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R.A.F. NARRATIVE

(FIRST DRAFT)

THE ITALIAN CAMPAIGN

1943 - 1945

VOLUME II

OPERATIONS, JUNE 1944 - MAY 1945

**Air Historical Branch 1
Air Ministry**

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P R E F A C E

The present volume, the second and final one on the Italian campaign, opens at the point when Rome had fallen to the Allies, and concludes the account of air participation in Operation 'Diadem'. Then, after a full evaluation of the air effort in the Spring offensive and of the interdictory preparations for it, it shows how the slow-down in ground operations led to an extension of the air offensive northwards. From the resumption of the Allied advance, the multifarious air operations in support of the thrust to Florence and the Arno, the battles of the rivers and the assault on the Gothic Line are given in detail and integrated with ground movements. The episode of the capture of Elba Island by ground and air forces is related.

After an evaluation of the perennial importance to the enemy of the River Po, an account is given of the first major air effort to neutralise it - Operation 'Mallory Major' - . The reasons for its only partial success are traced in the ingenious enemy system of temporary crossings and ferries. The growth of enemy coastal traffic on the two sea flanks offset the air offensive against land communications: it is shown that nothing short of concentration of air effort or a major ground advance could solve this problem.

With the onset of the Winter of 1944/1945 and the growth of a second stalemate, air policy was reorientated and the opportunity of retaining the initiative in the Allied favour boldly seized in the form of the interdiction of Italy from the Reich.

It is first shown how heterogeneous was the composition of Mediterranean Allied Air Forces and how much of a triumph was the moulding of its various national elements into one compact striking force. Then, in a survey of strategy in the period of the Octagon Conference, the interplay of the campaigns in Italy and Northwest Europe is defined. A section on the Swiss loophole in the interdictory net explains the role played by air strategy in a bloodless diplomatic victory.

It is then recorded how the isolation of Italy from the Reich by air attacks developed from bold but inadequate beginnings to a full-scale campaign of long duration. Although all the target zones are discussed, priority of space has been accorded to the Brenner Pass Line. These operations may serve for a long time to come as a model of the progressive attrition by air attack of a vital railway system against the best efforts of efficient repair and anti-aircraft systems. Enemy sources have been liberally drawn on and the important contribution of applied intelligence to operational planning has been established.

Then follows the record of the final air effort to neutralise both the coastal shipping carrying supplies to Army Group C and the harassing naval units, and of the systematic reduction of the substitute fuel plants that kept the German road transport in operation.

A feature of interest is the account of the unexpected enemy Serchio Valley counter-offensive of December 1944 and the part played by the Air Forces in reducing the threat. The conclusion is advanced that although it added materially to Allied difficulties it bore no correlation with the Ardennes counter-offensive then at its height.

An account is given of the strategic decisions at the Argonaut Conferences affecting Italy, the redefinition of Allied objectives and the withdrawal of air and ground forces, ~~also of tripartite views on the role of the Italian campaign and its contribution to the campaigns in Northwest Europe and on the Russian front.~~

The final chapter covers the plans and operations leading to the victory in Lombardy. Here, of necessity, the course of ground operations had to be outlined. The closest possible co-operation between ground and air forces was achieved. Notwithstanding, the actual measure of the Air Forces' contribution, the way in which it had created the most favourable possible situation before the offensive and its individual and decisive role in support and in the enemy debacle on the banks of the Po have been emphasised.

The Italian theatre was, for the Air Forces, the great cauldron of experiment. The long duration of the campaign provided the time for methods to develop to logical conclusions.

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CHRONOLOGY

1944

1 June Formation of the Balkan Air Force.
26 May - 1 June M.A.A.F. despatched 14,628 aircraft on operations connected with the Italian offensive and dropped 8,674 short tons of bombs.

2 June Inauguration of shuttle bombing by U.S.A.A.F. between Italy and Russia.
Valmontone captured.

2 - 8 June M.A.S.A.F. and M.A.T.A.F. flew 10,224 effective sorties on campaign missions. M.A.T.A.F. claimed 1,698 enemy vehicles destroyed.

3 June Marshal Tito and Allied missions evacuated by air from Yugoslavia.

4 June Rome entered by Allies.
Allied fighter control re-organised.

5 - 11 June Heavy bomber support of 'Diadem' operations.
5 - 14 June Continuous fighter bomber attacks on enemy transport.
5 - 15 June Tactical support for both armies.
5 - 22 June Medium bomber interdiction operations.

6 June D.A.F. assumed responsibility for support of both army fronts. D Day Normandy landings.
Fortresses of U.S. XV Air Force first operated from Russian bases.

7 June General withdrawal of Luftwaffe H.Q.s. and operational units.
Enemy night fighter reinforcements arrived.
Civitavecchia, and Tarquinia town and airfield occupied.
Period of changes in army air support controls.

9 June D.A.F. ordered temporary cessation of 'strafing' missions owing to high aircraft casualties.
79th Fighter Group transferred to Corsica in readiness for Operation 'Dragoon'.
Russian air group staff arrived at Caserta and proceeded to Bari to establish a base there.

10 June Fighters of XV Air Force attacked oil refineries at Ploesti.
Pescara and Chieti captured.

10 - 20 June French forces moved up to Orcia River defence line.
11 June New orders issued to Luftwaffe: air boundaries re-defined.
12 June Cancellation of plan for airborne landings on Elba Island.
14 June Tarquinia airfield operational.
Cancellation of plan for heavy bomber attacks on Elba beaches.
Orvieto captured.
Much less enemy transport in evidence.
C.C.S. order for completion of destruction of enemy in Italy.

15 June Air force areas redefined.
New directive on strategic air targets.
Strategic fighter sweeps over S. France airfields.
Orbetello and Grosseto captured.

16 - 22 June Heavy air attacks on enemy communications.
Elba ports attacked by air and 'Brassard' convoys sailed.

17 June Operation 'Brassard' - the landings on Elba - launched, with air support.

18 June Air support for Elba ground advance, and attacks on evacuation craft.

19 June Capture of Elba completed.
20 - 30 June Battle for the Trasimene Line.
20 - 21 June Heavy enemy air attacks on Poltava airfield in U.S.S.R.
21 June Air attack on Leghorn.

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CHRONOLOGY

1944

- 22 June Air participation in Operation 'Diadem' officially ended. M.A.T.A.F.'s interdiction responsibilities extended to Po River and the Genoa - Alessandria line. Heavy bomber attacks on enemy installations in N. Italy. Chaff-dispensing elements first employed in anti-flak measures by the 57th Bombardment Wing.
- 25 June Germans standing on Trasimene Line. General Cannon estimated Air Force transfers of 70 per cent to S. France.
- 29 - 30 June Evacuation of Chiusi by Hermann Goering Division. First 'Dixie' close support operations by D.A.F.
- 2 July A.F.H.Q. instructed by C.C.S. to proceed with Operation 'Anvil' - 'Dragoon'.
- 3 July Siena captured by Fifth Army.
- 5 July Final shuttle bombing raid from U.S.S.R. to England via Italy. S.A.C.IED advised of forthcoming transfer of air and ground forces to S. France. Siena - Arezzo road crossed. Allied advance halted. Period of revival of enemy night air operations in battle areas.
- 6 July - 4 Aug. End of X Corps advance. All Highway 69 in Allied hands. Cecina captured.
- 7 July Air attacks on Arezzo, resulting in reduction of enemy shelling of Allied assault.
- 9 July Issue of directive for Operation 'Mallory Major' - the air attacks on the Po bridges.
- 10 - 15 July Operation 'Mallory Major' - first phase.
- 14 July Formation of first Air Crew Rescue Unit in Italy.
- 15 - 19 July Air support for the capture of Ancona.
- 16 July Arezzo captured.
- 16 - 27 July Operation 'Mallory Major' - second and closing phase of the successful series of attacks.
- 17 July River Arno reached E. of Pisa by Fifth Army.
- 19 July Leghorn captured by Fifth Army. H.Q.M.A.T.A.F. moved to Corsica in preparation for assault on Southern France. Reduced tactical air strength in Italy.
- 20 July Attempted assassination of Hitler.
- 22 July River Arno reached N. of Leghorn. French army troops withdrawn from Italy.
- 24 July Campaign in Normandy officially ended.
- 25 July Campaign in Northern France begun.
- 26 - 27 July Olga Line evacuated by Germans.
- 27 July Hitler issued directive on defence works in Italy. San Casciano captured by Allies.
- 28 July Allies established contact with the Paula Defence Line.
- 31 July Fliegerkorps II transferred from S. France to Bulgaria. Small-scale enemy air attack on Allied convoy;
- 4 August Southern sector of Florence occupied by Allies. End of the ground campaign in Central Italy.
- 7 - 9 August Fighter support for Polish advance to Fano.
- 9 - 25 August Eighth Army operations to gain contact with Gothic Line.
- 9 - 26 August Secret deployment of D.A.F. in preparation for Operation 'Olive'.
- 9 - 20 August No enemy day air reconnaissance plotted.
- 10 August River Cesano crossed by Polish Corps.
- 11 August Liberation of Florence, only snipers remaining.
- 15 August Landings in S. France - Operation 'Dragoon' (formerly 'Anvil') launched following intense air bombing and attacks by airborne forces and supported by land-and carrier-borne aircraft.

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1944

15 - 20 August Main D.A.F. night intruder effort over S. France and W. Italy.

17 August First instructions for Operation 'Olive' issued to D.A.F.

19 August U.S. heavy bombers' last raid from Italy on Floesti.

20 - 31 August Increase in D.A.F. night intruder support for Eighth Army.

22 August 1,059 partisans evacuated by Balkan Air Force.

23 August Poles crossed Metauro River.

25 August Rumania declared war on Germany.
Move of D.A.F. H.Q. to Chiaravalle from Siena.
Operation 'Olive' - ground/air operations launched against the Gothic Line.

25 - 29 August Eighth Army's advance to River Foglia across River Metauro.

26 - 29 August D.A.F.'s continuous support of army advance. Night air attacks on Pesaro.

30 August River Foglia crossed.

30 Aug. - 3 Sept. Breaching of Gothic Line with air support.
Air attacks on rear communications.

31 August Air Operation 'Crumpet' against Pesaro cancelled.
Move of D.A.F. HQ. to Senigallia.

1 September Record army support effort to date by D.A.F.

1 - 12 September Air preparations for Fifth Army attack on Gothic Line.

2 September Pesaro occupied by Eighth Army and eastern end of Gothic Line breached.

3 September Forward airfields unserviceable owing to violent rain.

4 - 12 September First air/ground battles for Coriano and Gemmano ridges.

7 September Italian liner Rex sunk by No.272 Squadron off Capodistria.
Air offensive held up by rain.

9 September M.A.T.A.F. medium bomber attacks S. of Bologna opened.

10 - 18 Sept. Air attacks on San Fortunato ridge.

11 September Germans in occupation of main Gothic Line defences.

11 - 16 Sept. 'Octagon' Conference at Quebec.

11 - 12 Sept. Air Operation 'Sesame' - medium bomber attacks N. and N.E. of Florence.

12 September Brig. Gen. B.W. Chidlaw appointed to command of XII Fighter Command.

13 September Opening of Fifth Army attack on Gothic Line, with bomber support.

13 - 21 Sept. Second battle for Coriano and battle for Rimini.

14 September End of campaign in Northern France.

15 September Introduction of use of white phosphorus bombs by 57 Wing.
A.E.A.F. disbanded; Air Staff S.H.A.E.F. formed,
Strategic air forces European theatre reverted to control of C.C.S.
Airborne landings at Nymegen and Arnhem.

16 September C.C.S. directive (Octagon 29) on the Combined Bomber Offensive.

17 September Enemy line broken on Fifth Army front.

17 - 19 Sept. Air support for the assault on San Fortunato.

18 September First operation by Rover 'Frank' against guns on Canadian Corps front.

18 - 30 Sept. Continuous air support for Fifth Army.

19 September Plans issued for air attacks on Savio River bridges and for Operation 'Divorce' against Reno River bridges.

19 - 28 Sept. Enemy naval offensive in Adriatic and Wellington units' counter-measures.

20 September Rover 'Joe' moved forward.
Beginning of Eighth Army advance from R. Marecchia to R. Senio.
XII Fighter Command set up in Italy for support of Fifth Army.

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CHRONOLOGY

1944.

- 20 - 30 Sept. Reduced air operations owing to deteriorating weather.
21 September Rimini and Firenzuola captured.
22 Sept. - 19 Oct. Air attacks on the Savio River bridges
25 September British airborne forces landed in Greece followed by
seaborne forces.
Fifth Army breached central Gothic Line.
H.Q. M.A.T.A.F. returned to Italy.
Tactical air strength in Italy now stronger again.
27 September Monte la Battaglia (10 m. from Imola) captured by
Fifth Army.
30 September Gothic Line turned and pierced.
Air Operation 'Divorce' abandoned.
- 1 October Photographic Reconnaissance Wing decentralised.
General McCreery Eighth Army Commander vice General Leese.
1 - 18 October Strategic air attacks on N. Italian railways.
4 - 5 October Last minelaying operation in Danube by R.A.F. aircraft from
Italy.
9 October Moscow Conference.
Allied advance up Serchio Valley postponed.
10 October No. 336 Wing to meet R.A.F.'s photographic requirements and
units of XV and XII A.F.'s their respective requirements.
12 October Air Operation 'Pancake' against Bologna defences: 1,661
short tons of bombs dropped by M.A.S.A.F. and M.A.T.A.F.
in support of an unsuccessful Fifth Army attempt to
break through to Bologna.
14 October Athens liberated by British forces.
16 - 31 Oct. Support by XXII T.A.C. for Fifth Army operations in
Faenza, Imola and Bologna areas.
19 October XV A.F. directed to sustain railway attacks on continuous
basis.
21 October Eighth Army began advance from R. Savio to R. Lamone.
Cesena captured.
24 October Adv. H.Q. D.A.F. moved to Rimini.
Decision for A.A.I. to go over to offensive - defensive.
24 - 26 Oct. D.A.F. support for Eighth Army's advance to R. Ronco.
25 October Commencement of air fly-in of troop reinforcements.
26 October R.A.F. Regiment units under command of Porterforce
(Eighth Army).
27 October Issue of air directive for Operation 'Bingo' - the attack
on the Brenner power stations.
Allied offensive halted: beginning of ground stalemate.
29 October Postponement to 30 November of Fifth Army assault on
Bologna.
31 October Air and ground operations brought to a standstill by bad
weather.
No. 2 Army Air Support Unit disbanded and No. 1 Army Support
Signals Unit formed.
Period of the birth of Rover controls in tanks and armoured
cars and the 'Horsefly' system of Rovers in cub aircraft.
- 1 November U.K. First Tactical Air Force formed to work with
Southern Group of Armies in Europe.
3 November Directive to M.A.T.A.F. defining its principal targets as
enemy lines of communication.
Air support of ground operations drastically cut.
Isolation of Italy from the Reich henceforward the main
air objective.
4 November Official opening of the air Battle of the Brenner and
'Blockade' - the isolation of Italy from the Reich.
4 - 13 November Air attacks on Forli town and airfield (part of Operation
'Seatent').

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CHRONOLOGY

1944

- 6 November Operation 'Bingo', followed by continuous air attacks to the conclusion of hostilities on the whole N. Italian railway system.
- 7 - 20 November Fifth Army, with strong support by D.A.F., advanced to the Montone - Cosina line.
- 9 November Forli captured by Eighth Army.
- 11 November M.A.T.A.F. began concentration on frontier railway routes. First penetration into Austria by M.A.T.A.F. aircrews from Italy. XV A.F. relieved of Italian interdictory responsibilities. Oil now the first strategic air priority.
- 12 November First 'Timothy' air operations, in support of Eighth Army.
- 13 November Serious Allied ammunition shortage situation.
- 14 November Communications replaced war production as No.2 strategic air priority.
- 15 November First heavy bomber attacks from Italy on Austrian Brenner line terminals.
- 16 November Gen. Eaker's advocacy of closing Swiss routes by air action.
- 19 November Last mission from Corsica by 42nd Bombardment Wing (transferred to E.T.O.) First use of SCR.584 by 47th Bombardment Group.
- 20 Nov. - 1 Dec. Air operation 'Harry' - support of Eighth Army advance to R. Lamone.
- 21 - 24 November Air support for the advance to Faenza.
- 22 November D.A.F. directed to increase fighter bomber effort on communications. Renewal of enemy night harassing bombing for a period of 5 weeks.
- 23 November Eighth Army crossed R. Cosina.
- 24 - 26 November Eighth Army advance towards R. Lamone.
- 27 November General Alexander promoted to Field Marshal.
- 28 November Enemy retook Monte Castellaro and Monte Belvedere.
- 30 November Ground conditions static and air support of Fifth Army reduced.
- 1 December R. Lamone reached by Eighth Army.
- 2 December Eighth Army began advance across Canale Naviglio to R. Senio.
- 2 - 9 December Air support of Canadian Corps.
- 2 - 3 December Air support for attacks on Russi and Ravenna.
- 3 - 7 December Air support of V and Polish Corps marred by bad weather.
- 4 - 23 December Air support of XIII Corps (Fifth Army) thrust towards Imola.
- 7 December Beginning of expansion of Brenner flak defences. Pideura captured. Enemy decision to reinforce Tenth Army front. Ravenna captured. Air support of attack towards Faenza. Record D.A.F. day effort to date. (613 sorties)
- 8 - 9 December German counter-attack on Canadian front.
- 9 December No enemy searchlight defences used after this date.
- 9 - 16 December Air attack on Tossignano - XIII Corps sector.
- 10 December Faenza captured.
- 10 December First 'Shoran'-guided air operation - by 57 medium bomber Wing. Eighth Army H.Q. received direct hit by enemy bomb. Canadian advance to Naviglio Canal.
- 10 - 18 December Field Marshal Alexander appointed Supreme Commander. General Mark Clark appointed to command of 15th Army Group and Lieutenant General L. K. Truscott to Fifth Army. Fighter bomber demonstration near Bagnacavallo to conceal manoeuvres of Allied tanks.

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CHRONOLOGY

1944

14 December Second 'Shoran'-guided air operations. Adverse situation on Canadians' front restored with air support.

14 - 17 December Air support for Eighth Army advance to R. Senio.

16 December Commencement of Ardennes enemy offensive. Pergola captured.

16 - 31 December Air support reduced owing to deteriorating weather and snowfalls.

19 - 31 December Air attacks on the R. Senio defences. Eighth Army seizure of R. Senio east banks (except Alfonsine pocket).

21 December Bagnacavallo captured by Eighth Army.

22 December 8th Indian Division ordered to Lucca to meet enemy threat in Serchio Valley.

23 - 27 December Deepest German penetration in Ardennes offensive. Air attacks on enemy airfields in N. Italy.

26 December Serchio Valley counter-offensive: first enemy successes. Allied fighter bomber attacks on enemy in Serchio Valley.

27 December Enemy progress in Serchio Valley. Allied light bombers joined in air support.

28 December Enemy setback in Serchio Valley

28 - 31 December Continuous air support for Indians in Serchio Valley.

29 December Plan ordered for withdrawal of air force units from the Arno Valley. (N.B. this plan was never put into action). General von Pohl's call for air reinforcements and strengthening of Brenner flak defences.

1945

1 January Restatement of air force policy.

3 January Enemy tanker Prometheus sunk by Squadrons Nos. 272 and 458.

4 January Eighth Army attack on Senio pocket.

5 January First Allied air attacks on the Comacchio Spit area, continued through January.

8 January Supreme Commander announced abandonment of winter offensive.

9 January Air directive issued ordering intensified interdiction and suspension of army support as a major responsibility.

11 January Warsaw occupied by Russians.

12 January 319th Bombardment Group and 514th Air Service Group transferred from Italy to U.S.A.

15 January Eighth Army reached approaches to R. Senio east bank. German 356th Division began to move from Italy to Russia. Under continuous air attack, it took 3 weeks on the journey.

23 January D.A.F. reduced its close support effort to attacks on heavy guns.

23 Jan. - 3 Mar. D.A.F. support for Eighth Army operations in Senio area.

26 January End of battle of Ardennes bulge.

29 January 'Argonaut' Conferences opened at Malta (terminated at Yalta 11 February).

31 January D.A.F. asked for proposals for new methods of interdicting R. Po. Eighth Army's first attempt to occupy R. Senio floodbank.

1 February German 16th S.S. Pz. Gren. Division began leaving Italy and took 3 weeks under air attacks on the journey.

4 - 10 February Decisions at Yalta Conference to seek a decision in Germany and transfer air and ground forces from Italy.

11 February End of 'Argonaut' Conference at Yalta.

14 February Period of transfer of 27th and 86th Fighter Bomber Groups and 319th Air Service Group, and Canadian Corps (Operation 'Goldflake') to France.

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CHRONOLOGY

1945

- 15 February Opening of heavy bomber attacks on enemy-held Adriatic ports.
- 19 February Fifth Army attacked in Monte Belvedere sector, securing firm ground for Spring offensive.
- 28 February Turning point in the Brenner battle first discerned.
- 1 March Alpine Front Command created.
- 1 - 31 March Steep increase in Allied day and night air effort on interdiction of Italy.
- 2 March First operation by Rover 'David' control in Sherman tanks. Opening of German peace overtures in Italy.
- 3 March Mining of Venice and Pola by aircraft.
- 3 - 23 March Period of increased enemy fighter activity.
- 6 March Increase of Thunderbolt attacks on Austrian railway traffic affecting Italy begun.
- 7 March U.S. forces crossed R. Rhine.
- 8 March Swiss-Allied agreement on blockage of coal, iron and steel traffic and reduction of all Axis railway transport through Switzerland.
- 10 March Kesselring appointed C.-in-C. West.
- 11 March First successful medium bomber strike from Italy on bridges in Germany affecting supplies to Italy.
- 16 March Air Marshal Sir Guy Garrod appointed Deputy Air C.-in-C. M.A.A.F. and C.-in-C. R.A.F. Med. M.E. vice Air Marshal Sir John Slessor.
- 18 March Wellington attack on Monfalcone. Successful participation by R.A.F. radar station on Cap Corse in disabling of German destroyer 'Premuda'.
- 21 March Operation 'Bowler', the air attack on Venice docks.
- 22 March Yugoslav offensive launched with support by B.A.F.
- 23 March Von Vietinghoff appointed C.-in-C. S.W. vice Kesselring.
- 24 March { Final plans for Operation 'Grapeshot', the 15th Army Group - M.A.A.F.
Spring offensive defined.
Lower Rhine crossed by Allies.
Major General J. K. Cannon appointed C.G. M.A.A.F. vice General Ira Eaker.
- 24 - 29 March Opening of air offensive on enemy substitute fuel installations.
- 27 March Objections to retaliatory Alpine Front Command operations withdrawn.
- 1 April First enemy jet-propelled aircraft reported in Italy by day reconnaissance.
- 1 April Encirclement of Ruhr completed.
- 1 - 8 April Maximum air effort on substitute fuel.
- 2 April Night air attacks on Brenner Line. Submarine sunk by Wellingtons in Adriatic.
- 4 April Operation 'Roast' launched: air attacks on Spit defences. Operation 'Fry' launched after preliminary air attacks on the Islands.
- 5 April Air/Army plan for Operation 'Buckland' issued.
- 5 - 8 April Operation 'Lever', the attack on the Wedge, launched.
- 5 - 10 April Fifth Army diversion in Massa area. Air attacks on La Spezia guns.
- 6 - 7 April Operation 'Leonidas Eins', the German false front manoeuvre on Eighth Army front.
- 7 April M.A.T.A.F. issued instructions for Air Operation 'Wowser'.
- 8 April Revival of day air attacks on Brenner line.
- 9 April D Day Operation 'Buckland' on Eighth Army front: day and night attacks on Senio defences. Vienna occupied by Russians.

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1945

9 - 12 April Air support of the advance beyond R. Santerno.
9 - 14 April Eighth Army battle of the breaching of the R. Senio and Santerno lines.

10 April Air attacks on R. Santerno defences.
Eighth Army across R. Senio and advancing to R. Santerno.
Massa captured by Fifth Army.

10 - 20 April Alpine Front Command offensive operations.
10 - 12 April Heavy bomber interdiction operations.
11 - 12 April Night attacks by No.205 Group on Bastia and Argenta.
11 - 20 April Air attacks on R. Po approaches and crossings.
12 April Opening of air attacks on enemy ammunition.
13 April Operation 'Earlsdon' in Argenta area cancelled.
Air support for waterborne landing in Argenta area.
Strategic Air Forces in Europe's main mission defined as direct assistance to the ground campaign in Northern Europe.

13 - 14 April Night air attacks on Portomaggiore.
14 April Opening of Fifth Army offensive with air support by all categories.
Failure of Allied waterborne landing in Argenta area.
Air support for the attack on the Argenta Gap.
14 - 20 April Fifth Army battle of the advance to the Po Valley.
15 April Opening of battle for the Argenta Gap.
15 April Record day effort by XV A.F. in support of Fifth Army.
15 - 16 April Close support for N.Z. Division.
15 - 19 April Fifth Army's drive up Highway 65 and W. of 64.
15 - 20 April Eighth Army battle of the Argenta Gap.
15 April Bad weather neutralised heavy bomber support of Fifth Army.
First 'Shoran'-guided operation by D.A.F. (No.3 Marauder Wing).
General Spaatz ordered heavy bomber support of the Army in Italy.
Air support of Eighth Army attack on the Fossa Marina.
Enemy night air operations.

16 - 23 April Eighth Army crossed the Fossa Marina.
16 - 17 April 'Pointblank' air operations finished.
17 April Fifth Army breakthrough in Highway 64 sector.
17 - 18 April Continued heavy bomber attacks on Bologna defences.
Air support for Br. XIII Corps.
17 - 26 April Medium bombers continued the Battle of the Brenner.
18 April German lines round Bologna breaking.
18/19 - 20 April Air Operation 'Divorce' against the Reno bridges.
19 April N.Z. Division reached R. Idice with air support.
20 April Germans began retreating to the R. Po.
End of the battle of the Argenta Gap.
20/21 April Enemy retreat across R. Po reported by night air reconnaissance.
Airborne Operation 'Herring'.

20 - 26 April Air Operation 'Corncob' against Adige and Brenta bridges.
8 - 21 April M.A.S.A.F. and M.A.T.A.F. heavy and medium bombers dropped 7,338 short tons of bombs on Eighth Army front: D.A.F. light bombers, fighters and fighter bombers flew 6,644 sorties in tactical army support.
During the same period, heavy and medium bombers dropped 4,965 tons on Fifth Army front and XXII T.A.C. flew 2,603 sorties in light bomber, fighter and fighter bomber attacks.

21 - 24 April Major and decisive air attacks on the Po ferries and crossings, and ground defeat of the enemy south of the Po.
21 - 27 April Major destruction of enemy transport by air forces in the pursuit.

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CHRONOLOGY

1945

- 22 April 'Midnight Rover' inaugurated.
Fifth and Eighth Armies met at Bondeno, Cento and Finale.
Ferrara captured.
- 23 April Russian armies in Berlin.
Theatre directive on role of Strategic Air Force issued.
First Fifth Army units reached R. Po.
- 24 April German mass surrenders in Italy began.
Air attacks on German bridgehead near Ferrara.
Eighth Army crossed R. Po.
First signs of weakening in enemy repair effort reported.
Only very little movement on the Brenner route.
La Spezia and Parma captured.
- 24 - 28 April D.A.F. close support for advance from R. Po to R. Adige.
- 25 April Last air attacks on the Brenner railway route.
General insurrection of partisans in enemy-held Italy.
Allied and Russian armies met at Torgau.
Opening of the pursuit phase of the Italian offensive.
New Zealanders reached R. Adige.
Verona captured.
German armies cut in two.
- 27 April Genoa and Piacenza captured.
- 27 - 30 April Reduced air operations owing to the fluid ground situation
and bad weather.
- 28 April Vicenza and Alessandria captured.
Mussolini captured and shot by partisans.
- 29 April South Africans (Fifth Army) and Eighth Army met in Padua.
Venice and Ghedi town and airfield captured.
Surrender of Army Liguria.
Air attacks on enemy transport in Conegliano area.
Enemy signed instrument of surrender, involving nearly
1,000,000 men.
- 30 April Turin captured.
Surrender of enemy formations continued.
- 30 and 1 May Last C.A.F. operations against enemy surface craft.
- 1 May Eighth Army and Yugoslav forces met at Monfalcone.
Death of Hitler reported.
- 2 May Cessation of hostilities in Italy.
- 7 May Surrender of Germany.
- 8 May V.E. Day.
- June M.A.S.A.F. disbanded.
- 6 July M.A.T.A.F. disbanded.
- 15 July B.A.F. disbanded.
- 31 July M.A.A.F. became R.A.F. Mediterranean and Middle East and
U.S.A.A.F. Mediterranean Theatre of Operations.
- Air Marshal Sir Guy Garrod appointed A.O.C.-in-C. Med. M.E.
- 1 August M.A.C.A.F. became M.C.A.F.
- 16 August V.J. Day.
- 19 October M.A.C.A.F. became Air H.Q., R.A.F. Italy.

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CODE NAMES

A Force	Clandestine Allied rescue organisation.	
A.H.Y. or A.Y.H.	A sound-radar bombing device.	
Anvil	First code name for the assault on Southern France.	
Argonaut	Allied conferences in Malta and Crimea.	29 Jan. - 11 Feb. 1945
<u>Benito Pylon</u>	German long-range radio aircraft detection system.	
Bingo	Air operation to destroy Brenner electrical system from Trento southwards.	6 November 1944
Bowler	Air attack on Venice docks.	21 March 1944 1945
Brassard	Assault on Elba Island.	17 - 19 June 1944
Bridgeton	Follow-on operations after Buckland.	April 1945
Buckland	Air/ground offensive on Eighth Armyfront - assault phase	9 April 1945
Cinder	An arm of Eighth Army thrust at Argenta	April 1945
<u>Coastwatcher</u>	German aircraft range and azimuth detection system.	
Coke	An arm of Eighth Army thrust at Argenta.	
Corncob	Air attacks on Adige and Brenta bridges.	20 - 26 April 1945
Crocodile	Large flame-throwing tank.	
Crossword	Negotiations for enemy surrender.	
Crumpet	* Medium bomber reduction of Pesaro defences.	
Diadem	Allied Spring offensive 1944.	11 May - 22 June 1944
Divorce	Air attacks on R. Reno bridges.	Sept. 1944 and April 1945
Dixie	Last light air support operation based on tactical air reconnaissance.	
Dragoon	Final code name for the assault on Southern France.	15 August 1944
Earlsdon	* Airborne operations in support of assault phase of Eighth Army offensive.	April 1945
<u>Egon</u>	German system of radar control in night operational aircraft.	
Excalibur	Eighth Army attack on Russi, Ravenna, Faenza.	December 1944
Fantail	Landing vehicle, tracked.	
Flipper	Fifth Army advance to R. Po.	April 1945
Frantic	Shuffle bombing operations to and from U.S.S.R.	
Freedom	Air evacuation of Allied aircrews from Bulgaria.	September 1944
<u>Freya</u>	Allied Forces Headquarters. German early aircraft warning equipment.	
Fry	Eighth Army attack on the Comacchio Lake Islands.	4 April 1945

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CODE NAMES

Gee H	British blind bombing device.	
<u>Giant Wurzburg</u>	German aircraft detection equipment.	
Goldflake	Outward move of ground forces from Mediterranean to Western Front.	Feb. - April 1945
Grapeshot	15th Army Group offensive.	April - May 1945
Harry	Air support of Eighth Army advance to R. Lamone.	20 Nov. - 1 Dec. 1944
Hasty	Airborne operation in Avezzano area.	1 June 1944
<u>Herbstnebel</u>	* German plan for general withdrawal in N. Italy.	Autumn 1944
Herring	Airborne drop of Italian volunteers behind enemy lines.	April 1945
Horsefly	Air support control unit in cub aircraft (XXII T.A.C.)	
Impact	Series of operations in Eighth Army thrust at Argenta.	April 1945
Impact Blue and } Impact Harrow }	Cover plan operations on Spit and Comacchio Lagoon.	April 1945
Impact Eton	Cover plan naval and air operations directed against Porto Garibaldi.	April 1945
Impact Plain	Landing across Comacchio Lagoon and drive towards Argenta.	April 1945
Impact Royal	Follow-on to 'Plain' towards Argenta.	April 1945
Impact Slam	Follow-on to 'Plain' towards Portomaggiore.	April 1945
Jessica	Alpine Front Command operations plan.	April 1945
Kangaroo	Turretless tank modified to carry infantry.	
Lazzarone Air } Force }	A Mitchell aircraft engaged in supply of distressed Allied air personnel in enemy territory.	
<u>Leonidas Eins</u>	German false-front manoeuvre on Eighth Army front.	6/7 April 1945
Lever	Eighth Army attack on Comacchio Wedge	5 - 8 April 1945
Mallory	* Early air plan to destroy Po (6) and Trebbia (1) bridges.	
Mallory Major	Destruction of Po bridges from Piacenza to Adriatic.	12 - 27 July 1944
Merlin	Air/ground operation to capture Faenza.	Nov. 1944
Oboe	British blind bombing device.	
Octagon	Quebec Conference.	11 - 16 Sept. 1944
Olive	Air/ground assault on the Gothic Line.	Aug. - Sept. 1944
Overlord	Allied entry into N.W. Europe.	6 June 1944
Pancake	Allied air attacks on Bologna defences.	12 October 1944

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CODE NAMES

Pig	Fighter bomber operation similar to 'Timothy' but without bombs.	
Pineapple	Operation in which reconnaissance aircraft reported transport targets.	
Pineapple Sundae	Last light operations resembling 'Pineapple', in which armed reconnaissance missions were already airborne.	
Plaster	* Plan for air attacks on Bologna defences.	Jan. 1944
Pointblank	The progressive dislocation of the German military, industrial and economic system, the disruption of vital elements of lines of communication and the material reduction of the German air combat strength by the successful prosecution of the Combined Bomber Offensive from all bases.	
Quadrant	Quebec Conference.	August 1943
Rebecca H Reunion	British bombing device. Air evacuation of Allied aircrews from Rumania.	September 1944
Roast	Eighth Army attack on the Comacchio Spit.	2/3 April 1945
Rover David	The original D.A.F. air support control with Eighth Army.	
Rover Frank	Air support control co-operating with artillery.	
Rover Jimmie	Alternative name for 'Paddy' used September 1944.	
Rover Joe	Air support control Fifth and Eighth Army Fronts.	
Rover Midnight	Night photo recce liaising with controls.	
Rover Paddy	Air support control Eighth Army front.	
Rover Pete	Air support control Fifth Army front.	
Rover Tank	Air support control mounted in a Sherman tank.	
Rover Tom	Air support control with Polish Corps.	
Sesame	Medium bomber operations in support of Fifth Army assault on Gothic Line.	
Sextant Shoran	Cairo Conference. Short Range Air Navigation - U.S. device for bombing through overcast.	11 - 12 Sept. 1944 3 - 5 December 1943
Sinister	* Plan for air supply of Eighth Army.	
Squireen	Fifth Army advance across R. Po and capture of Verona.	April 1945

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CODE NAMES

Speedball	Rover station with fast contact cars on Fifth Army front.	
Strangle	Air interdiction of enemy communications in Italy.	19 March - 11 May 1944
Timothy	Concentrated fighter bomber 'blitz' providing maximum close support and elasticity of manoeuvre.	
Toby	Air attacks on pre-arranged divisional thrust targets.	
Wasp <u>Wassermann</u>	Small flame-throwing tank. German long range aircraft detection system.	
Wowser	Maximum air effort in co-ordination with initial stages of 15th Army Group offensive.	April 1945

* Operations cancelled.

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ABBREVIATIONS

A.A. Anti-aircraft
A.A.F. Army Air Forces (U.S.)
A.A.I. Allied Armies in Italy
A.A.S.C. Army Air Support Control
Abt. Abteilung - German administrative unit
A.E.A.F. Allied Expeditionary Air Force
A.F.H.Q. Allied Force Headquarters
A.F.S.C. Air Force Service Command
A.G.R.A. Army Group Royal Artillery - Normally a unit operating a collection of medium guns for counter battery work.

A.H.B. Air Historical Branch - Air Ministry
A.L.O. Air Liaison Officer (Army personnel)
A.O.C. Air Officer Commanding
A.O.P. Air Observation Post (artillery-spotting aircraft)
A.S.C. Air Support Command
A.S.R. Air/Sea Rescue
A.S.S.U. Army Support Signals Unit
A.S.V. Air to surface vessel
A-20 Boston aircraft (U.S.)
A-36 Mustang 'Invader' aircraft (U.S.)

B-17 Boeing Fortress aircraft (U.S.)
B-24 Liberator aircraft (U.S.)
B-25 Mitchell aircraft (U.S.)
B-26 Marauder aircraft (U.S.)
B-34 Ventura aircraft (U.S.)

Ca. Cant aircraft (Italian)
C.C.S. Combined Chiefs of Staff
C.G. Commanding General (U.S.)
C.I.G.S. Chief of the Imperial General Staff (Br.)
C.M.F. Central Mediterranean Force
C.O.S. Chief of Staff (Br.)
COSMED Annotation for signals from Chiefs of Staff to SACMED
C.P. Command post
C.R. Fiat aircraft (Italian)
C.S.D.I.C. Combined Services Detailed Interrogation Centre

D.A.F. Desert Air Force
Do. Dornier
D.Z. Dropping zone

E-boat Enemy motor torpedo boat
E.T.O. European theatre of operations

F.A.F. French Air Force
F.A.G. Fern Aufklärungs Geschwader - long range reconnaissance wing (German)
FAN Annotation for signals from C.C.S.
F.C.P. Forward control post
F.M.G. Funk Messe Gerät - gun-laying device (German)
F - 5A Mosquito aircraft (Br.)
F.W. Focke-Wulf aircraft type (German)

G.C.I. Ground Control Interception
G.O.C. General Officer Commanding
G.S. General Staff

He. Heinkel - aircraft type (German)
H.F. High frequency
Hr(s) Hour(s)
H2S(X) Radar navigational aid (Allied)

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ABBREVIATIONS

I.A.F.	Italian Air Force
Int/Ops	Intelligence/Operations
I.S.T.D.	Inter-Service Topographical Department
J.C.S.	Joint Chiefs of Staff
J.G.	Jagd (Fighter) <u>Geschwader</u> - German Air Force unit
Ju.	<u>Junkers</u> - type of aircraft (German)
Kdo.	<u>Kommando</u> - German Command H.Q.
K.G.	<u>Kampf</u> (Bomber) <u>Geschwader</u> - German Air Force unit
K.T.	<u>Kriegs Transport</u> (War Transport) - German type of merchant vessel.
L.C.A.	Landing Craft Assault
L.C.F.	Landing Craft Flak
L.C.G.	Landing Craft Gun
L.C.I.	Landing Craft Infantry
L.C.M.	Landing Craft Mechanised
L.C.N.	Landing Craft Navigation
L.C.R.	Landing Craft Rocket
L.C.S.	Landing Craft Support
L.C.T.	Landing Craft Tank
L.S.T.	Landing Ship Tank
L.V.T.	Landing Vehicle Tracked (Fantail or Buffalo)
M.A.A.F.	Mediterranean Allied Air Forces
M.A.C.A.F.	Mediterranean Allied Coastal Air Force
M.A.S.A.F.	Mediterranean Allied Strategic Air Force
M.A.T.A.F.	Mediterranean Allied Tactical Air Force
Mc	Macchi - aircraft type (Italian) (MC is used in Vol.I)
Me	Messerschmidt - aircraft type (German)
M.E.	Middle East
MEDCOS	Annotation for signals from SACMED to C.C.S.
MedME	Mediterranean and Middle East (R.A.F. command area)
M.O.K.	<u>Marine Ober Kommando</u> - Naval High Command (German)
M.O.R.U.	Mobile Operations Room Unit
M.T.O.	Mediterranean theatre of operations
(N)	(Night) - term applied to air operations
NAF	Annotation for signals from A.F.H.Q.
N.A.G.	<u>Nah Aufklarungs</u> (Close Reconnaissance) <u>Geschwader</u> - German Air Force Unit.
N.I.D.	Naval Intelligence Division
N.J.G.	<u>Nacht Jagd</u> (Night Fighter) <u>Geschwader</u> - German Air Force Unit
N.O.I.C.	Naval Officer-in-Charge
O.B.S.	<u>C-in-C. South</u> (German)
O.B.SW	<u>C-in-C. Southwest</u> (German)
O.K.L.	<u>Supreme Command of the German Air Force</u>
O.K.W.	<u>Supreme Command of the German Armed Forces</u>
Opsum	Operations summary
O.R.	Operational research
O.R.B.	Operations Record Book (Form 540) (Br.)
O.S.S.	Office of Strategic Services (U.S.)
O.T.	<u>Organization Todt</u> (German Labour force)

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ABBREVIATIONS

P.I.U. Photographic Interpretation Unit
P.R.U. Photographic Reconnaissance Unit
P.R.W. Photographic Reconnaissance Wing
P.O.W. Prisoner-of-war
P-38 Lightning - type of U.S. aircraft
P-39 Airacobra - type of U.S. aircraft
P-40 Warhawk - type of U.S. aircraft (or Kittyhawk, Br.)
P-47 Thunderbolt - type of U.S. aircraft
P-51 Mustang - type of U.S. aircraft
P-61 Black Widow - type of U.S. aircraft (night)

Q.M.G. Quartermaster General

R.A.A.F. Royal Australian Air Force
R-boat Enemy minesweeper
R.C.A.F. Royal Canadian Air Force
R.C.T. Regimental Combat Team (U.S.)
Re Reggiani - type of Italian aircraft
R.H.A.F. Royal Hellenic Air Force
R.N. Royal Navy
R.P. Rocket projectile
R/T Radio telephony

S.A.A.F. South African Air Force
S.A.C.MED. Supreme Allied Commander Mediterranean
S.A.S.O. Senior Air Staff Officer
S-boat German M.T.B.
S.C.R. Signals Corps Radio
S.C.O.R.U. Statistical Control and Operational Records Unit
S.H.A.E.F. Supreme Headquarters Allied Expeditionary Force
S.K.G. Schlacht Kampf (Ground assault) Geschwader - German Air Force Unit.

S.M. Savoia Macchi - Italian type of aircraft
S.N.O. Senior Naval Officer

T.A.C. Tactical Air Command
Tac/R Tactical reconnaissance
T.A.F. Tactical Air Force
T.C.C. Troop Carrier Command

U.S.N. United States Navy
U.S.S. United States Ship

V.H.F. Very High Frequency (Radio telephony)

W.I.S. Weekly Intelligence Summary
W.P. White phosphorus

CHAPTER 1

AIR OPERATIONS IN THE ADVANCE TO FLORENCE

MOVES OF THE OPPOSING AIR FORCES AFTER THE FALL OF ROME

Allied Tactical Airfields at the Launching of Diadem⁽¹⁾

On 12 May, all units of Mediterranean Tactical Air Force covering the front line were located on excellent airfields in Italy. The tactical airfield situation had been relatively stable for some months past. From this date onwards until mid-July, American aviation engineers and British airfield construction units undertook an arduous programme of movement and reconstruction; the tactical forces moved forward progressively on to the new, more advantageous sites, so as to aid in the advance and keep within working range of the retreating enemy and his communications.

At the opening of Operation 'Diadem,' XII Tactical Air Command was based on fields at Vesuvius, Pomigliano Capodichino, Santa Maria, Marcianise, Lago, Castel Volturno, Pignataro, Venafrano and Nettuno. The Desert Air Force was based on San Angelo, Madna, Canne, Trigno, Cutello, Biferno and Sinello. Tre Cancelli, La Banca on Anzio beachhead and San Vito on the east coast⁽²⁾ were under construction at the time.

Estimates of Airfield Requirements

To meet the situation created by the progress of the battle it was estimated that the following airfields were required: twenty-one airfields for XII Tactical Air Command, comprising five south of Rome, ⁽³⁾ five north of Rome, two in the Tarquinia area, two in the Grosseto area, two in the Piombino area, and five in the Pisa area; and for Desert Air Force, three in the Aquino - Frosinone area, five in the Rome area, and, along the east coast area, as many as the hilly terrain would permit. All airfields for XII Tactical Air Command were to be 6,000 feet: most airfields for Desert Air Force were to be 3,600 feet minimum with one 6,000 feet airfield for night fighters and medium bombers. The survey assumed a German retreat to behind the Pisa - Rimini line.

This ambitious programme was to tax to the limit the resources of the air forces. The engineer troops available comprised one Engineer Aviation Battalion (U.S.)⁽⁴⁾ and one Airfield Construction Group (British)⁽⁵⁾ in the XII Tactical Air Command area, and in Desert Air Force area two Airfield Construction Groups (British)⁽⁶⁾ - the first on the east coast, the other in the central area. Few people had anticipated the rapidity of the Allied advance; more engineers had to be at once imported.

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- (1) A. H. B. /ILJ11/1, Vol. 7, App. D.D.
 - (2) Refer to Appendix 1 and Figure 1.
 - (3) Including Anzio.
 - (4) No. 815.
 - (5) No. 3.
 - (6) Nos. 69 and 15.

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Responsibility for Airfield Construction

The responsibility for all forward tactical airfield construction for Mediterranean Allied Tactical Air Force was vested in the Chief Engineer, Allied Armies in Italy. In the Desert Air Force area, the Chief Engineer of No. 69 Airfield Construction Group operated under direction of Eighth Army. Initially, no central responsibility was established for XII Tactical Air Command and delays occurred until the responsibility within this area was vested in the Commanding Officer of Engineer Command, Allied Air Forces Mediterranean Theatre of Operations. Responsibility for maintenance of airfields rested with H.Q. Air Force Service Command.

Progress of Airfield Construction up to 12 July⁽¹⁾

In spite of transportation and other difficulties, the engineers rapidly caught up with the front and, in addition to maintaining fields already in use, constructed new ones. Reconnaissance survey parties were active ahead of the main body and in some cases ahead of the infantry (one party was taken prisoner and held by Allied troops). These parties prepared the ground until the front line position allowed the main parties to move in.

As he retreated, the enemy did everything possible to render his evacuated airfields useless to the Allies, laying mines, ploughing and cratering the fields and destroying buildings. His demolitions were usually found to exceed that accomplished by our bombing. As a result, with few exceptions, particularly in XII Tactical Air Command areas, ⁽²⁾ the enemy airfields were unsuitable for improvement or rehabilitation. In Desert Air Force areas a few enemy airfields were, however, rehabilitated. The considerable achievements in airfield construction and the remarkable advance of the Air Forces during 'Diadem' can be checked in Figure 1 and Appendix 1.

Other Allied Airfield Activities in June

On 1 June, as a result of considerable planning, the Balkan Air Force⁽³⁾ was officially inaugurated, with headquarters at Bari. Although it came under the operational control of M.A.A.F., it was essentially, as a matter of policy, a British project. As it needed a special area on which to base its operations, the Brindisi area was assigned to it, with all requisite special operational facilities.

Vesuvius became the base for the training of the Italian Air Force, due for re-armament with Airacobras and Baltimores. Early moves in connection with the plan for the landing in Southern France called for the drafting of the air build-up for Corsica, the main base for air operations in Operation 'Anvil'. In North Africa and Sicily economies were put into force, so that the needs of the fluid situation in Italy could be met. Various airfields in North Africa were derequisitioned; in Sicily plans were drafted to close all aviation units ⁽⁴⁾ and to move

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- (1) A.H.B./ILJ11/1, Vol.7 App. D.D.
 - (2) Where 5,000 to 6,000 feet runways were required.
 - (3) Abbreviation B.A.F.
 - (4) Except Catania.

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troop carrier and transport activities to the Rome area. When the Ancona area was secure, Strategic Air Force fighter units were to move in from the Heel, leaving the latter vacant for the use of Balkan Air Force and Italian Air Force units.

Fighter Control after the Fall of Rome (1)

The problem of fighter control at this period was related to the general lines of the land battle. Before the capture of Rome, the Fifth and Eighth Armies advanced on a narrow front, tending to converge without actually overlapping, while V Corps waited on the east coast for signs of an enemy withdrawal. After the capture of Rome, Fifth Army advanced north-westwards on the axis Rome - Viterbo - Siena, and Eighth Army north-eastwards on the axis Rome - Terni - Foligno - Perugia. V Corps advanced along the east coast, with the ultimate intention of rejoining Eighth Army. On 5 June, the two armies were very close together and some time elapsed before the divergence was appreciable enough to simplify air control. Fighter control worked on the following lines. Before 4 June, control in the West was exercised by 64th Fighter Wing and on the east coast by No. 1 Mobile Operations Room Unit. After 4 June, as the operational areas of the two armies became gradually more distinct, separate fighter control was exercised in three sectors. In the West by 64th Fighter Wing along the Fifth Army axis of advance, in the Centre by No. 1 Mobile Operations Room Unit along the axis of the Eighth Army advance, and in the East by a Fighter Control Detachment of M. O. R. U. advancing behind V Corps, with Forward Fighter Controls deployed in each Sector.

On 5 June, the airfields of XII Tactical Air Command and Desert Air Force were very close together. The routing of aircraft of each force entailed flying, in many cases, within the operational area of the other; only by the closest liaison between controllers was it possible to avoid confusion and mis-identification.

Although front line enemy close support was withdrawn during the retreat, a small but up-to-date night fighter force was operating; it was therefore of importance that night fighters in particular should be handed to the Operations Room and thence to the G. C. I. station best placed to deal with them. Radar coverage along the two axes of advance was closely co-ordinated. The bulk of it was deployed by 64th Fighter Wing, for in addition to their army commitments they were responsible for coast watching and port defence. Desert Air Force, whose radar coverage in its mountainous zone was more difficult, was issued with extra equipment. The two fronts unified their coverage by telling over information to one another and improving their communications.

Reversion of Tactical Command (2)

Towards the end of May, Tactical Air Force had foreseen that a point in the fighting would arise when

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- (1) H. Q., M. A. T. A. F., O. R. B. App. B/SASO.
 - (2) H. Q., M. A. T. A. F., O. R. B. App. F/SASO, May and June 1944.

the temporary expedient of unified control of air operations would be no longer practicable or desirable. This point appeared when Eighth Army turned northwards across Highway 6. On 6 June, the Air Officer Commanding Desert Air Force assumed responsibility for air operations on the front of Eighth Army and V Corps, leaving the Commanding General XII Tactical Air Command with responsibility for air operations on the front of Fifth Army only; the area division was the inter-army boundary, but this did not exclude the possibility of mutual help, should need arise. With the reversion to normal command went a transfer of combat units. Desert Air Force received from XII Tactical Air Command Nos. 244 and 239 Wings, No. 79 Group and Nos. 208 and 40 Squadrons. This left Nos. 87, 42 and 57 Wings in Corsica and Sardinia, (outside the two army areas), also operating under the direction of Tactical Air Force. The two H.Qs of XII Tactical Air Command and Desert Air Force moved in sympathy alongside the respective Army H.Qs. The air assault phase of Operation 'Diadem' had finished and the air phase of sustained offensive was acquiring a momentum which was to last until 22 June, when M. A. A. F. accepted 'Diadem' as closed.

Major Changes in Luftwaffe Dispositions (1)

The Allied offensive forced on the Germans the need for major changes in the disposition of the Luftwaffe. On 29 May, Kesselring informed the General Officer Commanding Close Support Corps Southern Area that Central Italy and Rome were to be defended at all costs. Under pressure of air attack and the threat of having their bases overrun there was, however, no alternative left to the Germans but to move back their air forces to safer areas and to modify their whole air policy. Combat losses had been severe and it was feared that other Allied amphibious landings on the north coast of Italy were imminent. In any case, the Luftwaffe Command, (2) as was testified by senior members under interrogation later, affirmed that the primary role of the air force in Italy was strategic and that support for the army on the battlefield was of secondary importance. As the air force was inadequate to fulfil both roles satisfactorily, the former retained priority.

On 29 May, all the F.W. 190 fighter-bombers (3) were withdrawn from operations to Northern Italy to rest, refit and prepare against outflanking landings; three days later, all single-engined fighters in the Central Italian battle area were withdrawn to Upper Italy. The battlefield was thus left without day close support. To offset in some small degree this situation, fifteen night fighters moved from Germany to Italy for operations in the full moon period to supplement the persistent, but on the whole, ineffective night harassing effort by Ju. 88s and the obsolescent Ju. 87s (an effort which had risen to one hundred sorties on the night 2/3 June). The main task of the night fighters was the defence of supply connections to the front. Ground moves included the transfer of three airfield commands from the Rome area to the Perugia - Pisa area. The repair services for motor transport in the Rome and Perugia areas, as well as the main repair workshop in

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- (1) Letter Ref. G.219247 from C.-in-C. S.W. 29 May 1944. German document (A. H. B. 6 Translation No. VII/82).
 - (2) O. K. L. - Oberkommando Luftwaffe.
 - (3) 19 had been destroyed in the Piacenza raid alone.

the Rome area, were all transferred to the Florence - Pisa area. But although the Rome Area Airfield Regional Command H.Q. moved its entire ground organisation, staff was put at Kesselring's disposal for urgent defence construction. Fighter control H.Q. Viterbo was closed, its staff moving to Siena. (1) Aircraft safety installations and radar equipment south of the line Orbetello - Pescara were moved, the latter to be used to consolidate defences in Northern Italy. New airfields were projected in the Perugia - Siena - Pistoia area.

Some flak units in Central Italy were withdrawn into defence positions; flak defences between Bologna and Florence and light flak defences of northern bomber airfields, were reinforced. During the later phases of Operation 'Diadem', the activities of the flak units contributed appreciably towards preventing a collapse of the German front, but they suffered heavy losses from air and artillery - some ninety guns in all - and one hundred and ten more guns had to be demolished for lack of transport to tow them. (2)

Moves of Luftwaffe Headquarters (3)

After a temporary move to Torre Gaia, south-west of Rome, the Commanding General of the Luftwaffe in Central Italy - General der Flieger Ritter von Pohl - retired to Viterbo, where for a brief period he was joined by the Commander-in-Chief. On 7 June, Von Pohl moved to Siena and shortly after to Florence, then to Casalecchio near Bologna. Kesselring, too, moved northwards. Air Fleet Command 2, whose functions were rapidly shrinking, lay at Malcesine, with advanced battle H.Q.s at Monte Riceo (4) and Tabiano. (5) The 25th Flak Division, the central unit, settled down in the Verona area with the Signals H.Q. of Air Fleet Command 2 and the main administrative supply unit, Feldluftgau XXVIII, at Treviso. Fighter Command Northern Italy retained unchanged its functions of intercepting long range Allied bomber formations and defending the northern air bases. These latter had never developed, owing to shortages of manpower and material, into the fortresses they had been planned to be.

Two staffeln of the Tactical Reconnaissance Gruppe transferred to Florence (the third was already at Jesi) while the new Night Fighter Gruppe moved first to Castiglione Del Lago, then to Ravenna and Forli, with take-off facilities at Florence. The Long Range Reconnaissance Gruppe was withdrawn at the end of May from Perugia to Bergamo.

German Anti-Invasion Precautions

Not only were the Germans apprehensive of further Allied landings on the Tyrrhenian or Adriatic coasts, but were expecting landings in Northern and Southern France. Consequently, fighters previously engaged on front line

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- (1) Letter from Luftflotte 2 to Feldluftgaukdo XXVII, 4 June 1944 German document A.H.B.6. Translation No. VII/82.
 - (2) Von Pohl Series of Interrogation Reports. No. A.596/FN.935 C.S.D.I.C. (Air) C.M.F. (A.H.B.6.)
 - (3) Von Pohl Series of Interrogation Reports. No. A.596/FN.935 C.S.D.I.C. (Air) C.M.F. (A.H.B.6.)
 - (4) Near Monselice.
 - (5) Near Parma.

operations developed contacts with O.C. Fighters Southern France, and long range torpedo bombers in Southern France made arrangements for staging in Northern Italy if necessary. In late May, Hitler ordered all but two of the fighter formations in Northern Italy to transfer to Northern France, so that at this period in early June the Long Range Reconnaissance Gruppe (FAG/122) and two Italian Fascist Fighter Squadriglie, were all the aircraft remaining at the disposal of Luftflotte 2, and the fifteen night fighters and the worn remnants of the three Me. 109 Staffeln of the Tactical Reconnaissance Gruppe all that were left to Von Pohl to continue the hopeless struggle over the front line. Nor was there any prospect of improvement.

New Responsibilities of the weakened Luftwaffe

Letter from
C.-in-C. S.W. to
G.O.C. Luftwaffe
Central Italy 4
4 June 1944.
German Document
(A.H.B.6
Translation
VII/82)

The G.O.C. Luftwaffe in Central Italy was formally advised on 4 June by the C-in-C. Italy that with a view to the preservation of ancient works of art, the Fuehrer had ordered that the city of Rome must not be turned into a battlefield (1) and the section Tiber - Old Tiber - Subiaco - Caesar position would not be defended. The consequent fighting withdrawal to the Apennine (or Gothic) Line involved very carefully controlled air cover. In face of the almost complete withdrawal of the battered close support and fighter forces, his complaint on the following day is revealing. A real easing of the situation, he said, was only to be expected if immediate and strong fighter and ground attack support were provided, even if only for a short period. There was, too, the need for preparations against other possible Allied landings, one piece of evidence of which was the move shortly afterwards of a Staffel of single-engined fighters to Scutari in Albania for reconnaissance of Bari, Taranto and Brindisi.

Directive to
C.O.C. Luftwaffe
in Central
Italy from
Operations
Div. Luftflotte
2, 11 June 1944.
German document
(A.H.B.6.
Translation
VII/82).

Not until 11 June, when the withdrawal of headquarters was ordered, was there any noteworthy allocation of new responsibilities. It had been decided to hold the general line Orbetello - Terni - north of Pescara, but it was realised that the strong Allied superiority might force a gradual withdrawal into the Gothic Line. The dwindling Luftwaffe resources were spread out over a number of commitments far beyond its power to fulfil. Orders for the defence of the Gothic Line were issued to the G.O.C. Luftwaffe Central Italy, 25th Flak Division and Jagdfuehrer (O.C. Fighters) Northern Italy. G.O.C. Central Italy was to cover and support the Army with close support formations and flak, protect supply routes, railways and airfields in the southern area of Northern Italy and add the weight of its flak artillery to the coastal defence forces. A boundary was redefined as between G.O.C. Luftwaffe in Central Italy and his northern colleague, C.O. 25th Flak Division, who, with the O.C. Fighters Northern Italy, was responsible for all other commitments in Italy. 25th Flak Division was to protect airfields, supply routes, railways and industrial installations in the northern area of Northern Italy, and their anti-aircraft artillery would assist in the defence of the Adriatic coast

(1) This was merely a face-saving gesture, for Allied patrols were already in the outskirts of Rome.

to the north of the River Po. Jagdfuehrer Northern Italy controlled operations against bomber formations from Foggia entering and leaving the Reich, and covered the air defence of the entire area of Northern Italy and, whenever possible, Allied air attacks on the Army. The real weakness of the situation was implicit in the warning given to the Feldluftgau XXVIII - the administrative command unit - that south of the Apennines that they need only expect operations by not more than five night ground attack Staffeln (the mixed force of Stukas and Ju. 88s) - and that only in the full moon period - three close reconnaissance Staffeln and occasionally only by four fighter Gruppen. The general drift of the instructions regarding supplies and equipment was economy in the forward areas and a solid build-up further north in more secure areas.

The Italian Fascist Republican Air Force

Mention has been made of two Italian Fighter Squadriglias operating under command of Luftflotte 2. A brief retrospective glance must be taken here at the development of the Italian Fascist Republican Air Force, staffed by Italian personnel who elected to continue the Axis association after the Italian surrender on 3 September 1943. It has already been stated in Appendix 5 to Volume I that after a proportion of the old Italian Air Force had taken off to join the Allied and others had destroyed their aircraft, the main harvest accruing to the Germans - according to Von Pohl and some of his Staff - was some two hundred S.M. 82 transport aircraft which were formed into a Transport Geschwader. Apart from these, about one hundred Macchi aircraft, some still in the factory, and about sixty S.M. 79 torpedo bombers were, it was stated, considered usable; all other aircraft were broken up for salvage. The Fascist Republican government under Marshal Graziani set about the reconstruction of the Italian Armed Forces in German-held territory. Luftflottenkommando 2 was made responsible for the birth, development and operations of the new air force. Little remained of the old equipment, most of which had been demolished, looted or sold. Lieut. Col. Botto, an experienced fighter pilot, was appointed Under Secretary of State for Air, and a number of volunteers drafted into the new organization. Instead of equipping them with the most up-to-date Italian aircraft type of the period - the Macchi 205 - it was decided to provide the all-German Me. 109, whose performance was superior and whose production, unlike the Macchi, was adequate and could be maintained. It was hoped to replace the once formidable but now outmoded S.M. 79 torpedo bombers by Ju. 88s, but production of the latter was being discontinued in favour of the Ju. 188 and those available were all needed by the Luftwaffe. Eventually, the old S.M. 79 was chosen and a Staffel of them based at Gorizia in February 1944. Lacking adequate instruments, their operations were restricted to moonlit nights in good weather. During the Anzio landings and later convoy sailings thereto, some of these S.M. 79s operated from Perugia against Allied shipping. The strengthening of Allied anti-aircraft defences in the Anzio beachhead, the loss of their commander, of eleven aircraft shot down by Allied fighters between Perugia and Venegono and damage suffered during an Allied air attack on Gorizia, all helped to force the S.M. 79s out of front line activity. An effort was made early in 1944 to use first the Ca. 313 and later the C.R. 42 as night ground attack aircraft and a few Staffeln, based in the Viterbo area and under command of Von Pohl, operated in the

Anzio area. It could be said that they had a certain nuisance value as a purely emergency measure. They were superseded by the obsolescent but heavily armoured Ju. 87, which, as has been seen, was in action at the time of 'Diadem'.

These Italian formations, even if recognised by the Allies, were seldom reported and little mention of them occurs in what Luftwaffe records are available. It seems evident that their crews were keen and on the whole efficient, but it cannot be said truthfully that they inflicted any appreciably serious damage or that all in all their contribution materially affected the issue of the air war. A few records of the Republican Air Force seen by the author in the Italian Air Ministry in Rome confirm the pedestrian nature of their contribution.

GROUND OPERATIONS FROM THE FALL OF ROME UNTIL THE END OF DIADEM

Allied Strategy- The Final Phase of Operation 'Diadem'.

British
Historical
Section Central
Mediterranean
(A.H.B./ILJ11/
58/9)

On 5 June 1944, the German retreat was at its greatest momentum and the opportunities of destruction from the air most frequent. Three German divisions had ceased temporarily to exist, one had been disbanded and all the rest had been heavily mauled. Although Kesselring had been promised reinforcements amounting to eight divisions, the certain delay attending their arrival compelled him to gain time at the expense of surrendering ground. The Gothic Line, (usually referred to in Allied documents as the Pisa - Rimini Line) lay a considerable distance back, running along the summits of the Northern Apennines. Time was needed for its completion and to reassemble his retreating armies. He dare not stand too soon and risk another major defeat and if he waited too long before standing, the Allies would reach the Gothic Line before its defences were completed.

Allied plans for the pursuit north of Rome - still in full swing - envisaged separate axes of advance for the two armies. Fifth Army's first objective was the port of Civitavecchia, vital for our supply maintenance; Eighth Army was directed on the area of Terni and Chieti, so as to prevent the formation of a continuous front and threaten the left wing of the Tenth Army with encirclement. When these plans proved successful, new orders for the pursuit were sent to both armies. The greatly weakened enemy was in no position to launch a worthwhile counter-attack and continued to suffer seriously from air attacks. To exploit this situation Eighth Army was directed to advance speedily towards the area Florence - Bibbiena - Arezzo and the Fifth Army on the area Pisa - Lucca - Pistoia. Polish Corps was to take Ancona if Eighth Army failed to do so. Resistance increased from this point, until on 20 June it hardened on the Lake Trasimene Line (1) and the German will to halt us began to be felt.

Air Force
Participation
in Operation
'Diadem'

(A.H.B./ILJ11/1,
Vol. VI)

By the 22 June, the 'Diadem' air phase of the Italian campaign may be said to have concluded as far as the Air Forces were concerned. Most of the objectives laid down in the Allied ground and air plans had been achieved. The process of pressing back the Germans to the Gothic Line had still to be

(1) Referred to by the Germans as the Albert - Frieda Line.

Signal M. 22112
Air C-in-C. to
M.A.S.A.F.,
M.A.T.A.F. and
M.A.C.A.F.
22 June, 1944
(A.H.B./IIF11/1,
Vol. VI TAB. 'A')

faced, but new plans for action thereafter were already being prepared. On 22 June, the end of the air contribution to 'Diadem' was formalised. (1) Tactical Air Force's responsibilities for the disruption of rail communications were extended to include the River Po and the Genoa - Alessandria Line. A brief summary of the systematic advance of Fifth and Eighth Armies and of V Corps and Polish Corps will provide the background for the concluding stages of air operations from the fall of Rome until 22 June.

Fifth and Eighth Army Advance up to 22 June.

Fifth Army
History H.Q.
5th Army - A.5
and 8th Army
Advance to
Florence Br.
Hist. Sect./CM.

Fifth Army had the easier terrain to work on and weaker resistance to contend with. VI Corps set the pace, therefore, with two divisions supported by armour. On 7 June, they entered Civitavecchia, which, after repair, was open to our shipping on 12 June and resumed work of great value as the most important port between Naples and Leghorn. On 6 June, taking advantage of the French crossing of the Aniene, South Africans captured Civita Castellana. East of the Tiber, stiff resistance was overcome and Monterotondo taken.

On 8 June, at long last, the enemy in the Adriatic sector began to fall back in front of V Corps and Pescara and Chieti were occupied on 10 June. The general pursuit continued, against stiffening resistance, for ten more days. With fresh divisions in line, Kesselring held up the capture of Orvieto by the Fifth Army until 14 June. IV Corps took Orbetello and Grosseto on the 15th and crossed the River Ombrone the same night. On the right flank the French Expeditionary Corps continued its advance up Highway 2, capturing, in the ten days 10 - 20 June, Montefiascone and the high strong position of Radicofani, coming to a halt at the German defence line along the Orcia River.

On the Adriatic front, V Corps were relieved by Polish Corps, who were ordered to secure the capture of Ancona without delay. After initial successes, including the crossing of the River Asso and the capture of Pedaso, their bridgehead across the Chiente River was destroyed by a heavy counter-attack and a halt was called.

Close of Operations on the Trasimene Line.

Ibid

Several factors contributed to the general situation about 22 June, which marked the opening of a short static phase. Firstly, the Germans had chosen their terrain, had a plan ready and executed it. Secondly, their forces were stiffened by reinforcements from several other fronts, including the Western and Russian fronts. Thirdly, the terrain chosen favoured defence; it ran from the River Chiente on the east coast, across the Apennines, along the upper Ombrone, the Orcia and Astrone Rivers, through Chiusi (the old Etruscan hill-town) Lake Trasimene (2) the high ground north of Perugia and from the Tiber Valley to the sea. Fourthly, an unseasonable spell of very bad weather between 17 and 20 June slowed down our advance. Fifthly, the Eighth Army's advanced elements were two hundred miles from their

(1) Amendment to Operations Instruction No. 8. 16 Feb. 1944
M.A.A.F.

(2) Where Hannibal defeated the Romans in one of the greatest ambushes in history.

Letter from
C.-in-C.A.A.I.
to S.A.C.M.E.D.
C.442, 25 June
1944 (A.H.B./
ILJ11/58/9,
App.D-4)

railhead and sixthly, the decision to launch Operation 'Anvil' - the landing in Southern France - had not yet been made; although General Alexander had been forewarned that his ground forces and some of the air forces supporting them might have to be withdrawn, the indecision and controversy which had gone on for close on two months still continued among the Allied strategists in London and Washington. General Cannon had told General Alexander that if 'Anvil' was decided on, the air forces left to support the troops remaining under A.A.I.(1) command would be reduced by about seventy per cent of their strength at the time, rendering impossible effective air support of the operation into Southern Germany being discussed in Italy at the time.

AIR OPERATIONS IN THE FINAL PHASE OF 'DIADEM'

Areas of Close Support for the Advance to the Trasimene Line (2)

Sufficient information has now been given for appreciation of the highly fluid situation and the various changes of disposition being made to cope with it within the opposing air forces. Other moves were still to be made before the close of 'Diadem,' in particular on the Allied side. Before proceeding to the narrative of air operations from 5 to 22 June it will be as well to turn back to Section 2 of Chapter 9 in Volume I and refresh the memory on the operational areas covered by the controlling air formations, so that the modifications of 15 June can be understood.

It will be recalled that area responsibilities were defined in the Air Plan as follows. XII Tactical Air Command was responsible for the general battle area south of Rome, the central strip north of Rome up to Lake Trasimene, and for the Tyrrhenian coastal area as far north as Lake Bolsena. The Corsica-based 87th (U.S.) Fighter Wing was responsible for the west coast area running north from Lake Bolsena, with an eastern demarcation line of Lake Trasimene, Arezzo and Florence; and Desert Air Force for the eastern areas, beginning on a line east of Rome and running east to the Adriatic and north to the east of Lake Trasimene and Arezzo. These areas of responsibility were now changed; on 15 June, they ceased to be so general in terms and were more specifically defined to suit the ground situation. The same date - 15 June - was selected for the issue of a new bombing directive on strategic air force targets. The narrative will now carry the record of general air operations in support of the land battle up to 15 June. Then, after brief considerations of the new orders, the record will be carried on to 22 June and the general conclusions made and lessons learned from air participation in the Spring offensive recapitulated.

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- (1) Allied Armies in Italy.
 - (2) M.A.T.A.F. O.R.B/Ops. June 1944. A.780 M.A.T.A.F. 15 June 1944. Nos. 2/5, 7 and 9 A.A.S.C. War Diaries, June 1944. No. 1 M.O.R.U. War Diary, June 1944.

Close Support by XII Tactical Air Command, 5 to 15 June 1944

The record of close support in all three areas ran more or less to pattern, but with local variations, successes and setbacks which cannot be written off without fair examination. What was common to the whole of the main battle front was a high tempo of advance, a long awaited situation when the long months of interdiction had borne fruit, materially assisting the ending of the stalemate, and when the enemy supply state literally invited mass disorganisation.

4 June in the XII Tactical Air Command area was a record day. They claimed 518 enemy mechanical transport vehicles destroyed and 603 damaged; the full total claimed for the day was no less than 657 destroyed and 621 damaged. This figure was probably not repeated, but for some days to come claims were to remain high. Enough has been said already to indicate that it was the usual thing for army counts (now being continuously made) to confirm that the air forces' claims were substantially true, indeed often modest. M.A.A.F actually claimed that during the month of May a total of 2,768 M/T had been destroyed and 2,427 damaged.

XII Tactical Air Command continued to take a heavy toll of the enemy from 5 June on to 14 June, when there was considerably less transport in evidence. Operations mostly fell under the heading of armed reconnaissance; while road and rail vehicles were busy evacuating the smitten German formations with varying success, there was no lack of targets for Thunderbolts, Invaders and Kittyhawks. The manifold cars, wagons, guns, ammunition dumps and so forth included were often attacked from low levels: the enemy casualty rate was mounting appreciably here, as in all areas. Much of the enemy transport was liberally protected by mobile flak batteries, often reported as intense and accurate. Civitavecchia itself, a prize of great importance, was studded with flak defences and one of the most heavily defended areas on the front. It was a great relief to the air formations when it fell on 7 June, in company with Tarquinia and its airfield, which was enlarged and, a week later, occupied.

No. 2/5 A.A.S.C.
War Diary (Ops.)

Fighter bombers then turned to the Viterbo - Montefiascone road and railway tracks here and on the Orvieto line, roads through San Lorenzo, Grosseto, Chiusi, Terni, Todi, Bolsena on the lake of that name and Spoleto, causing road blocks and rail stoppages here and wherever, within their area, the disorganised German units had to pass, even crossing into the territory of 87th Fighter Wing, to hit Siena railways.

The attack on Elba (Operation 'Brassard') was on the table at this time and both the need for preliminary sounding of the general position and the need to disrupt to the maximum the German coastwise supply traffic justified an occasional attack on Piombino, the mainland port serving the island, such as that on 13 June. Bridges, for months past a routine target, were included, although of course the spice of variety had now removed the monotony of which aircrews had complained, during and before Operation 'Strangle'.

On 14 June, the enemy situation was crystallising, in accordance with his own plans and the nature of the terrain. Only a small amount of motor transport was now evident. This reflected both the destruction inflicted and the subterfuges forced upon him. Italian civilian carts had been pressed into service; night movement again increased; vehicles were

M.A.T.A.F.,
O.R.B. Appx
E/Ops. 157,
5 June 1944

now being stationed inside houses, whole walls being torn down to accommodate them. On 15 June, only scattered motor transport targets were found and the emphasis of air operations generally was temporarily lifted from the battle area.

Co-operation by Medium Bombers

Ibid and Medium
Bomber Opera-
tions 1 Jan. -
28 Aug. 1944
H.Q. 12th
Air Force
(A.H.B./
IIJ11/12)

Medium bomber operations began on 5 June with a record number of sorties against road bridges; they continued to pattern until 22 June, when M.A.A.F. issued the directive opening the Po Valley to them. From the fall of Rome, there was a tendency for the medium bomber wings - 42nd and 57th - to return in part to rail interdiction, though they continued to give considerable attention to road targets. Two new highways had come into prominence during the advance, Nos. 1 and 74; and on 7 June there were two medium bomber missions against bridges at Cecina and three against bridges near Albinia. Bridges at Pitigliano and Acquapendente, to the west and north of Lake Bolsena respectively, were attacked. 9 June saw a revival of attacks on roads. Four of the eight missions dispatched were against bridges on Highway 1. Others bombed Highways 2 and 73. This was the day Tarquinia and Viterbo fell. A sudden flare-up along the front brought the whole weight of the mediums to bear again on 12 June on road targets. This day marked the slowdown in the rout and by 14 June, when the ground forces took Orvieto and Terni, attacks by the mediums on road targets had virtually ceased.

The need for an unremitting watch on enemy ports continued. In this work the mediums were able to play a part after the heavy normal interdiction programme had been met. San Stefano was attacked on 15 May; Porto Ferrario on Elba on 11 and 15 May; Piombino on 15 and 16 May. Leghorn was the point of heaviest attack. On 13 and 14 June, 42nd Wing sent three missions each day against two vessels which had been sunk to block the harbour. Medium bomber tactics remained substantially the same throughout 'Diadem'. General purpose bombs were invariably used against bridges. The types and fuzings had been studied during months of growing precision in attack, and stabilised according to target. In the size of formations there was change from large towards smaller sortie totals per mission. Thirty-six sortie missions grew increasingly rare; 24 sortie missions for attacks on railway bridges were no longer universal; 42nd Wing frequently cut the number to 18 and occasionally to 12, as the emphasis on road targets swelled to its peak.

German Evidence of Medium Bomber Attack Results

Ibid

The daily status reports of the results of rail interdiction continued to be issued, built up on the usual sources of photography and intelligence reports. Confirmation in part of local successes came later, when complete records of the Arezzo-Florence line were found in a railway office in Florence, and those of Vaiano on the Diritissima line (1) and Pitecchio on the Pistoia by-pass in the respective station offices. The evidence is clear. On the key Arezzo - Florence line, after six days attacks, no trains ran either north or south up to 29 June. The same absolute standstill

(1) Direct Florence - Rome.

prevailed on the Florence - Bologna line after 1 June. The Pistoia by-pass, which received less attention, managed to pass a few trains through on most days in June up to the 21st; thereafter there are no entries; a series of our small-scale attacks was sufficient to maintain traffic at zero level.

Changes in Army Air Support Control June 1944

Nos. 2/5, 7,
& 9 A.A.S.C.
War Diaries

Units of No. 7 Army Air Support Control who had been attached to No. 2/5 began to filter back to the area of Fifth Army H.Q. The detachment of No. 7 which had functioned on Monte Trocchio returned to rest and refit, satisfied with its work in spite of the handicaps of low-lying mist and dust over the battlefield. The main unit prepared for its move to Frascati with No. 9. An order to No. 9 Control to proceed to the eastern sector for cover of V Corps was cancelled on 7 June, when V Corps was notified that it was shortly to be relieved. When the Polish Corps took over from them on 16 June, a Polish Army Air Support Control had preceded them by a day; this Control took over from No. 9, which had deployed No. 1 M.O.R.U. (B) tentacles to V Corps, 3rd Carpathian Division and the Italian Utili Division.

As a result of the rapid advance by Polish Corps after 15 June, it was agreed to split the Army and R.A.F. controls, the Polish Control going forward and Detachment 'A' of No. 9 remaining behind at M.O.R.U. 'B'. The two controls, when split, were 20 miles apart, linked by radio. On 24 June, another rapid advance again created communication difficulties between the Polish tentacles and their control, putting a distance of 60 miles between the controls. The next day the R.A.F. Rear Link Control of Detachment 'A' had again caught up.

When the Desert Air Force re-assumed responsibility for close support of the Eighth Army on 4 June, a detachment of No. 2/5 was sent from H.Q. Advanced D.A.F. to M.O.R.U. 'B' (No. 1). The Desert Air Force began to make itself felt in air control affairs; on 11 June we find it instructing H.Q. No. 1 M.O.R.U. that no army targets were to be engaged without its (D.A.F.'s) permission. As communications in this fluid phase were poor, it was not possible to give the Army full service: hence a complaint from H.Q. V Corps direct to G - Air, Allied Armies in Italy. About the same time, No. 7 South African Spitfire Bomber Wing moved across to the central sector, leaving a light and medium bomber wing, a fighter squadron and a fighter reconnaissance squadron. The Desert Air Force, anxious, no doubt, to try their hands at control, took over these units. It is difficult now to see the point in making a break in a well-running control system in the middle of a crucial battle. Towards the end of the month, No. 1 Mobile Operations Room moved from San Vito to Tortoreto. No. 2/5 A.A.S.C. moved up on 10 June from Castrociello to Valmontone. When following the previous and following records of the close support air effort up to the end of 'Diadem', the moves just related and the way the controls lived at such times on a hand-to-mouth basis will be borne in mind.

Close Support for Eighth Army, 5 to 15 June

No. 2/5 A.A.S.C.
and No. 1
M.O.R.U. War
Diaries,
June 1944

The whole effort for the first three days after Rome fell was directed on the heavy enemy road movement to the north and north-west out of the capital. This included attacks on armour; on 5 June, a completely successful raid on some 88-mm guns holding up a leading brigade enabled a unit of the

SECRET

14.

6th South African Armoured Division to continue its advance. Armed reconnaissance, after rising to a peak again on both fronts, was held down by bad weather to 155 sorties on 7 June and only two close support missions could be flown. On 8 June, when Desert Air Force support reverted to the Eighth Army, there was still plenty of transport in evidence and returns showed heavy damage among convoys and parks. The Desert Air Force ordered 'no strafing missions' on 9 June. The reason given was the high casualty rate of recent weeks from German flak. Although seldom of the heaviest calibre, there was so much of it clustered in the area of important convoys that it could not fail to take its toll of low-flying aircraft.

The weather was threatening on 10 June; there was no flying. Although the Rover 'David' control was active, the effort was meagre until 15 June, but the Army continued to send in grateful reports when missions accounted for enemy armour, vehicles and guns on the move and motor transport, not yet entirely gone to earth as it had in the western sector. About this time, continuous observation of enemy movement confirmed his practice of starting movement just before dark and the germ of a belated plan to call in the co-operation of the night intruders emerged. Terni, key town in the centre of the front and Pescara on the Adriatic, with many facilities, had fallen to the ground forces. Close support was, as it were, drawing them forward and at the same time impeding the enemy's withdrawal.

87th Fighter Wing in Corsica

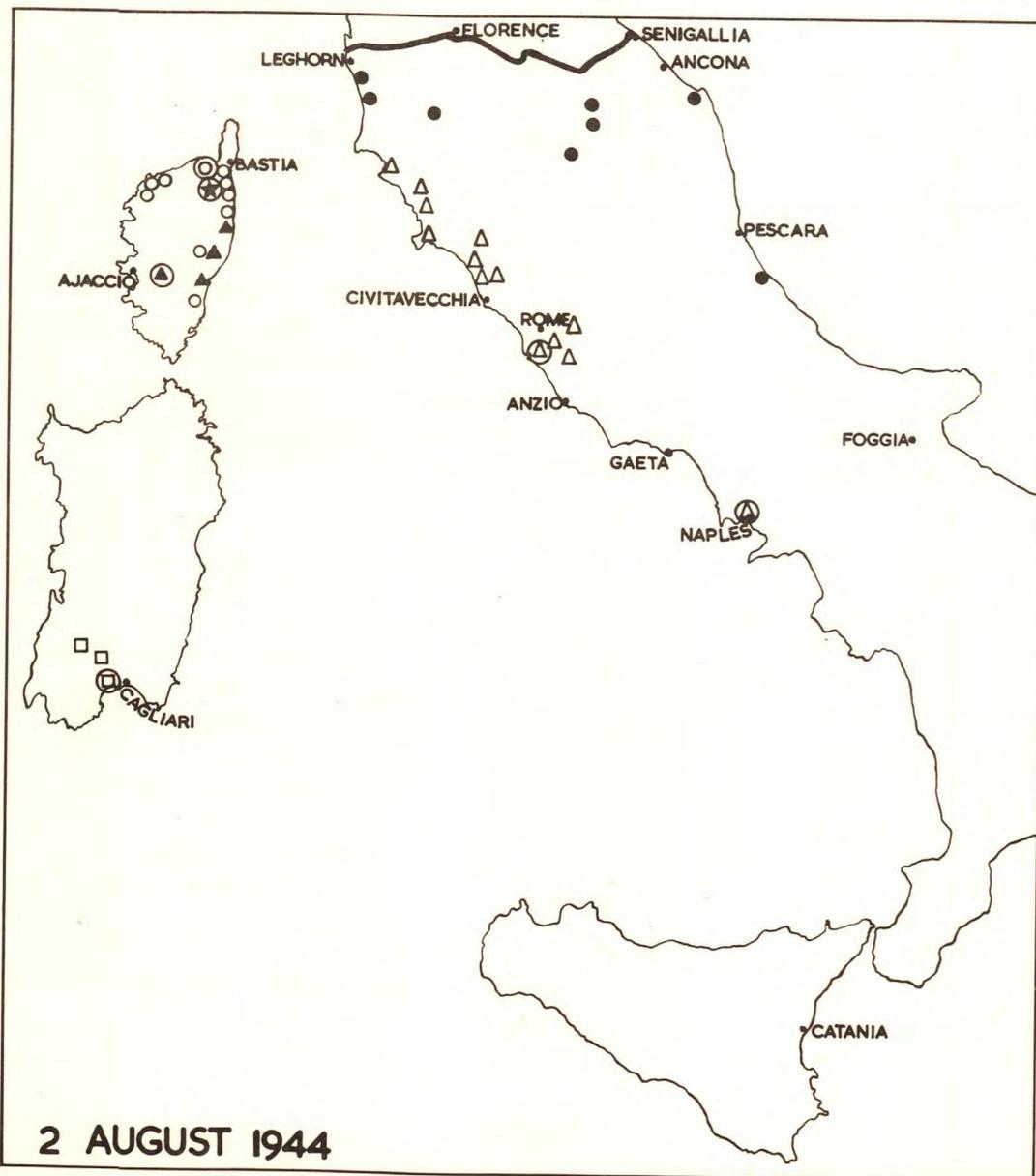
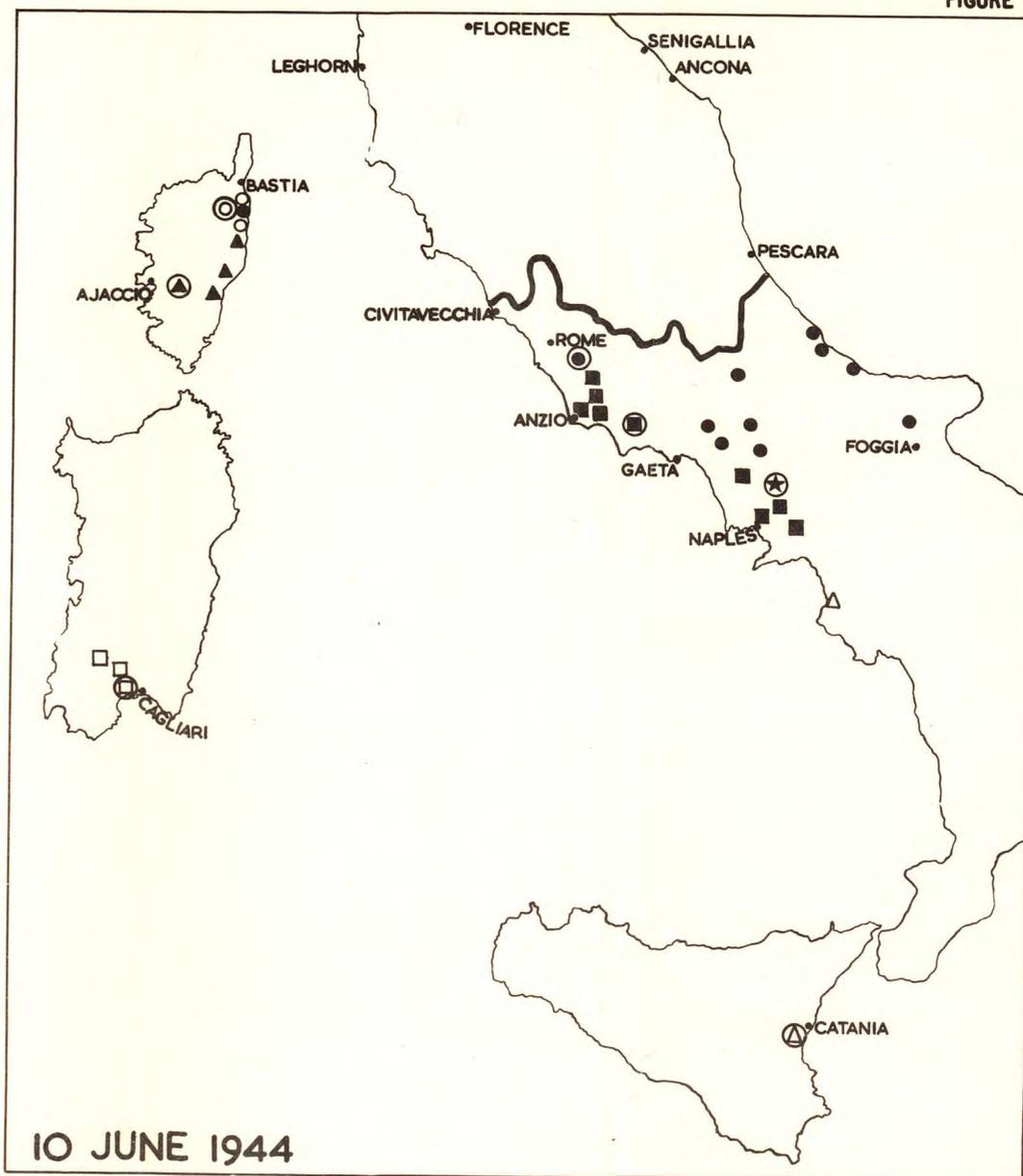
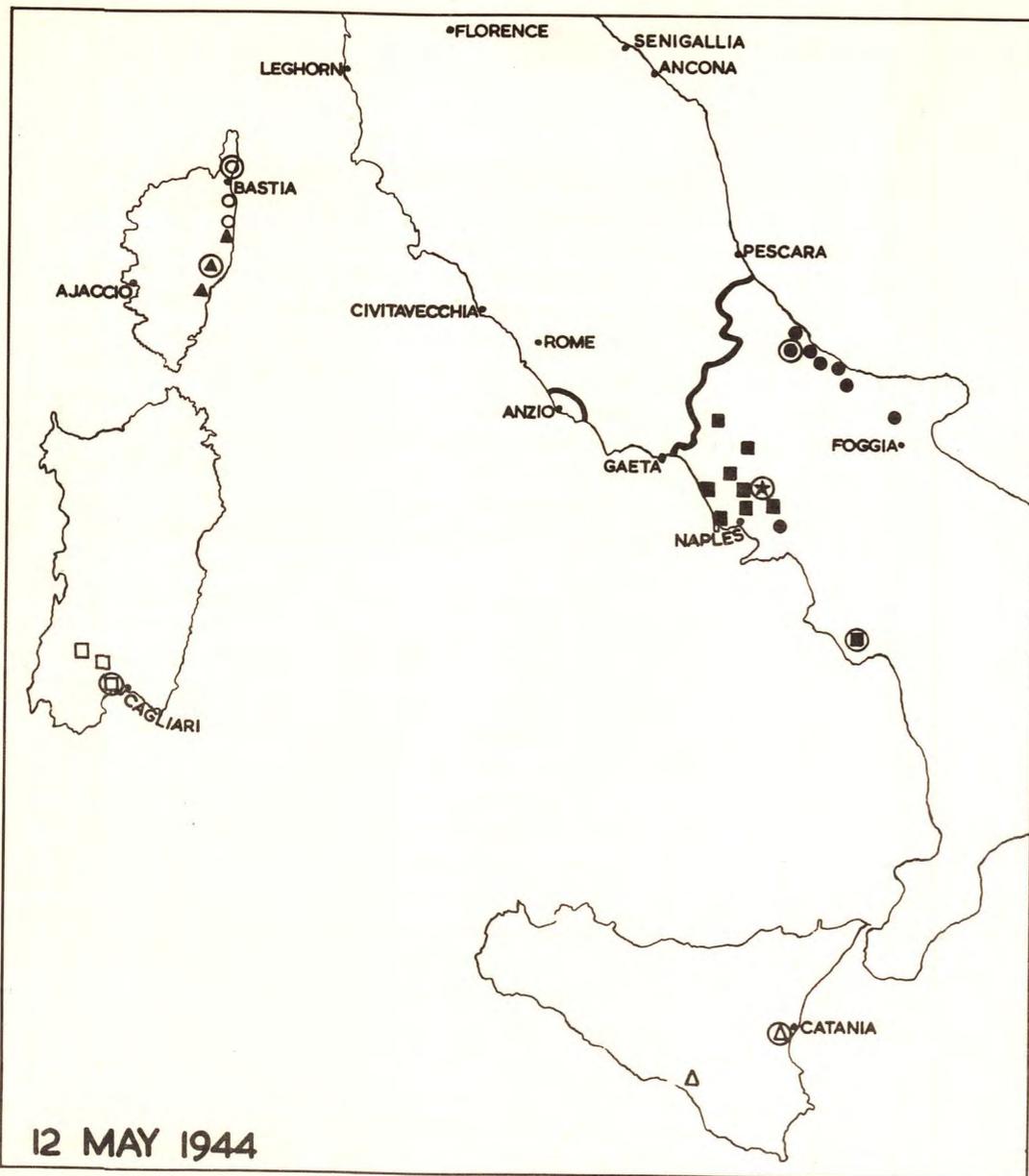
During the Spring of 1944, the island of Corsica rose to full stature as an Allied air base. It was the scene of two major trends in operations. The first was the build-up for the landings in Southern France. The second, which must now be examined, was the participation of the island-based 87th Fighter Wing in the Allied advance on the mainland of Italy, in particular in the concluding phases of the air contribution to 'Diadem'.

TAF/3/2/Air
Operational
Directive No. 8,
17 April 1944

M.A.T.A.F.
O.R.B./S.A.S.O.,
9 June 1944

By the directive of 17 April, a Commanding General was appointed, with operational control of an American Fighter Bomber Group - the 57th, operating Thunderbolts - and two experienced R.A.F. Fighter Wings - Nos. 322 and 251; these Fighter Wings were transferred specially for the task from the Middle East. On 9 June, the Tactical Air Force, anxious to push forward No. 79 Fighter Bomber Group (Thunderbolts and Kittyhawks) in readiness for 'Anvil', (if it should be decided on) transferred it to Corsica, that is, from control of XII Tactical Air Command to that of 87th Fighter Wing.

The primary tasks of 87th Wing were the provision of escort to the Mitchells and Marauders of the 42nd and 57th Wings, and the disruption and destruction of enemy communications and supplies in Italy. Its brief extended to counter air force, weather reconnaissance, photographic and ground support missions, and, in co-operation with 63rd Fighter Wing on the mainland, anti-shipping strikes up to 20 per cent of its available effort. The entire zone of operations for the Wing was again sub-divided into three sub-zones. Zone 1 coastal, Zone 2 from the Pisa - Florence - Pontassieve line southwards, and Zone 3 to the north of this line. No. 57 Fighter Bomber Group included, by 12 June, Squadrons II/5 and II/3, both of the French Air Force and based at Alto, equipped with Thunderbolts; and half a Tac/R Squadron (No. 241).



THE ADVANCE OF TACTICAL AIR BASES IN OPERATION DIADEM

LEGEND

- ★ MEDITERRANEAN ALLIED TACTICAL AIR FORCE
- DESERT AIR FORCE
- 87 FIGHTER WING
- XII TACTICAL AIR COMMAND
- 42 BOMBARDMENT WING
- ▲ 57 BOMBARDMENT WING
- △ TROOP CARRIER COMMAND
- HEADQUARTERS
- APPROXIMATE FRONT LINE



Nos. 251 & 322
Wings O.R.B's

The enemy air raid of 12 May on Corsican air bases, constituted a serious, but not fatal, setback. The next day the Spitfire Wings on Poretta (1) managed to muster 21 aircraft during the forenoon, a figure rapidly increased by the servicing units. Surveys of dispersal followed and although no changes seem to have been effected at Poretta, improvements were made and aircraft shelters erected at Alesani and Solenzara.

87th Fighter Wing Operations from Corsica, 5 to 15 June

M.A.T.A.F. Nos.
322 and 251
Wings O.R.B's.

From the fall of Rome to 15 June, the Thunderbolts and Spitfires of 87th Wing carried out their comprehensive brief in favourable weather. The emphasis of the heavier Thunderbolts fell on railway yards, locomotives and wagons south of Orte, north of Orvieto, on Elba, round Lake Trasimene, and many other points leading to the front, but they also attacked, like the Spitfires, roads, bridges and motor transport at the height of the German retreat from 4 - 5 June; on 16 June their attention was turned to Elba, air operations against which were controlled by 87th Wing.

A considerable percentage of the Spitfire effort was spent on escorting the medium bombers based on Corsican and Sardinian fields. The rest of the daily average of 144 sorties put up by these two wings were spent on sweeps and armed reconnaissance. Motor transport was an objective for which they were admirably adapted, and the daily returns of 'flamers' added up to a not unimportant fraction of the total destruction; they took a heavy toll in the rear areas round Florence, Arezzo, Lake Trasimene, Lake Bolsena, Vetralla, Tarquinia, Follonica, Pistoia, Lucca, Siena; many locomotives and wagons were accounted for, Foligno airfield was strafed and six aircraft destroyed.

Although German flak was a continuous menace in most areas, air opposition was not serious. It must not be dismissed, however, as non-existent. For example, on 15 June, a No. 322 Wing formation met and engaged twenty Macchi fighters west of Parma, shot down two and damaged two without loss to themselves. On 8 June, a No. 251 Wing formation destroyed a Ju. 88 near Pistoia. The next day, in the same area, seven Me. 109s were met and three of them destroyed without loss to the Spitfire formation. The next day aircraft of the same Wing visited Pistoia airfield, but found nothing to attack except a single Ju. 52. They destroyed a Me. 109 the next day and another on 14 June when some aircraft ran into twelve Me. 109s, again in the same area.

Strategic Air Forces in Italy, June 1944.

M.A.A.F.
Operations in
support of
'Diadem'
(A.H.B./ILJ11/1,
Vols. V and VI)

Support of 'Diadem' by the R.A.F. Wellingtons, Liberators and Halifaxes of No. 205 Group continued after the fall of Rome on every night except one, until the night 11/12 June, when they turned to oil and industrial targets in the Balkans and Central Europe. Before proceeding to the narrative of their operations and those of the day heavy bombers and their Lightning and Mustang escorts, it must be appreciated to what dimensions the Fifteenth Air Force had grown by this time.

(1) The exact state of affairs at the American and French bases cannot at present be traced, as all Operations Records Books involved are at Washington or Paris.

The effective strength (not the aircraft assigned) on 15 June was:- in heavy bombers, 901 U.S.A.A.F. and 27 R.A.F; in medium bombers 77 R.A.F; in fighters 401 U.S.A.A.F., representing a grand total of 1406 effective aircraft.

Night Bombing Operations, 5 to 10 June

Ibid
and No. 205
Group O.R.B's

The night bombers concentrated on the creation of road blocks at key junctional points at Terni, Viterbo, Orvieto, and to this extent enhanced the continuity provided by the small R.A.F. Boston and Baltimore night bombing force and kept the enemy on the alert when he wished for unimpeded and unobserved transit back to firmer defences. This Wellington group had recently called forth the personal congratulations of General Eaker for their excellent work on the night 3/4 June, when they seriously damaged in several places a vital bridge over the Tiber. The crews usually reported favourably on the technique and efficiency of the flame-dropping aircraft, whose precision enabled them to report with confidence a high proportion of direct hits and near misses and evidence clear enough to the naked eye in the clear night weather ruling at that time, until smoke from the fires started obscured the target. ~~Occasionally~~ Occasionally, a single Me. 109 or F.W. 190 was met during the night on patrol fitted with a white nose light, evidently acting as desperate expedients in aid of the small night fighter force.

Day Heavy Bomber Operations in Italy, 5 to 15 June

Ibid

With the landing in Northwest Europe a reality, it was inevitable that the day operations of the Strategic Air Force should reflect the new situation. Yet the needs of the armies in Italy were still of considerable moment and certain heavy raids on Italian targets were carried out in the same periods as the attacks on oil in the Balkans, the Reich and Central Europe. One of the peak days in Italy was the day Rome fell. Just over 600 heavy bombers with an escort of 229 Lightnings and Mustangs carried out heavy and, on the whole successful, raids on communications in N.W. Italy and on both sides of the Franco-Italian frontier. Marshalling yards at Turin, Genoa and Novi Ligure were attacked, as well as the often-visited Antheor viaducts and the Var bridge in Southern France. A force of some 450 aircraft, with escort, attacked bridges and movements in Northern Italy, the next day, as far south as Bologna and Ferrara. There was no air opposition worth mention. After a day at Ploesti, the heavy bombers returned to Italian targets for a day on 7 June, this time concentrating on shipping and ports in N.W. Italy such as Leghorn where, (it was revealed by strike photos), moles, installations and shipping were effectively hit, on Voltri shipyards, Savona rail junction and Vado Ligure marshalling yards, where damage was also considerable in both of two attacks; also on the Antheor and Var bridges again, where it appeared that the target was cut.

Attacks on Mestre and Ancona marshalling yards followed, and on 15 June, when bad weather prevented the bombers from operating, some 170 fighters swept the Southern France airfields of La Jasse, Avignon and Orange, where bombers and fighters were based. They destroyed and damaged a few bombers and fighters and set fire to buildings, but lost 13 aircraft, (almost all to flak). Another 40 aircraft dispatched on a similar mission ran into cloud banks off Corsica and returned to base. The German Air Force moves

leading to this attack will be related shortly, after a few notes on oil. On all the other days in the period except 12 June, oil targets were heavily attacked. It will be recalled that in the discussions preceding Operation 'Overlord' the American viewpoint was clearly expressed as a belief that the first priority of air attack before the landings should be oil targets. By destroying his oil sources, it was claimed, one would destroy his ability to continue the war. The day heavy bomber force and its escort fighter force based at Foggia was entirely American; the emphasis on oil will therefore be easily grasped. Even when the target was in Italy, it was often chosen because of the oil storage there; for example on 9, 10 and 13 June the oil depots at Porto Marghero were visited.

Ibid

German Air Reaction in N. Italy to Strategic Operations

G.A.F. Operations -
A.M.W.I.S.'s
June 1944
(A.H.B./IIG1).

The enemy long range bomber force had moved just before the fall of Rome from Northern Italy to Southern France. Only a score of bombers remained in the Po Valley. The force in Southern France, now numbering about 150 Ju. 88s, He. 111s and Do. 217s, was scattered over bases ranging from Toulouse to the Rhone Delta. These purely anti-shipping units' prime task was to attack the forces landing in Normandy from 6 June onwards. In view of those German apprehensions of further amphibious landings in the Mediterranean already recorded, preparations were at the same time already being outlined for the eventual transfer, at short notice, of some at any rate, back to Northern Italy to operate against any major Allied strategic move in the Ligurian or Adriatic Seas.

Apart from training units, there were about ten Me. 109s at Orange for tactical reconnaissance and the same number of Arado 196s for coastal patrols. Five long-range reconnaissance Ju 88s were responsible for covering the Western Mediterranean and Allied convoy lanes.

German Fighter Opposition to Allied Heavy Bomber Attacks

The Luftwaffe had depleted the close support forces in the battle areas to build up a force for what to them was a more urgent purpose, - the defence of the Reich, with its aircraft, ball-bearing and other war industries, against heavy day raids from Italy. This fighter force of nearly 100 aircraft began to get into its stride after the fall of Rome and in the latter half of the period under review put up, whenever weather allowed, an average of 40/50 fighter sorties against bombers crossing N. Italy. The Allied formations of bombers and fighters reported attacks ranging from indifference to persistent aggression, attacks which on some occasions were pressed home far over the Italo - Reich borders and were repeated on the homeward flight.

Directives to Strategic and Tactical Air Forces

Signal 3116
Air Ministry
to A.F.H.Q.,
14 June

On 14 June, the Combined Chiefs of Staff advised the Supreme Commander in the Mediterranean that the destruction of the German Armed Forces in Italy south of the Pisa - Rimini Line must be completed and that there should be no withdrawal from the battle of any Allied Forces necessary for that purpose. When this line had been reached, one of three amphibious operations would be possible - against the South of France ('Anvil'), against the Biscay area or at the head of the

Adriatic. The aim should be to launch the operation decided on by 25 July, so long as it did not limit the completion of the advance to the Pisa - Rimini Line.

Operations
Instruction
No. 51, H.Q.,
M.A.A.F., O.R.B.,
15 June 1944

Signal A, 780
H.Q., M.A.T.A.F.,
O.R.B.,
15 June 1944

The following day - 15 June - new directives were issued to the Air Forces to conform both with the general and local situations. The directive to the Tactical Air Force altered no principles, but merely moved the areas of control further northwards; in particular, XII Tactical Air Command were to attack all rail communications north of the bomb-line up to the line Cecina - Poggibonsi - Arezzo - Fabriano - Fano (all exclusive). The limit of 87th Fighter Wing's responsibility now stretched to Genoa and the land line tallied with that of XII Tactical Air Command. The entire zone from 20 miles north of the bomblines and south of the general line Pisa - Florence - Fano, an area of great movement at the time, was thrown open to the three controlling units - Desert Air Force, XII Tactical Air Command and 87th Fighter Wing - who now exchanged their general intentions daily and attacked all movement irrespective of army areas, calling on one another, where need existed, for assistance against worthwhile targets. The night bomber effort was integrated under control of XII Tactical Air Command. They were given the night Bostons and Baltimores of No. 232 Wing to assist in the effort against communication targets in support of both armies.

Allied Air Effort from 16 - 22 June

M.A.A.F.
Operations in
Support of
'Diadem' Vol.
VI. (A.H.B./
ILJ11/1)

During this period, while the main weight of fighting fell in the area west of the Tiber, poor weather delayed the ground forces and prevented any continuity in air operations. The air effort's main emphasis remained - with interruptions on support of the ground operations, - on attacking communications, motor transport, marshalling yards, and port and harbour installations; the total tonnage dropped, in a week in which on two days all operations were cancelled, reached a figure no less than four-fifths of the preceding week's, roughly one-third falling in the battle area south of the Pisa - Rimini Line (principally by Tactical) and two-thirds north of the Line (principally by Strategic Air Force). There was no change in tactics; enemy communications continued to be the primary objective. The east and west coast railroad lines at Pesaro and Recco and two of the central lines in their southern sections remained cut throughout the week. Of the other two central routes, one was again cut in the attack by medium bombers on 21 June and the other probably. The bad flying weather limited photographic reconnaissance, hence there were breaks in the type of strike evidence so valuable at the time.

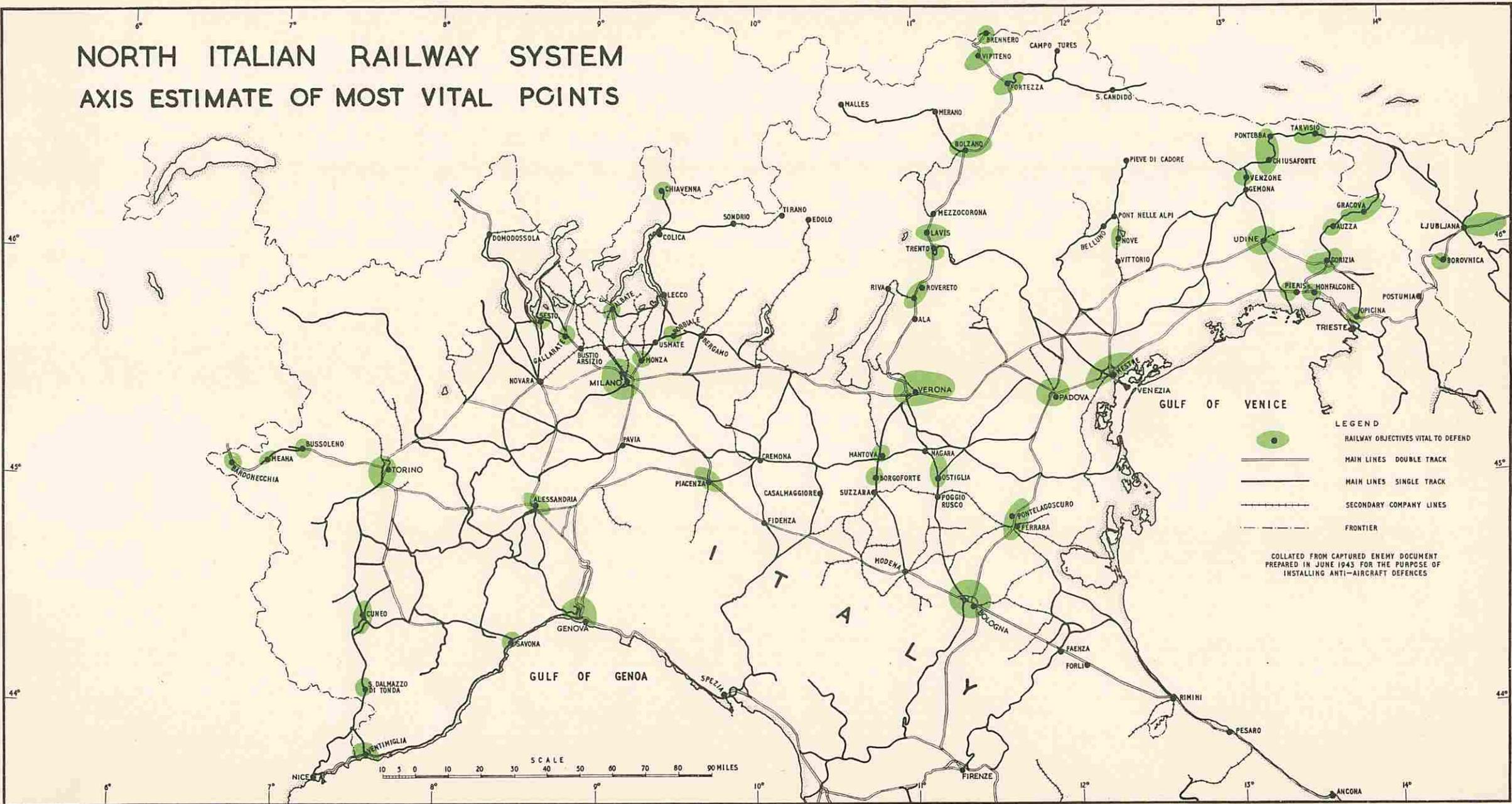
Apart from the anti-rail/road offensive, two other features must be recorded; firstly the air participation in the capture of Elba Island, (1) and secondly, the series of attacks on the west coast ports by the medium bomber wings and 87th Fighter Group.

A large part of the work leading to the satisfactory status of rail interdiction mentioned above was effected by the two medium bomber wings (2) and the fighter bombers of XII Tactical Air Command. As soon as the Elba episode was over, a large force of aircraft again stood by, awaiting a

-
- (1) Operation 'Brassard'.
(2) 42nd and 57th.

NORTH ITALIAN RAILWAY SYSTEM

AXIS ESTIMATE OF MOST VITAL POINTS



SECRET

MAP. 2

Printed by Photographic & Reproduction Branch, Air Ministry, London S. W. 1

A. H. B. 1. 0165. 14798

break in the weather. Most bombers stood down on 19 June, but the Thunderbolts of 87th Fighter Wing were active against barges off Leghorn and rail targets in the ports of Sestri Levante and Viareggio.

Some medium bombers were able to operate the next day - 20 June - and destroyed a number of road bridges and damaged others between Genoa and La Spezia. The lighter aircraft of 87th Fighter Wing put in a crowded day and one mission returned claiming several hits on a 20,000-ton aircraft carrier in Genoa docks, unconfirmed as no photographs of Genoa were taken at this period. Leghorn, after the capture of Elba and Piombino, would almost certainly become the most southerly enemy port. Blockships had been sunk at the harbour entrance; these and a jetty were hit by Mitchells on 21 June. The pattern of the rest of the Air Forces' operations showed no departure from the normal. A diminishing harvest of motor transport was an index of a hardening front.

The heavy day bombers were only out on 22 June, when, after excellent concentrations on the marshalling yards at Ventimiglia by 55 Wellingtons and three Liberators, (assisted by eight flare dropping Halifaxes), a comprehensive offensive on northern railway installations was carried out by about 750 Liberators, Fortresses, Lightnings and Mustangs, the two latter categories sweeping as well as providing cover. Seldom had such saturation of a complex been so effectively planned. In addition, oil storage plants, bridges and the Fiat factory at Turin were hit. The value of this and other raids might well have been repeated, had the strategic position been cleared in favour of a continued offensive upon Italy with all forces, and would in all probability have been considerable. As will be seen, the fighting potential was to be so drastically cut as to destroy any hope of pursuing the victory to its logical conclusion.

Comparison of Enemy and Allied Estimate of Vital Rail Points in North Italy.

M.A.A.F./S.6665/
Int, 27 June 1944
See Ibid Vol.
VI/Tab. 'L'.
(A.H.B./ILJ11/1,
Vol. VI)

In June a certain document came into the hands of the Allied Combined Services Detailed Interrogation Centre Liaison H.Q. in Rome. This was a map (1) prepared by Il Generale di Brigata, Direttore Superiore Transporti in June 1943 as a guide to the Germans for setting up anti-aircraft defences of crucial rail points in Northern Italy. The Target Analysis Section at M.A.A.F. reported, after scrutiny of it, a high degree of exactitude in the fundamentals on which our strategic air programme since the invasion had been based.

Of the 46 targets indicated, target charts for 34 had been prepared. Of the remaining twelve, six were located in the rail complex between Milan and the Swiss frontier, an area in which no operations were planned because of the intricate inter-connections of the local railway net. Three others were minor targets on the Brenner Line which photo reconnaissance showed to be unsuitable for heavy bomber attacks; one was a hydro-electric power station (a target of very low priority for heavy bomber attack); the final two were bridge targets for which suitable alternatives had already been plotted.

(1) Figure 2.

Twenty-five of the forty-six vital points plotted had, by 27 June 1944, been attacked by M.A.A.F., principally the marshalling yards, but including the bridges at Dogna, Avisio and Bolzano. The Borovnica Viaduct (just over the Italo-Slovene border), had been twice cut by partisans. Analysis of the 46 points showed a fairly equal proportion of railway centres; engineering structures and railway power sources; comparing this enemy estimate of our intentions with the course of strategic operations on the railway system recorded in the course of the narrative to this point, it will be clear that he had a fairly clear grasp of the possible military needs of the situation. Railway power sources were relegated in the event to low priority by the Allies, on account of the pressure of overall European bombing priorities. (1)

Coastal Air Operations in the concluding Weeks of 'Diadem'

M.A.C.A.F.,
O.R.B., Air &
Operations,
May - June 1944

Some idea has been given of the productive work of Coastal Air Force in the first week of 'Diadem'. It is now time, before proceeding to final conclusions on the Spring offensive, to give an outline of the significant role played by this force from that point.

The sinkings of two U-boats in the first week in 'Diadem' were followed by three more kills in May. 'Swamp' hunt operations were carried out in co-operation with naval forces. The 76-hour hunt from 14 to 17 May ran the U-boat, as intended, to exhaustion. Survivors estimated that not more than three hours had been spent on the surface during the whole period; the resultant exhaustion of the battery forced them to surface. A considerable strain was imposed on our crews when this hunt was almost immediately followed by another, which led to the sinking of U-960 on 19 May. Another (U-371) had been sunk earlier off Djidjelli. The commander, familiar with the coastline and our tactics, steered inshore, knowing the 'Swamp' aircraft would be operating to seaward and expect the opposite move. Prisoners from four of the five sunk included two of the most experienced and successful commanders in the Mediterranean. These operations reduced in dramatic fashion the enemy submarine force to two, although it could not be said the menace had been finally dealt with. It was known that at Pola three midget U-boats (2) were being constructed and that two or three of the smaller version of this type were at sea somewhere along the Tyrrhenian coast. More serious was the threat from human torpedoes launched from U-boat carriers, of which three in the Spezia area were likely to become operational before long.

Notwithstanding, the reduction of these threats to the convoys on which the Allied forces in Italy, Corsica and Sardinia depended for many essentials, enabled Coastal Air Force to employ its forces more offensively in June. During this month there were no U-boat attacks, no air attacks on convoys or harbours and no offensive action of any kind against the wide system of targets defended by M.A.C.A.F. Once the drop in enemy activity was grasped, considerable changes were made in the disposition of general reconnaissance and fighter aircraft. Wellingtons moved from North Africa to Sardinia for

Report by Commander
S.O. (1) Med.
C.-in-C. Naples,
21 July 1944
M.A.A.F. /S. 6685/
Int.
(A. H. B. /11J1/269/38,
Encl. 520).
526).

- (1) But note Operation 'Pingo', in November 1944.
(2) The Caproni B type originally evolved by the Italians.

anti-shipping operations; Beaufighters and Mosquitoes to Alghero and Foggia for intruder operations. Economies were promptly effected in fighter defence in North Africa and the pace accentuated in offensive operations by 63rd Fighter Wing, who during June, destroyed a considerable number of 'E', 'I', 'F' and 'R' boats, barges, one merchant vessel, one L.S.T., a ferry, a schooner and a quantity of surface craft, M/T and locomotives. This Wing damaged 26 bridges in addition to port installations, factories and radar sites. No. 6 Squadron, armed with Rocket Projectile Hurricanes, was the most successful unit, in particular on night operations.

An unobtrusive, profitable but time-consuming commitment was Air/Sea Rescue; a comparison of figures for May and June shows how many lives of valuable trained crews were being saved for the Air Forces. In May, - an exceptional month, - A/S.R. aircraft flew just under 1,000 sorties; marine craft made seventy-five. One hundred and seventy-nine Allied airmen and two enemy were saved. In June, just on 600 sorties by aircraft and 50 by marine craft led to the saving of 91 Allied and six enemy lives. The percentage of successful incidents rose from 33.5 per cent to 53 per cent.

The absence of enemy long range bomber attacks in June was mainly the result of their concentration against the Normandy landings. Coastal Air Forces' intruder operations made tenure of their bases in the South of France insecure; by the end of June, the bombers were scattered over bases at Cognac, Toulouse, Perpignan, Montpellier, Valence, Lyons/Bron and Istres. The latter airfield was used as base for an attack of an unusual kind by the Italian Fascist Republican S.M. 79 torpedo bombers, who set out to bomb Gibraltar on the night 4/5 June, without achieving anything.

CONCLUSIONS AND LESSONS FROM AIR OPERATIONS 'STRANGLE' AND 'DIADEM'.

The Need for careful Assessment of Conclusions.

The time, the place and the range of viewpoints concerned must all be allowed for in any attempt to draw conclusions and to list the lessons learned from the air operations 'Strangle' and 'Diadem.' For purposes of comparison, several Allied appreciations from distinct viewpoints are given. In the main, the Allied conclusions and the lessons learned remained unmodified as they applied to the Italian theatre of war, until the final victorious offensive in the Spring of 1945. Some of the lessons were borne in mind in the planning for Operation 'Overlord'. Several of the most relevant assessments will now be given.

Conclusions by Tactical Air Force on Operation 'Strangle'.

There was no doubt as to the complete tactical success of Operation 'Strangle', the programme of communications interdiction which lasted from 19 March to 11 May with an intensity which reached continuous battle proportions. It was marked by good planning, a sound choice of targets and a close co-ordination of all available interior forces. By 27 April, General Arnold, Chief of the American Army Air Forces in Washington, ventured the hope that the operations then proceeding might well become classic examples of the capabilities

Report on
Operation
'Strangle'
M.A.T.A.F/D/
SASO/7 O.R.B.
24 July 1944.

of air bombardment in isolating a battlefield. Those hopes were not fulfilled, but a measure of success, unobtainable had the enemy possessed a comparable air force, was achieved.

The principal effect of our air superiority was to allow our bombers to operate either without, or with only a small, fighter escort and to enable fighter-bombers to work in small flights (1), so rendering possible in fair weather conditions an almost constant stream of aircraft over the whole area and making it extremely difficult for the enemy to move by day; another major effect was to grant our ground forces almost complete immunity of their logistical organisation behind the lines. Meeting the main requirements of the air plan meant an initial maximum effort on targets likely to involve major repair work; aiming at the maintenance of at least three blockages on every route; employing fighter-bombers against the track between major blocks and to interfere with the repair of major blocks; and by using light bombers in a harassing role at night, regardless of the state of the moon. Photographic reconnaissance for correction of visual and bomb strike photo reports proved of great importance.

As regards isolation of the battlefield, this was held by M.A.T.A.F. to be a dangerous catch phrase. Where there were numerous routes leading to the battle area, it was impossible to isolate that area by air action alone; but it was possible so to interfere with the movement of personnel and supplies to an area that it could be made militarily impracticable to retain that area, a task demanding an extended period of time. This judgement, it must be noted, was recorded one month after the conclusion of the air contribution proper to 'Diadem'.

The need to supplement day attacks by night attacks was seen, but it was realised that the night harassing forces available were inadequate and the need for more efficient aircraft for this work made plain. 'Strangle' had given confirmation to the claim that bombing accuracy had been seriously reduced in the face of flak opposition, but had been, all the same, remarkable.

As regards the interdiction - marshalling yard controversy, Tactical Air Force's experience was that saturation of rail objectives was the only way to hold up repair effectively; that since the destruction of marshalling yards would not by itself dislocate a railway system, they should only be attacked when active. While generally satisfied with the results of rail interdiction the successful interdiction of roads was admitted to be extremely difficult, as it was mainly at night that traffic moved. Again, for the same reason, no really positive method of dealing with the heavy traffic of small coasting craft and barges had been found.

Conclusions by Tactical Air Force on Operation 'Diadem'.

Returning to the study of 'Diadem' six months after its close, Tactical Air Force recalled that among its important objectives was the prevention of supplies and reinforcements reaching the German armies in Italy. It considered this objective almost completely attained, but again it was pointed

(1) Of 4 or 8 aircraft.

out that the shortage of aircraft suitable for night operations precluded adequate coverage of the enemy communications system as a whole, hence nullifying to some extent the effectiveness of the isolation programme. Not only was the night force inadequate, but it lacked precision blind bombing instruments. Only by saturation of enemy communications areas by night intruders and the use of precision pathfinders or blind bombing techniques on special night targets, could assurance be given of a complete isolation of the battle area. It will thus be seen that the early hopes of a balanced air force had not to this point been realised.

Conclusions by Strategic Air Force on Operation 'Diadem'.

Estimate of the Situation Rail Communications in N. Italy. 15th Air Force/A-2. 11 June 1944 (A.H.B./ILJ11/1, Vol. VII, Tab. 'CC').

The Strategic Air Force interpreted its role of supporting the ground operations in Italy by attacking Northern Italian rail communications, as well as certain ports. A detailed study presented the following conclusions by this force. Their bearing on the relative value of attacks on marshalling yards and railway repair centres on the one hand, and attacks on bridges on the other, is an important piece of evidence in the slow evolution of these two policies towards a balanced integration of both.

Complete and continuous interdiction alone would bring about the maximum injury to the rail transportation system in N. Italy. Attacks on marshalling yards might provide incidental interdiction of lines, but available by-passes and opportunities of quick, easy repair rendered such interdiction only temporary and without critical effect. It was, however, true, it was agreed, that certain marshalling yards and handling facilities might, as a result of successful interdictions, become profitable targets. The most effective method of producing long term and continuous interdiction was the complete destruction of bridges or viaducts with long spans, an object the completion and policing of which enemy defences in their actual state were incapable of seriously interfering with.

Air Intelligence Conclusions on 'Diadem'.

Assessment of Air Operations against Enemy Communications in Italy. M.A.A.F. Intelligence Section, 16 June 1944.

The Target Analysis Sub-section of the Intelligence Section H.Q., M.A.A.F. arrived at the following conclusions in reviewing the period 16 March - 15 June. It recalled that air operations against the Italian lines of communication were never expected to secure in themselves a withdrawal of enemy ground troops from the stabilised Gustav Line. They were designed so to weaken the enemy, through continuous disruption of his communications over a long period of time, that our impending ground operations would be materially facilitated. It was, in other words, a long range type of ground-air support, related to, and dependent upon, large scale ground operations for consummation. Abundant evidence had gone to show that although the enemy suffered from shortages before 11 May, his position, as long as the front remained static and quiet, was not highly critical. After the opening of the offensive, the position was radically changed. The almost uniform consensus of all intelligence reports supported the idea that the largest factor in the collapse of enemy transport after D-Day was due to the breakdown of local distribution immediately behind the front. This, in turn, was due to the progressive removal of transport from the front areas in order to satisfy the requirements of the peninsular supply routes.

In short, the denial of railway routes in this latter area caused the enemy to over-commit his limited motor transport facilities in the zone of communications. The weight of the Allied ground offensive and the speed of its advance made it impossible for the enemy to readjust his motor transport in time to cater adequately for his local requirements in the combat zone. Ultimately, this factor resulted in the destruction of a large part of his motor transport force and relative paralysis in large areas of the combat zone.

Effect of Air Power in a Land Offensive.

J.C.S. 1794,
18 June 1944.
(A.H.B./ILJ11/1,
Vol. VII,
Tab. 'H.N'.)

Lessons learned from Air Participation in the Spring Offensive and in Operation 'Strangle'.

The Deputy Air Commander-in-Chief summarised the part that air power had played in the break-through and might be expected to play in similar circumstances in other theatres. Although the document occasionally over-simplifies for the sake of clarity, it is one of the most concise and informed works of its kind and shows considerable lucidity and grasp of the essentials of war.

The text is given virtually complete at Appendix 4. It will suffice here to recapitulate its main points. It opened by exposing the things that 'Diadem' had proved air power could not be expected to do. It could not by itself defeat a highly organised and disciplined army, whether it had, or virtually lacked, air support. It could not by itself enforce a withdrawal by drying up the flow of essential supplies; so long as the Germans were not being forced to expend ammunition and fuel, vehicles etc, at a high rate, they could maintain stocks at the essential minimum. It could not prevent entirely the movement of reserves. In short, it could not absolutely isolate the battlefield from enemy supply or reinforcement; nor, on the other hand, could it absolutely guarantee the immunity of our forward formations, back areas, ports, bases, airfields or convoys against the occasional air attack or reconnaissance.

What it had done since 15 March was to make it impossible for a highly organised and disciplined army to offer prolonged resistance to our determined ground offensive in country ideal for defence; it had turned an orderly retreat into a partial rout and temporarily rendered the German army ineffective as a fighting force. The army alone would not have been able to achieve this. The report enlarged on the immunity all branches of our own ground forces passively enjoyed, irregardless of any enemy air threat, thanks entirely to our domination of the air, as well as on the priceless air reconnaissance reports on which their advance was planned and executed. The air contribution made the break-through possible and delayed and disorganised the movement of reserves. (1)

Vindication of broad Principles of Conduct of Air War in Italy.

The progress and conclusion of Operations 'Strangle' and 'Diadem' established firmly two principles already adopted in the theatre. It will be realised that these principles must be accepted as true and successful in that theatre, but not of universal application in their entirety. The first was the current form and expression of the principle of teamwork between independent ground and air commands which had been

(1) In particular, the delay imposed on the movement of the Hermann Goering Division was fatal.

born in the Desert campaigns and developed through Tunisia, Sicily and the early months in Italy. The Spring battle of 1944 established more clearly than ever the efficiency and harmony resulting from the integration of co-equal ground and air forces working in harmony towards a common end. (1)

The other principle was that of the method of rail interdiction, accepted as the primary air task and translated into terms of action by an emphasis on the cutting of bridges and viaducts. In addition to the technical case for interdiction put up by experts within M.A.A.F. it will be recalled that, as given in the section in Volume I on the Interdiction - Zuckerman controversy, prominent Italian railway officials had testified to the greater efficacy of interdiction, on the grounds that the Germans were seldom using marshalling yards as the Allies believed they would, and the damage thereto, although appreciable, hit the civilian supply system harder than the German military machine. Although it had been intended to intensify attacks on rail centres by strategic bombers, in practice the programme achieved nothing like continuity, owing to the magnetic pull of the Pointblank air programme and the Americans' insistence on the importance of destroying oil targets.

Estimate of the
Situation - Rail
Communications
in N. Italy H.Q.,
15th Air Force,
11 June 1944
(A.H.B./IIJ11/1,
Vol.VII,
Tab 'CC').

The results of what operations had been carried out led the Strategic Air Force to support the contention regarding the dubious nature of the results of marshalling yard attacks on the tactical situation. These results were minutely analysed by the S.B.S. (2) Office of the Fifteenth Air Force Detachment at Bari. They pointed to the current German strategy of using minor yards, or routeing military traffic straight through the big ones, (rendering it increasingly difficult to catch concentrations of 'pay' traffic) and of using available bypasses. If interdiction were successfully continued, marshalling yards might, however, on account of enforced concentrations, increase in importance as targets. In any case, any attack on transport (except at the moment of a peak load when all facilities are required) must be sustained over a period of at least three weeks and, except for periods of heavy fighting, probably for about six weeks before tangible results could be expected to be produced on the enemy supply position. From these and points made in the preceding epitomes of the reports of other units it will be seen that it was clear to many if not all concerned that a sound bombing policy against communications should not be over-simplified; it called for a balance of all the factors involved, including the geographic, the economic and the military.

The Need for a stronger Night Bombing Force and Change of Night Tactics.

M.A.A.F. Operations in Support of 'Diadem'.
(A.H.B./IIJ11/1, Vol. VII)
D.O.Ops. Minute to C.A.S. on above. (A.H.B./IIJ11/1, Vol.VII).

During 'Strangle' and 'Diadem', the entire burden of maintaining the interdiction programme at night fell on two squadrons of R.A.F. Bostons and two squadrons of R.A.F. Baltimores. The Wellingtons, - also part of No. 205 Group - conformed to the general plans of Fifteenth Air Force, but carried out valuable attacks on the west coast ports, so reducing the flow of seaborne supply. The joint contribution, though relatively light and only partially successful, made

- (1) Refer to Appendix 4.
(2) Strategic Bombing Survey.

possible continuity of a kind. The recognition that its weight was inadequate had, it will be recalled, been a complaint in the theatre from the first. Now the conclusion was inescapable. M.A.A.F. reaffirmed it in their summary of the Spring operations and pointed out the need for the United States Army Air Force to begin to broaden its operational policy of day bombing to include night operations. That this was to some extent appreciated appears clear from the early decision to convert an American light bomber group to night operations.

The report was examined by the Director of Overseas Operations, Air Ministry, who pointed to the conclusion that although the squadrons in question were worthy of the highest praise, it was felt they were inadequate for the task. If complete interdiction of supply routes, both by sea and land were desired, it was essential to build up a strong tactical night bomber force.

A strong light was thrown at this time on the question of diffusion of the Wellington effort, and it became apparent that although No. 205 Group were the best judges of what they could do in any given circumstances and how to do it, it was probable that by carefully planning periods of stand-off, a maximum effort on single targets would achieve more in the long run than several smaller efforts on the same date. They had been given too many targets.⁽¹⁾ This was in line with the tendency already noted in favour of weight and saturation in attack by other aircraft categories. It did not apply to fighter bombers, but it did, with more force, to medium bombers.

AIR PARTICIPATION IN THE CAPTURE OF ELBA

Strategic Considerations

Elba and Pianosa Islands⁽²⁾

The island of Elba is situated between Corsica - 30 miles away - and Italy, from which it is separated by a narrow channel no wider, between Cape Pero on Elba and Piombino on the mainland, than five miles. Its greatest length is about nineteen miles, its average width three to four miles, with three headlands where the width increases up to about ten miles. The general conformation is broken, rising to 3,000 feet at Monte Capanne in the West. Of the other islands in the Ligurian Archipelago, only Pianosa was held by the Germans.

Strategic Importance of Elba and Pianosa

In November 1943, Allied attention began to centre on Elba. General Giraud proposed the mounting of a small reconnaissance in the island. The Commander-in-Chief agreed. That and four other missions were carried out in the period up to June 1944, with the object of securing intelligence reports on the defences.⁽³⁾ The Joint Intelligence Committee at Allied Force Headquarters began a study of Elba at about the

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- (1) Letter from D/Air C.-in-C. to A.O.C. No. 205 Group R.A.F. 26 May 1944. (A.H.B./ILJ1/90/4(B).
 - (2) 'L'île d'Elbe'. Article in Revue Historique de l'Armée. No. 4 - Service Historique French Army H.Q.
 - (3) A. 883 M.A.C. to A.C.P., 6 Nov. 1943 (A.H.B./ILJ1/90/4(B), Encl. 1a).

same time as that of General Giraud's proposal and summarised its strategic importance in the following terms.(1) So long as the front remained south of Rome, the Germans would retain their hold on Elba, since it enabled them to send coastal shipping from northern ports to Piombino, San Stefano and Civitavecchia. The increase in the weight of Allied air attack on land communications enhanced the value of German coastal shipping without being able to stop it. The loss of Elba would seriously affect the supply of the enemy armies. Its possession denied the Allies a forward base for carrying out harassing amphibious attacks against the mainland.

If we took it, the Germans would probably attempt its recapture. This would involve commitments - for the Allies who held it and had to cover it from the mainland with ground and air forces, and for the Germans who needed it. Enemy air operations at that time might be on a fairly serious scale. This paper was submitted with some hesitation, for everyone had in mind the unfortunate fate of Kos and Leros.

The Air Forces agreed on the strategic value of the island, but were apprehensive that the Allied navies and ground forces might, in the event of its capture, call for a continued air cover just when the ground and air forces in Italy were in the middle of their Spring offensive. It was made quite clear on 7 April that there could be no commitment for standing patrols.(2) With this proviso the tentative date of 25 May was fixed for D-Day for planning purposes and 'Brassard' chosen as the code name for the operation. Allied Armies in Italy remained sceptical to the end as to the advisability of the operation.

The advantages of a complementary attack on Pianosa Island would be to enable us to install radar, shorten future convoy routes to Elba, organise an emergency landing ground and install anti-aircraft equipment. It was known that a landing ground existed, but the idea of organising it or another was dropped soon after.

French Air and Army Command

Reorganisation of the French Armed Forces

History of
A.F.H.Q.,
Part 3.
Section 1.
A.F.H.Q.,
Caserta
1 Nov. 1945.
(A.H.B./IIJ1/
168/13).

In April 1944, the French Committee of National Liberation reorganized the command of the French armed forces, assuming for itself the general direction of the war and appointing its President, General Charles de Gaulle, as Chief of the Armed Forces.(3) The post of Commander-in-Chief, held by General Giraud, was abolished and the latter offered the post of Inspector General of the Army. This he refused and withdrew to the active reserve without appointment. A new General Staff of National Defence, under General M.E. Bethouart as Chief of Staff, was created to command the French

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- (1) J.I.C. (A.F.) note to J.P.S. 20/43, 22 Nov. 1943. (A.H.B./IIJ1/90/45, Encl. 2B).
 - (2) J.C.S.1291 M.A.A.F. 7 April 1944. (A.H.B./IIJ1/90/45, Encl. 5a)
 - (3) He assumed the powers accorded to a French Premier by the law of 11 July 1938. (Ref: Letter Bethouart to Gammell, 17 April 1944. A.F.H.Q. memo, 20 April 1944 - G-3 A.F.H.Q. File 37/4, Vol.I). (Cabinet Historical Archives).

armed forces. Thus ended the long Giraud - de Gaulle conflict for control of the French armed forces.

In view of an agreement of December 1943 which contemplated the use of a French field army in the invasion of Southern France, General de Gaulle appointed General de Lattre de Tassigny as commander of a new French Army 'B', comprising all field forces nominated for the operation and for 'Anvil.' The Supreme Allied Commander Mediterranean accepted the concept of the establishment of a French army headquarters as soon as the two French corps contemplated for use were ashore in Elba.

French Inclusion in the Chain of Command

Ibid

Letter: Bethouart
to Wilson
20 Apl. 1944
(A.F.H.Q. - G-3
files 37/4
Vol. II) (Cabinet
Historical Archives)

Letter: Bethouart
to Gammell
25 Apl. 1944
(A.F.H.Q. /G-3 files
37/4) (Cabinet
Historical Archives)

When the invasion of Elba was being planned, A.F.H.Q. considered direct communication with the French commander necessary. General De Gaulle and the French Committee of National Liberation were unalterably determined to maintain the principle that French troops should operate under French command; consequently General de Lattre de Tassigny made it clear to A.F.H.Q. that unless he was included in the chain of command, the commander on Corsica would not accept orders or be able to carry out the invasion of Elba. The Supreme Allied Commander agreed to his inclusion, and they worked out a procedure whereby de Lattre de Tassigny's staff approved all A.F.H.Q. cables to the French forces in Corsica. An organizational chart of the French chain of command as it stood at the end of April 1944 is given at Appendix 6.

Having recorded the developments in the relations between A.F.H.Q. and the French, an outline of the French air organization will now be given.

The French Air Force

Reference to the chart at Appendix 7 will explain how the 15 French squadrons operating in the Mediterranean theatre fitted into the various commands and with what equipment. The hierarchy of the French Air Force itself with the squadrons under command of the Escadres(1) is also made clear. Although the movement was at the time quite logically in the direction of autonomy, the French Air Force conformed in all operational matters to the orders of Mediterranean Allied Air Forces and there is no trace of any major difficulties. A brief history of French air rearmament is given at Appendix 8.

It was in keeping with the increasing participation of various friendly nations in the European war on the Allied side and the steady return of French prestige that the role of the French Air Force in Operation 'Brassard' should be marked, even if limited. French air squadrons were therefore an integral part of the convoy protection by Coastal Air Force and of the Thunderbolt attacks before and during the capture of Elba.

(1) The equivalent of a R.A.F. Wing or U.S.A.A.F. Group.

Plans

Planning, Organization and Command for Operation 'Brassard'

Weekly Planning
Tel. No. 31
A.F.H.Q.
10 Apl. 1944
(A.H.B./ILJ1/90/
45, Encl. 18a)

Initial planning was carried out at A.F.H.Q. in Algiers, detailed planning by Force 255 in Corsica. The commanders nominated were Lieutenant General H. Martin, (French Commander of Allied Ground Forces in Corsica) with Brigadier General Magnan in command of the ground forces landing in Elba; Rear Admiral T. Troubridge R.N. in command of the light naval forces; and Colonel T. C. D'Arcy, Commanding General 87th Fighter Wing (acting under command of the C. G. Tactical Air Force), in command of the air forces.

Air Operational Directive

Weekly Planning
Telegram
No. 31 A.F.H.Q.
10 Apl. 1944
(A.H.B./ILJ1/90/
45, Encl. 18a)

On 16 April, Colonel T. C. D'Arcy was allotted responsibility for the conduct of air operations by day in close support of the operation until the island was captured. For planning purposes he was to assume that he was to control 57th Fighter Group (plus No. 2/5 French Squadron), Nos. 322 and 251 R.A.F. Spitfire Fighter Wings, and half a Tactical Reconnaissance Squadron. If required, additional supporting forces from 57th Bombardment Wing were available. Protection of assault shipping to within five miles of the assault area, night fighter protection to the operation and night air protection of the island after capture, as well as general assistance in the conduct of the operation, were the responsibility of Coastal Air Force.

TAF/71/Air
16 Apl. 1944
(A.H.B./ILJ1/90/
45, Encls. 27b
and c)

Outline Air Plan

Ibid

The task of the Tactical Air Force was threefold; to neutralise enemy air forces likely to interfere with the operation, to provide air cover by day over the assault area and assault shipping lying off it and close air support to the ground forces. Any medium bomber support necessary was to be provided by 57th Bombardment Wing, without prejudice to the normal authority of its own Commanding General. The order of battle and location of Tactical units⁽¹⁾ are shown in the footnote. While the headquarters of 87th Fighter Wing was to remain in Bastia, Colonel d'Arcy was to establish a command post alongside the Army and Naval H.Q.'s in an L.C.H.⁽²⁾

F.44529 and)
Sigs 111225B
A.F.H.Q.
11 May 1944
(A.H.B./ILJ1/90/
45, Encls 33a
and 32a)

Immediately prior to D-Day, a bombing programme, with the object of neutralising enemy air forces, including reconnaissance units, was to be implemented. An airborne operation - proposed by the French - might be directed against Elba and another against Pianosa, with the object in the latter case of capturing the island and installing a G.C.I. Section for night fighter control. These airborne operations were,

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- (1)
 - 57th Wing (310th Gp - 4 Sqns (B-25) Ghisonaccia
 - (340th Gp - 4 Sqns (B-25) Alesan
 - (321st Gp - 4 Sqns (B-25) Solenzara
 - 87th Wing (57th Gp - 3 Sqns (P-47) Alto
 - (322nd Wing - 4 Sqns (Spits) Poretta
 - (251 Wing - 3 Sqns (Spits) Poretta
 - ($\frac{1}{2}$ TAC/R Sqn - $\frac{1}{2}$ Sqn (Spits) Poretta.

- (2) Landing Craft Headquarters.

however, not feasible until 17 June on account of other commitments. There was to be no fighter protection after a successful operation; the French were to rely on their own anti-aircraft defences.

As regards fighter cover, the limits of Coastal Air Force's responsibilities up to D-Day have been given. 87th Fighter Wing planned a programme of fighter effort over the assault area and shipping within five miles of it. For three days, the Wing was to provide standing patrols. Thereafter, cover duties reverted to Coastal Air Force as part of the normal commitment of the air defence of Corsica. A small forward fighter control was to be set up in Elba, linked with the Combined Operations Room at Bastia, for the receipt of broadcasted warning of the approach of hostile aircraft, gained from radar situated in Corsica and/or Pianosa.

Methods of calling for close air support were to be worked out in detail with the army staff. The existing Air/Sea Rescue arrangements in Corsica were to be extended to cover Operation 'Brassard'. Artillery reconnaissance was planned to assist the three supporting naval gunboats.

Air Bombing Priorities

Ambitious plans were discussed and elaborate preparations made for a far greater air participation in the operation than was actually carried out. In view of the bitter opposition from the defences in the event it is important to study briefly the full bombing plan and its priorities, checking positions on Figure 3, so that when the narrative of the assault is terminated, comparisons may be made between what the air forces actually accomplished, and what they might have accomplished and a decision made as to whether a more effective contribution could not have been made to the combined operation with the forces available.

French Command,
Ops in Corsica
and 1st Army
Gp. staff G-3/
212/BD/3,
8 June 1944
and 90/315
7 June 1944
(Cabinet Hist.
Archives)

In the preliminary discussions of a full-scale air bombing plan, the Air Force considered that in order to obtain worthwhile results, approximately 1000 tons of bombs should be dropped. A list of eleven objectives⁽¹⁾ in order of importance was drawn up, the most important (in the French Commander's opinion), being the defences on the beach of Marina di Campo, in Pianosa village, at Punta di Campo and the radar station there, guns at Enfola, and guns, searchlights and radar in the Porto Longone area. This intensive bombing plan, as has been explained, was abandoned, its possible advantage being unanimously outweighed, before the event, by what seemed the paramount need for tactical surprise. The actual word used by the three Commanders was that it was considered 'inopportune'.

Summary of the Army and Navy Plans

Ibid

Operation 'Brassard' was defined as an assault on the island of Elba⁽²⁾ with the object of seizing and holding it. The assault force was the 9th Division Infanterie Coloniale. A further 3,000 men were held in Bastia as reserve. The plan of attack was considered in two phases - Pre-H Hour and H Hour. The first phase consisted of five separate landings. The two

(1) Shown on Figure 3 (hatched areas Nos. 1-11).
(2) Refer to Figure 3 for all locations.

main landings of this preliminary phase were to be by detachments of Commandos at beaches adjacent to the Gulf di Campo and on either side of Cape Stella respectively, both with the object of neutralising gun positions. Three other small parties were to land near Toro on the north coast at Gulf della Biodola with the object of capturing the enemy H.Q. at Villa Napoleone⁽¹⁾ and, lastly, south of Point Moncone.

At H Hour, the main assault was to go ashore on the larger beach in the Gulf di Campo,⁽¹⁾ (between Marina di Campo and Cape La Foce). All forces were to advance north and east and overrun the island. Simultaneously, a force of some 200 men were to assault Pianosa Island. Naval forces are shown in the footnote.⁽²⁾

Changes in the Plan due to the Course of the Land/Air War

Planning for capture of Elba D.A.C.-in-C. (A.H.B./ILJ1/90/45).

In spite of repeated representations by H.Q. Allied Armies in Italy that the troops would do better employed in 'end-run' operations in Italy or leap-frog amphibious assaults, the Supreme Commander held to the plan to employ them first for the capture of Elba, then (based in Corsica), for an operation such as the landing in the South of France. He held that there need be no fatal diversion of air effort from the land campaign since the main tactical air task was in any case to disrupt communications (which included coastal shipping). Coastal traffic was steadily increasing and up to mid-April the combined efforts of the navy and air forces had failed to stop it.

By 16 May, it was realised that training and preparations would not be far enough advanced by the tentative date of 27 May; nor was it certain that the planned offensive would be far enough advanced to cover the situation arising from the island's capture. 'Brassard' was therefore postponed until mid-June, the next favourable moon period.

The French were strongly in favour of a parachute drop on the low ground S.E. of Porto Ferraio. There were doubts whether aircraft would be available; however, the French carried training to an advanced stage and promising moves were made to secure Dakotas for the task. Right up to 12 June, it was scheduled to take place, when it was suddenly cancelled. Although not actually part of the original plan approved by the French, they had pinned great hopes on its execution.

(1) Refer to Figure 3 for all locations.
(2) No: Type

40	L.C.T.
42	L.C.1. (L)
3	L.C.H.
36	L.C.A.
3 Flotillas	M.T.B. and M.G.B.
15	M.L.
3	Gunboats
9	Minesweepers
1	L.C.M.
8	L.C.G.
4	L.C.F.

Aircraft had been earmarked up to 10 June, (only a week before the assault). They expressed considerable bitterness at the decision. The decision took over-long in circulation and it was two days before Force 255, Tactical Air Force and the French were officially advised. An effort to pacify the French command by discussing a heavy bomber operation to soften-up the defences was another unfortunate move. The Air Commander-in-Chief stated that there should be no difficulty about 'laying on' bombardment operations there in any strength or character required if there were enemy forces or targets there. As early as 5 June, Force 255 began to prepare a plan for this possible bombing. It proceeded to develop until 14 June, when General de Lattre reported the decision of all three commanders that it was inopportune; tactical surprise was essential.

Intelligence

There were, right up to the landings, peculiar difficulties in obtaining reliable information as to the state of the defences and to what extent evacuation had taken place, if at all. Because of the general configuration of the island, and because circulation between the western and eastern zones was forbidden and all strong points guarded, the four missions sent provided only meagre intelligence. Photographs were taken from 16 September 1943 onwards and frequent partial cover gave a reasonably clear idea of locations, but these were vertical as well as partial, and were not infallible in the information most desired, that is, were they manned or not? Flak was intense and highly dangerous to low-flying aircraft. Not until a few days before the landing was it possible to secure oblique photographs of any value.

The actual situation in early June 1944 was as follows. For some months, defences had been strengthened and local security arrangements, including an alert code, tightened up so as to exclude civilians from access to key positions. Great secrecy as to postings to the passive defence of the island was maintained.

The Question of Evacuation

On 9 June, Kesselring ordered preparations for the evacuation of Elba and Pianosa, to synchronize with the beginning of the German withdrawal from the West Friedland position. Certain formations from G.H.Q. on Elba were to be transferred to Fortress Brigades on the mainland for work on defences in the Spezia area. This order was apparently never revealed to any of the lower formations. No trace of any order for evacuation was found by the French. On the contrary, all local rumours of evacuation were severely repressed. Elba would be defended to the last. In Allied circles considerable doubt existed, owing to the contradictory evidence, as to whether the attack would meet a defence in force or a rearguard action. Figure 3 shows the defences of the island as known to the Allies the day before the landing, and gives the information on which the preliminary and supporting air attacks were based.

General de Lattre de Tassigny in his report on the operation expressed satisfaction on the excellent assembly and interpretation of air photographs: the intelligence they furnished on the state of the defences was valuable. The intelligence estimates of the strength and quality of the garrison, labouring under the handicaps described, proved dangerously misleading. He treated them with reserve.

ALS/OPS/13
Gen. de Lattre
to SACMED
14 June 1944.
(Cabinet Historical
Office)

'L'île d'Elbe,'
Report in 'Revue
Historique de
L'Armée' No. 4,
H.Q. French Army.

246/4 Kesselring
to C.B.S.W.
9 June 1944
Ref Report No. 24
G.S. Ottawa.
(A.H.B./11/92/5,
App. 'B')

902 Fortress
Battalion,
(Elba) Telephonic
Communications
Order
10 June 1944.
(Cabinet Historical
Archives)

Operational Report
on the Conquest of
the Island of Elba
17-19 June 1944
French Army B.H.Q.
3rd Bureau A.F.H.Q.
File 2418.
(Cabinet Historical
Archives)

Pre-Assault Air OperationsAir Attacks on Elba Ports

In Operation 'Brassard', it was considered essential to preserve the element of surprise. Pre-assault air operations were therefore confined to the minimum scale thought to be effective. Occasional raids on the ports have been mentioned. It was not until the day before the landing that attacks were intensified. Their targets, (not the critical beach defences), were at Marina di Campo, Porto Ferraio and Porto Longone. In three missions, thirty-six Thunderbolt sorties were flown over the three targets. 500 lb. bombs were mostly used. At Porto Ferraio, a merchant vessel, harbour installations, waggons and a petrol dump were hit and other damage done to locomotives, rail bridge and approaches. At Marina di Campo, four direct hits were scored on dock installations, starting large fires. At Porto Longone, fires were started in the docks and seven small boats were destroyed.

M.A.A.F., O.R.B.
Central Med: Operational Summary
Nos: 176 and 177.

Monthly Stats.
Summary of R.A.F.
Scale of Effort
M.A.A.F., O.R.B.
June 1944

Marina di Campo, the actual main shock point for the assault, it will be noticed, received only eight 500 lb. bombs. That night, the attacks on the two ports were continued by Wellingtons, Halifaxes and Liberators of the R.A.F. Strategic Bomber Force. A force of thirteen Wellingtons and six Liberators hit the jetty, dock installations and buildings round the Steel Works Bay and left a large ship burning at Porto Ferraio. A force of thirteen Wellingtons dropped five 4000 lb. bombs and many 500 lb. bombs on Porto Longone. Two of the heavy bombs scored hits near a fort and the harbour and jetty were well covered. The results of the day and night bombing were calculated to hinder evacuation, disrupt communications and render movement of forces more difficult during the following days. On the other hand it heightened tension and alertness.

Convoy Cover

Report by Gen. De
Latre de Tassigny
on the capture of
Elba. (Cabinet
Archives)

The assault forces left the ports of Bastia and Porto Vecchio in Corsica during the forenoon of 16 June. There were no incidents until they were off the coast of Elba and enemy aircraft were neither observed nor operating in the area. The German air reconnaissance forces were, it will be remembered, low in strength and fully committed elsewhere. Six French Spitfires and four Airacobras of Coastal Command were included in the convoy air escort. (1) A fairly thick mist covered the island, an additional factor in the favour of surprise. Four Beaufighters of No. 417 Squadron took over the duties of night harbour protection.

(1) Confirmation of the composition of air cover cannot be established at the time of writing owing to the inaccessibility of the French and U.S. operations record books.

The Assault

The Landings

Ibid and Naval
Commander's
preliminary
report to
C.-in-C. Med:
Med 00403/15,
4 July 1944.
(Admiralty
Historical
Section)

At 0100 hours on 17 June, shock troops and commandos were landed in rubber boats to silence batteries at Campo and Enfola. The operation at Campo was successful. They put out the guns as ordered. At Enfola four powerful coastal guns were sited on a miniature Gibraltar-like eminence. The shock troops achieved a notable feat of arms in putting out three of them, before capture or dispersal.

H Hour for the main force was 0400 hours on 17 June. At 0330 hours the first German alert was given. Tactical surprise was complete, but reaction rapid and violent. Owing to the small area involved, the whole island had to be regarded as one artillery complex, most of whose heavy guns could play at will on the point of impact. The assault went in at 0400 hours, followed by stores and, later, mules, but without artillery.

Hot enemy fire opened ten minutes before H Hour, was reduced by rocket projectiles, but soon rallied. The enemy defences impressed everyone. Those in Campo Bay were extremely formidable. Caves had been excavated in the granite cliffs flanking Campo beaches. In them were 88-millimetre guns and machine guns; behind the beaches, precisely ranged on likely points of disembarkation, were heavy mortars. It was impossible to land on Campo beach as intended, so the troops were diverted to Nercio beach, across the bay. By 0900 hours, four battalions were ashore. They outflanked the main beach, where landing later became possible. No artillery was yet ashore, so air attacks on the remaining gun at Enfola and the formidable defences round Campo beach were called for. The troops moved eastwards from Nercio.

Air Support - 17 June

Ibid and
Int/Opsum
M.A.T.A.F.
No.433/
M.A.T.A.F.,
O.R.B. App.

An Air Support Party landed early in the operation. No one participating in the operations had had any practice in ground/air co-operation with the actual forces engaged and the initiative for requesting support was left to the ground forces. The calls from the Army for air attacks on enemy defences resulted in 136 sorties by the Thunderbolts of No.57 Fighter Group and Escadre 4 of the French Air Force against guns at Enfola, Capocchia and the Reciso area. The dangerous heavy gun (one of the four) remaining at Enfola and others at Capocchia were silenced, the threat to the landings being thus appreciably reduced. The same Thunderbolts destroyed bridges in the interior and cut a jetty at Rio Marina, also destroying a barge and two gun positions. Thunderbolts of No.57 and 79 Fighter Group joined in the attack on the Enfola guns and, sighting active surface craft off the island, reported sinking a launch and 36 small boats (1) and claimed to have damaged another thirty-two. Five barges and three armoured cars were also claimed as destroyed. Although our lighter aircraft succeeded in maintaining the impetus of their attacks, the efforts of No.57 Bombardment Wing to assist with 42 Mitchells against the Enfola gun positions were abortive owing to the bad weather.

(1) Actual sinkings according to ex-enemy sources, were 3 fishing vessels, 2 tugs and 2 ferry boats.

R.A.F. Spitfire Patrols during the Assault

Nos. 322 and 251
Wings O.R.B's.

In 115 Spitfire sorties, No. 322 Wing carried out eleven patrols without incident or loss. No. 251 Wing had a more eventful day, which lasted continuously from 0800 hours until last light and comprised eight missions totalling to 93 sorties. At the Army's request, formations were twice instructed to machine gun ground targets, with the result that an armoured car and three motor vehicles were destroyed. This participation, though slight when compared with the Thunderbolt effort, undoubtedly helped to turn the scales in a very difficult ground position. The Germans had well-sited strong points everywhere and numerous batteries, both fixed and mobile; this made the going on the ground very tough. The air plan was ad hoc and fluid and followed the calls of the ground forces, who still lacked supporting artillery; this was unloaded during that night and by 0600 hours on 18 June was all ashore.

The Phase of Consolidation

18-19 June 1944

Ground and Air Operations 18 June(1)

18 June saw the capture of Marino beaches and the battle for the interior. The day's air activity began at 0505 hours when the first Spitfire patrols were airborne. Wind and mist made flying difficult until 1100 hours, when the weather improved somewhat, remaining variable throughout the day. The attack on Porto Ferraio, aided by naval artillery, opened at 1100 hours. At 1400 hours aircraft reported its capture, as well as that of the Enfola gun already silenced by four Thunderbolt attacks. Tabors(2) were by then very close to Porto Longone.

No. 322 Spitfire Wing continued its patrols, still without incident. The flak from Piombino, across the narrow channel, on the mainland, was beginning to reach our aircraft. Calls were again made on No. 251 Wing to machine gun ground targets and small shipping. As a result, one F-boat was left sinking and two M/T were destroyed.

The Thunderbolt offensive effort was heavy and more significant; it comprised army support against gun positions and attacks on shipping at Rio Marina and Spiaggia di Mola. Prisoners-of-war repeatedly confirmed that evacuation was under way. The main German movement, northwards and eastwards, was reconnoitred by aircraft who reported the positions of batteries and machine gunned roads over the whole eastern sector. Violent artillery fire from Puccio, two kilometres from Porto Ferraio, held up the northward advance. Allied and naval artillery were now in constant action and the use of mules solved the thorny question of transport in the precipitous interior. The total Thunderbolt effort that day by 12 aircraft totalled 15 missions in all. 5.4 tons of bombs were

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- (1) Int-Opsum M.A.T.A.F.
(2) A unit of Colonial troops roughly equivalent to a battalion (French).

dropped on gun positions at Enfola, near Monte Puccio and in the general line of the army's fanning-out movements. It was difficult owing to mist, to observe results, but it was evident by explosions and the diminishing resistance that some attacks at any rate were effective.

The offensive against evacuation craft was carried out by some twenty Thunderbolts, who flew 15 missions. The pier at Porto Longone, vessels there, at Piombino on the mainland, at Spiaggia di Mola, the jetty at Rio Marina and a variety of fishing and other small craft hastening towards the mainland were hit. At least four craft were sunk. The island command H.Q. had been compelled, whether by air or artillery attack is at present unknown, to move from Villa Napoleone to the area east of Porto Ferraio.

The total effect of the day's air effort had been to materially assist the ground advance by bombing guns in the Isthmus of Puccio barring the road to the two east coast ports of Rio Marina and Porto Longone, and in the Pina, Puccio, Fortino and Enfola areas. When this was added to the effect of naval and ground artillery, the crust of the bitter local resistance had been cracked by nightfall, not without severe casualties. The air forces had also nipped in the bud the evacuation, as was proved by the count of prisoners the next day. General de Lattre, commenting on his casualties, pointed out that had the parachute operation been carried out, it would have saved them precious time at a critical moment. Escort for the convoy sailing during that day from Bastia was provided by twelve Airacobras from Nos. 346 and 347 Squadrons.

By nightfall Senegalese had taken Monte Costello and Reciso. Tabors of Goums advanced towards Falazzo and Margidore.

Final Operations, 19 June 1944

Combined Air and Ground Operations(1)

In spite of the increasing thickness of cloud over Elba, the two R.A.F. Spitfire wings maintained their patrols on 19 June from 0505 hours until 2025 hours. No.322 Wing reported no incidents until late evening, when the first enemy aircraft seen in the vicinity of Elba since before the landings in the Piombino area, two Me.109s, were met and destroyed without loss. Many of the 48 sorties of No.251 Wing were diverted to reconnaissance of shipping moving north towards Leghorn, owing to the rapid approach of Fifth Army. The Forward Fighter Control called for tactical reconnaissance of the northeastern corner of Elba; a Spitfire provided it.

Resistance was now confined to the northeastern corner. Twenty-four Thunderbolts scored many hits on guns, rendering the final ground operations so much the simpler. By 1200 hours, organized resistance on Elba had ceased. A surprise for the Allies was, however, still in store, for the same night a German Commando force landed at Punta di Cavo and rescued their commander - General Gall - , retiring after suffering severe casualties.(2)

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- (1) Nos.251 and 322 Wings O.R.B's.
(2) Gen. de Lattre's Report. (Cabinet Historical Archives).

Results

Strategic and Tactical Results

Gen. De Lattre's
Report.

(Cabinet Office)

Adml. Troubridge's
preliminary Report
to C.-in-C., Med.
(Admiralty Historical
Section)

A force of 9,800 troops (including 3,600 Moslems), small air forces and an appreciable light naval force (including two French destroyers) had captured the islands of Elba and Pianosa. (1) The ration strength of the garrison was proved to be 2600, of which 700 were Italians. That a greater number than this actually took part in the severe fighting is proved by the fact that 2,400 prisoners-of-war and 700 enemy dead were counted. Allied casualties (2) included 242 killed. No Allied aircraft were lost.

The strategic importance of the capture of Elba diminished rapidly from the final day of operations. By 21 June, when the bad weather had cleared, the renewed Allied advance had made the impending capture of Piombino and control of the channel a certainty. Nevertheless, although the postponement of the operation to 17 June robbed the expedition of the full fruits of the careful planning and ardent fighting devoted to it, there were certain definite advantages. Enemy supplies on the sea route were thereby intercepted and a new threat brought to bear for a short time on the German right flank, which, a few days later was deflected in the coastal region north of Piombino. (3) General De Lattre had not much to say regarding air participation beyond the statement that the help brought by it was 'precious', but that it should have been powerful in the early stages and that the airborne operation would have improved the position of the ground forces, while they were suffering from the lack of heavy artillery. There seems to be no consolidated report or comments by the Air Forces on the operation. Admiral Troubridge, in his preliminary report to the Commander-in-Chief Mediterranean, said that the actual ground/air co-operation was 'not so hot' but pointed out that the units concerned had had no previous practice together.

From the political angle, which in this operation was important, the fillip to French and, by implication, to Allied morale generally was undoubtedly considerable. Allied Armies Italy, intent on the consummation of their efforts on the mainland, were consistently opposed to the project for purely military reasons. On the level of Allied Forces Headquarters the political advantages were more clearly appreciated as well as those of the definite, even if small, military gain.

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- (1) Pianosa was captured, without any organised resistance being met, by 1,400 hours 17 June 1944.
 - (2) Allied casualties were:- British R.N. - 35 killed and 100 wounded: French Ground Forces - 207 killed, 51 missing and 636 wounded.
 - (3) On 19 June Fifth Army was operating a few miles north of Grosseto, no less than over 40 miles south-east of Piombino.

Lessons Learned from Operation 'Brassard'

Amphibious Assault

Med:00403/15
(RN), 4 July.
(Admiralty
Historical
Section).

In the opinion of the Naval Commander, a frontal assault (such as 'Brassard') on a well-prepared position, unless supported by heavy gunfire (as in Normandy) was not a practical proposition. It was fortunate that the mules were landed to tow mortars and mountain batteries, which when used on the flanks, rendered it possible to occupy, at a late hour, the beaches. The French Commander of the Ground Forces emphasised how valuable and correct had been the interpretation of the air photographs taken just in time and how essential it was in such operations that the poor intelligence on the number and quality of the defence personnel should be improved on.

Air bombing and naval artillery support in such operations should be as powerful as possible during the crisis of establishment and enlargement, so as to compensate for the lack of organised artillery not landed in the early phase. In such a predicament as arose in the first two days, a parachute drop behind the enemy line would have enabled the gaining of precious time in the advance, he said.

Commentary on Operation 'Brassard'

From the air point of view, the history of Operation 'Brassard' is one of a great opportunity missed: an opportunity, to be precise, of co-operating with land and sea forces to such effect as to have provided a small classic among operations. 'Brassard' was a small-scale operation, but is worthy of close study because it threw up the varied nature of the military-cum-political problems peculiar to the period, in higher relief than more spectacular proceedings on the mainland of Italy. Comparing the results with the effort, the air contribution, which at one time looked like being considerable, show up as fluctuating in its intention and patchy in execution. When considering what was done, it is difficult not to reflect on what might have been done.

The unsatisfactory state of both air plans and air execution arose from common sources. These were, firstly, the state of chronic indecision ruling in circles responsible for Allied grand strategy. At the time of 'Brassard', the Combined Chiefs of Staff were unable to decide what operations in the Mediterranean theatre should follow the 'Diadem' offensive. This indecision was adversely affecting morale in Italy. It showed least of all in the deliberations of the French High Command, which was quite sure where it was going. Its logical character showed up in the control of the operation and the just reserve with which the French Commander treated the misleading reports of ground intelligence, (insisting on a full-scale landing force), as well as in the vigour with which the thrust was pressed home during the fighting. Yet, attracted by the idea of preserving tactical surprise, the French Commander agreed with the operational air and naval commanders in turning down the idea of intensive air bombardment on D minus 1 Day, a decision he no doubt regretted from the moment the defences opened heavy fire while the assault craft were disembarking troops.

OPERATION BRASSARD

THE ASSAULT ON THE ISLAND OF ELBA

AIR ATTACKS AND GROUND ADVANCE

LEGEND

- 1 BEACH OF MARINA DI CAMPO
 - 2 PUNTA DI CAMPO
 - 3 ENFOLA
 - 4 PORTO LONGONE AREA
 - 5 SAN MARTINO
 - 6 RECISO HILL
 - 7 PUCCIO AND CAPOCCHIA
 - 8 PUNTA DEI RIPALTI
 - 9 RIO MARINA
 - 10 PORTO FERRAIO AREA
 - 11 MONTE BACILE
- ZONES OF AIR BOMBING IN ORDER OF URGENCY (FRENCH PLAN)
- ALLIED GROUND MOVEMENTS
 - ENEMY GROUND MOVEMENTS
 - GERMAN ARTILLERY TARGETS
 - ALLIED AIR ATTACKS
 - FLAK DEFENCES

COMMANDO AND BATAILLON DE CHOC
RAIDS ON BATTERIES 17 JUNE 1944

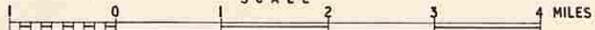
GERMAN COMMANDO LANDING
TO RESCUE GENERAL GALL
NIGHT 19/20 JUNE 1944

MAIN ASSAULTS
17 JUNE 1944

COMMANDO AND BATAILLON DE CHOC
RAIDS ON BATTERIES 17 JUNE 1944

TO PIOMBINO

SCALE



As regards this question of heavy bombardment, it must be made clear that as late as 13 June the Air Commander-in-Chief and his Deputy and the Commanding General of the Tactical Air Force, as well as the Supreme Commander, were all willing to stage intensive operations, believing these would soften resistance as well as encourage the French, who had fought admirably in Italy and Corsica and were keyed up for a landing in the south of their mother country: one of the main factors governing this favourable attitude was the likelihood that the Fifth Army would still be no further north than the Grosseto area and that the capture of Elba would still hold appreciable strategic value in spite of the doubts of Allied Armies Italy. There might be difficulties in the way of diverting heavy bombers from other tasks, but these might be overcome. In the event, weather was favourable on D minus 1 Day and over 650 heavy U.S. bombers attacked oil refineries at Vienna and Bratislava. That these raids on oil targets bore good results is evident from the personal letter from Speer to Hitler dated 30 June, where he stated that by 22 June the output of aviation spirit for minimum essential operations, had fallen by 90 per cent in the past few weeks; yet in view of the fact that adequate repairs were not effected before the Russian overrunning of the Rumanian oilfields, can it be said that the diversion of a few hundred heavy bombers to Elba on 16 June would have adversely affected the course of the war? In view of the proved formidable nature of the defences, there was, at any rate, a case for heavy attacks on them prior to the landings.⁽¹⁾

A.O.(46)1 C.O.S.
Committee on
Axis Oil Report/
p.57,
8 March 1946.
(A.H.B./IA/21).

Another ill-timed change in plans which caused a good deal of chagrin was the cancellation of the airborne operation at a point when the French were buoyed up with the arrangements made for transfer of aircraft for the task, and paratroops had been already trained and equipped. Nothing was gained by its cancellation. On the contrary, the French Commander missed the assistance it might have given.

There were too, certain linguistic and psychological national differences to be overcome, differences in logistical systems, in the conception of what constituted security: French land and air communications were never easy owing to the linguistic problems, in spite of long and friendly liaison work by British, French and American staffs. Some British and Americans found the French exasperating to deal with: a little more patience and a clearer understanding of the reasonable need of the French to rehabilitate themselves, to see their country liberated and to acquire adequate equipment to accomplish this task should have been forthcoming. Whatever gaps existed on the psychological plane, there was no lack of justified admiration for the martial ardour and tactical skill in battle of the French air, land and sea forces.

(1) A case, admittedly, open to question. In Operation 'Overlord', heavy bomber attacks on land defence batteries fell short of expectations, but in Operation 'Dragoon' met with reasonable success. Perhaps the most successful method was that employed at Enfola, on the north coast of Elba - the putting of them out of action by hand by commandos.

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AIR OPERATIONS FROM THE CLOSE OF 'DIADEM' TO THE
OCCUPATION OF FLORENCE

Army Operations 23 June to 4 August 1944

Storming of the Trasimene Line(1)

The battle for the Trasimene Line, on which Kesselring, with reinforced armies, elected to stand, lasted from 20 to 30 June. After severe fighting, Follonica and Piombino fell. On 27 June, the Germans began to withdraw; Siena was captured on 3 July. By 7 July, the whole of Highway 69 was in our hands. In the hill country either side of Lake Trasimene the Germans imposed severe delays on Fifth Army, the Herman Goering Division - ex-Luftwaffe men - defending Chiusi with great spirit until the fall of adjacent Varano forced them to evacuate it on 25 June. The general retirement was followed up by both armies; the Poles crossed the Chienti River.

New Plans of Campaign

The decision to give overriding priority for all resources in the Mediterranean to Operation 'Anvil' compelled the Allied Command in the Mediterranean to shelve its plans. These plans were to invade Southern Germany by an overland advance through Northeastern Italy and the Ljubljana Gap, combined with amphibious operations against Trieste at a later date.(2)

On 2 July, the decision to proceed with Operation 'Anvil' was communicated by the Combined Chiefs of Staff to Allied Force Headquarters.(3) A new directive was issued by the latter body to General Alexander on 5 July. Allied Armies in Italy lost three U.S. and four French divisions and were to acquire one U.S. (coloured) and one Brazilian infantry divisions. Considerable air forces were to move first to Corsica, thence to France. The moral weakening reported by General Alexander was arrested. His quotation - 'If the trumpet give an uncertain sound, who shall prepare himself for battle?' had been both apt and timely. The Mediterranean forces turned with lowered strength, but sober assurance, to the future with what were now precisely weighed forces on whom they might reasonably count. It was considered that an advance into Northeastern Italy would still be possible, though at a reduced tempo: but any Allied offensive in Italy with their strength as it stood after withdrawals for 'Anvil' would of necessity be followed by a considerable pause for re-grouping. This would allow the enemy to reduce his forces for the benefit of other fronts and might defeat the whole object of the Italian campaign. These and other considerations were accepted at the time by the Allied strategists, who were persuaded by General Eisenhower that the capture of Marseilles and the potential aid to his right flank in France were paramount objectives.

CGS Apprecia-
tion No.4,
61/g(Ops),
2 July 1944.
(A.H.B./IIJ11/
58/9 App. D-5).

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- (1) Allied Strategy Brit. Hist. Section Cent. Med.
(A.H.B./IIJ11/58/9).
 - (2) CGS Appreciation No.3, 19 June & Minutes of Conference of
Army Cndrs./6/G (Ops), 23 June 1944. (A.H.B./IIJ11/58/9,
Apps. D.3 and B.3).
 - (3) OOS MED 139, 2 July 1944. (Cabinet Historical Archives).

The new directive, (which requested the Air Commander-in-Chief to afford maximum air support consistent with 'Anvil's priority), defined the Army Group Commander's task as being still the destruction of the German forces in Italy. He was to advance through the Apennines, seize the line of the River Po and secure the area Ravenna-Bologna-Modena to the coast covering Leghorn. Thereafter, he was to advance north of the Po and secure the line Venice-Padua-Verona-Brescia.

Advance towards the Arno

Allied Strategy
Brit. Hist. Section
Central Med.
(A.H.B./IIJ11/59/9)

History of the
Fifth Army
Fifth Army A-5.

To meet the terms of this directive it was first necessary to make contact, without delay, with the Gothic Line. The progress past the Trasimene Line was halted about 5 July by Kesselring, who called for stiffened resistance all along the new line, which ran from Rosignano on the west coast, ten kilometres north of Cecina, to Volterra,⁽¹⁾ thence across the Val di Chiana to the heights surrounding Arezzo; on the east coast, Pilottrano and Osimo were key points.

In the limited IV Corps sector, the 16th S.S. Division fought with the same ferocity for Rosignano as it had for Cecina, which took from 4. to 9 July to capture. The drive continued toward Leghorn, which fell on 19 July: here almost all the port facilities were destroyed, (partly by preceding Allied air raids) and the harbour partially blocked by sunken ships (for which it was known our aircraft were partly responsible). On 22 July, the first formations reached the Arno north of Leghorn. The French captured Colle di Val d'Elsa and were within 25 miles of the Arno, when orders were received that all their remaining troops were to be in the Naples area by 30 July. Before they left, they took San Gemignano and Poggibonsi. These French divisions, among the best mountain troops the Fifth Army ever had, had always shown dash and daring in manoeuvres, as exemplified above all in their outstanding drive through the Gustav Line.

The Eighth Army made progress, engaging in bloody hand-to-hand fighting for Sanpatucchio. They took, lost and retook Chiusi by 26 June and advanced in the centre as far as the northern tip of Lake Montepulciano. The Fifth Army had been reduced to less than half its strength. The Eighth Army was therefore to be the spearhead of the attack on the Gothic Line, the next strongly prepared German position.

Arezzo and Florence the new primary Objectives (2)

The axis chosen for the attack was along the Florence - Bologna highway and the parallel road running through Firenzuola to Imola, a choice that offered the best scope for attack to the Desert Air Force, which must supply all air support of the Fifth and Eighth Armies once the landings in Southern France had begun; it could do this most effectively if the two armies were attacking (as they were) in closely adjoining sectors. The capture of Arezzo, with its good

-
- (1) Famous for its Etruscan tombs with their well-preserved mural paintings.
(2) Allied Strategy, Brit. Hist. Section, Central Med.
(A.H.B./IIJ11/58/9).

SECRET

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communications, which was to be the administrative base for the attack on the Gothic Line, and of Florence, from which it was to be launched, now became a paramount necessity.

The Eighth Army advanced to Forano di Chiena and Cortona. The German intention was now not to become heavily involved in ground unsuited to defence, but to fall back until a new delaying action became feasible. They were not allowed to do this; on 5 July the Siena-Arezzo road was crossed. XIII Corps drove through the hills into the Arno Valley and took positions dominating the country west of San Pancrazio. From 20 June to 7 July, the X Corps advance was continued north of Perugia. After a check from 20 to 27 June, the German withdrawal allowed general progress and Umbertide fell to the Indians on 5 July.

Air Attacks on Guns at Arezzo

The first attempt to break through the Arezzo defences lasted from 6 to 9 July and was unsuccessful. On 9 July, an attack on the German gun positions was organized. On 10 July, the air forces joined with the artillery, their primary task being the bombing of hostile batteries while Cabranks engaged opportunity targets. Low clouds and sodden airfields delayed the execution of the attacks planned for the morning, but, in more favourable afternoon weather, 66 sorties were flown and, for the next four days, an average of over 100 sorties. Many batteries were kept on the move and the effects, combined with the results of artillery shelling, were considerable.⁽¹⁾ These preliminary attacks were followed on the day of the big attack - 15 July - by intensified air and artillery operations, which silenced most of the remaining guns and obliterated evidence of the results of previous air attacks.⁽²⁾

X Corps advanced south-east of Arezzo from 12-14 July. Monte Santa Maria and Monte Favalto were stormed between 8 and 13 July. On 15 July, XIII Corps attacked. Fighter-bombers joined in the battle from dawn onward, in considerable force.⁽³⁾ During the night of 15/16 July, the enemy, after stubborn resistance, broke contact everywhere. On 16 July, an armoured brigade drove through to the Arno crossings. At 0945 hours, Eighth Army broke into Arezzo. The administrative base for the attack on the Gothic Line was secured.

The advance on Bibbiena took from 10 July to 10 August. On 17 July, IV Corps reached the Arno east of Pisa. On 18 July, the Poles captured Ancona. On 19 July, the Americans took Leghorn and struck north-west from Arezzo towards Florence. On 27 July, the New Zealanders captured San Casciano. On 28 July, XIII Corps was in contact with the last line of defence before Florence - the Paula Line - and the Indian troops had reached the Arno east of Empoli. X Corps, after violent fighting in the mountains, proceeded to move on towards Bibbiena, needed as a Canadian base.

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- (1) The Army admission of the impossibility of separating the effects of air and artillery attacks is to be noted.
 - (2) RA Branch XIII Corps War Diary. (A.H.B./ILJ11/58/12(A)).
 - (3) Details follow later.

After three weeks hard fighting, Florence was entered by XIII Corps. They had to break through the Olga and Irmgard Lines, capture Monte San Michele and many strongly held positions. An advance was made in the valley from 20-25 July; the Olga Line was evacuated by the Germans during the night 26/27 July. The Paula Line was not breached until 3 August. It was hoped to cross the Arno without having recourse to the bridges in the centre of Florence, so that the city would not become a battleground. The Germans had promised to treat it as an open city. It was possible, therefore, that they would leave the bridges intact.

Advance to the Arno at Florence

Ibid

On 3 August, German resistance at the dominating ground on Monte Lepri collapsed and the front moved forward. That night the German forces south of Florence retired across the lower Arno. The Imperial Light Horse crossed the Ema at Galluzzo and patrols entered the southern outskirts of Florence, reaching the Arno at dawn on 4 August and finding that all the Florentine bridges, except the Ponte Vecchio, (1) had been destroyed, and its approaches blocked. For a short period, the front was static.

Air Operations 23 June to 4 August

No. 2/5 A.A.S.C.
War Diary.

Ground Support up to 5 July - the Breaching of the Trasimene Line

In the Fifth Army sector, after four days bad weather which rendered all air support airfields unserviceable on 25 June, army support operations improved. Beginning with all day and successful attacks on a train of 200 trucks, on tanks, ammunition, guns and aviation spirit dumps on the Rimini - Forli railway line, the effort rose daily until the end of the month. On 29 June, 33 trucks and four locomotives were claimed as destroyed and many others damaged on the same Rimini - Forli line. (2) Tactical reconnaissance flashed back two targets the next day and 29 M/T were, as a result, claimed as destroyed. Advantage was thus taken of a still active enemy movement, which soon crystallised into the brief but vital defence on the Trasimene Line.

Our troops were often unable to make contact with enemy rearguards until late afternoon, owing to the extensive demolitions. When, however, they did make contact early in the day they usually exerted sufficient pressure to compel withdrawal before dark. It was at these periods that targets showed themselves. To profit by such occasions and hit the enemy as often as possible in the few hours of flying left before dark, a scheme - known as Operation 'Dixie' (3) - was put into practice.

-
- (1) The Old Bridge.
 - (2) As a result of 266 fighter-bomber sorties.
 - (3) (a) A corps would call for 'Dixie' at say 1900 - 2030 hrs.
(b) Tac/R aircraft, one or more, cover the area for the entire period aircraft in cabrank are also airborne -- 6 at a time.
(c) The Tac/R aircraft found the targets, reported them to Rover 'David' (on VHF) who referred them to the leading brigade. Responsibility for fighter-bomber attacks was Rover 'David's'. If ground troops found suitable targets, Tac/R aircraft confirmed their suitability for attack by fighter-bombers.

D.A.F., O.R.B./
Ops.
No. 2/5 A.A.S.C.
War Diary
No. 1 M.O.R.U.,
O.R.B.

In the Eighth Army sector, in the last week of June, Desert Air Force set up its new Advanced H.Q. near Orvieto. There was less M/T observable on the move than in the Fifth Army sector, but whenever seen by day it was attacked. Only on 30 June was the destruction at all appreciable - 22 M/T being claimed as destroyed and 17 damaged.

Weather was the main obstacle in this sector, too. Thunderstorms on the night 24/25th prevented Baltimores operating. Cloud and heavy rain reduced operations to a minimum for the next three days, putting all airfields out of action on the morning of 25 June. As was normal at that period a hot sun dried them rapidly so that, a few hours after, flying was possible. Mist and cloud covered many targets, so that precision bombing was out of the question; many missions returned with their bombs, and visual and photographic observation were often impossible.

From 1 to 5 July, the squadrons under control of Desert Air Force continued their close support of both armies. Weather was fair for three days, but a sustained maximum effort still impracticable. The main fighter-bomber effort was against rolling-stock on the Rimini - Forli Line, where great activity by some 400 trucks was reported. These trucks, M/T (now more in evidence) and gun positions were the main targets before the weather closed down again. Small successes against the trucks and motor transport were evident. Armed reconnaissance, which was sometimes the only flying possible, accounted for many guns and mortars in the path of the armies. Preparation for an attack on Ancona was carried out by a force which cut the Ravenna - Rimini - Ancona line in five places. The main tasks continued to be the attacks on railway sidings and ports, the cutting of railway lines and whatever transport used the roads by day.

Ground Support from the Breaching of the Trasimene Line to the Fall of Arezzo

Ibid

This period of variable, but on the whole, favourable flying weather saw some successful close support operations and the growth of the 'Dixie' fighter-bomber technique. As the ground hardened and the cloud lifted, the daily effort was forced up from 150 fighter-bomber sorties on 6 July to 360 on 13 July, and 402 fighter-bomber and 102 daylight bomber sorties (all by Desert Air Force) on 15 July.

Operations followed closely the periods of stalemate, tension, attack and temporary stabilisation in the moves of the Army given above, which have been deliberately narrated in phases so as to render this record of close support intelligible. On 10 July, XIII Corps called for air preparations for its advance south-east of Arezzo. An anti-gun programme, already prepared, was put into action. Daily the fighter-bombers attacked gun and mortar positions, some on request by Corps. On 11 July, twelve such targets were bombed. On 12 July, 96 sorties were flown against guns and 80 on 13 July. Shelling reports fell in this period from 120 to 5 per day. It is true that our own artillery shelling played its part in this satisfactory result, but it is clear that the Army was enthusiastic over the air contribution, indicating the gun targets to the fighter-bombers by coloured artillery smoke. Reports qualified many of the air attacks as 'outstandingly successful.'

On 15 July, XIII Corps opened a full-scale attack on Arezzo. Two hundred fighter-bomber sorties were flown on their front against guns, and some very close targets were attacked for New Zealand Corps against half-tracks and infantry only 800 yards from our own infantry. One 'Dixie' operation, in which tactical reconnaissance aircraft played a key role, was very effective against artillery, grouped, as was often the case, close up to a house for protection. The battle continued through the night, while the Germans broke and our armour poured into the Arezzo plain. Fourteen 'Dixie' missions of six aircraft each were flown in support of the final attack. A summary of their day's activities will present a fair sample of close support targets at that time. They included two groups of M/T, a house suspected of being a H.Q., a small concentration of tanks, self-propelled guns and half-tracks and ten camouflaged guns. All were identified and results of air attack reported by the Corps as good. After Arezzo had fallen on 16 July, the close support effort was switched to the Polish Corps' attack on the port of Ancona.

Ground Support for the Attack on Ancona

Ibid

Ancona had so far resisted all attempts at capture. Light bombers - the Baltimores and Marauders - had attacked the town, communications, harbour and shipping for weeks past. On several occasions small formations of Me.109's had been fought by the Spitfire escort. Pilots had reported heavy demolitions, including the blowing-up of the harbour. It had been thought the Germans intended to block the harbour entrance with the royal yacht Savoia; several air attacks had been made on it and it had been hit, but not sunk. On 3 July, the harbour entrance was still open. Concentrated air support for the Polish assault began pre-D Day on 15 July with attacks by 72 Baltimores and Marauders on gun positions. The weight of effort rose on 16 July to 76 light bombers, who specialised in attacks on gun positions. On 17 July, the main effort switched from Arezzo to Ancona and 200 fighter-bombers joined 90 light bombers, most of the fighter-bombers concentrating on guns. Bad weather prevented participation on any appreciable scale on 19 July, but the ground had been well prepared and, thanks in part to the air effort, the Poles entered Ancona on 19 July, thus adding a highly valued base to Allied gains.

Luftwaffe Operations

Re-appearance of the Junkers 87 as a Night Bomber

After the issue of fresh orders to the General Officer Commanding the Luftwaffe in Central Italy on 23 June, short-lived intensification of night ground attacks(1) against Allied targets near the front was reported. The obsolescent Italian Ca.313s and CR.42s were being steadily superseded by

Order regarding
conduct of Operations
by Luftflotte 2,
23 June 1944.
A.H.B.6 Trans:
VII/82.
G.219217/1F/11/48.

(1) The forces responsible were 1/ and 2/ Night Ground Attack Gruppe 9 and 2/ Night Ground Attack Gruppe 2 from the Forli-Ravenna area. H.Q. were near Turin/Caselle which was also the reserve base. Casablanca was to become one if reinforcements arrived.

Von Pohl
series of
Interrogation
Reports
C. S. D. 1. C. Air
CMF Nos. A 595.
(A. H. B. 6.)

the robust Stuka - the old Ju.87 - refitted, and supported by A. A. batteries and searchlight nuclei. The creation of this night harassing attack force was, although an emergency measure not without a certain nuisance value when weather permitted, and acted favourably on the German morale at a time when all hope of audible and visible air support was nearing zero point.

D. A. F. Adv. HQ.
(Ops) O. R. B.

The effort became noticeable as from the night of 6/7 July, when some forty Ju.87s operated, chiefly against Polish Corps in the Loreto area. Beaufighters on patrol made no contacts that night, but found their measure the next night, when they destroyed four of a force of some 25 aircraft. Thereafter, until the fall of Florence, reports of operations by small forces of Ju.87s came in fairly frequently and occasionally Beaufighters destroyed a Stuka. Enemy air losses were serious, (1) but replacements were found from the Balkans. From the end of June onwards, enemy fighters showed spasmodic signs of obedience to their new directive and were met in areas to which particular importance was attached from time to time. 27 June was such an occasion, when a growing interest in our missions in the Ancona - Rimini - Florence areas was reported. 29 June saw the appearance of the unusual number of 25-30 mixed Me. 109s and F.W. 190s in the Ancona area. Six Spitfires escorting a force of light bombers had a running fight with these German fighters without forcing a decision; one Baltimore had to force-land at Tortoretto landing ground. There was little enemy air effort over the front line from then on to the entry into Florence worth recording. The small fighter force was fully committed to the interception of bomber formations in the North and it may be truthfully said that all through the fighting from the opening of the offensive on 11 May up to the entry into Florence, the Luftwaffe was only able to put up a token effort over the battlefield.

General Luftwaffe Problems bearing on Italy

Ibid

The day before his death from injuries from the bomb intended for Hitler, General Korten said that the forces in Italy under Von Richthofen had been reduced to the minimum and that their main duty was to reconnoitre the movements of Allied Forces in the Mediterranean. This was borne out in fact. Air reconnaissance in the Western Mediterranean was increased in the last week in July and other moves and preparations in the South of France, of which the Allies were informed, reflected the German apprehensions of an imminent major landing.

The attempt on Hitler's life on 20 July had no effect on the German command in Italy. Kesselring had little interest in politics; (2) there is no evidence that he or his staff were in any way connected with the plot. Beyond a temporary tightening of the procedure for obtaining aircraft, and the natural excitement, there were no repercussions within the Luftwaffe in Italy.

(1) For example, from 26 to 31 July one quarter of the available crews and aircraft were lost to Allied action, and only patrols of roads were possible for some days after.

(2) He once told the Italian General Banza that he disliked Nazis and had refused the job of C.G.S. because he did not want to be mixed up in Nazi politics: he had had continuous quarrels with Rommel and was disliked by some of the senior Army Officers, who said that he did not know his job.

The pressure of operations on the Western Front was slowly and steadily affecting adversely the over-all situation of the Luftwaffe. Bomber crews and aircraft were being transferred there and to critical sectors of the Russian front. Decreasing fighting powers of parachute troops and crews were more and more frequently reported. There were increasing cases of local fuel shortages, especially for motor transport. The drift of fuel was to France and the Russian front.

Attacks against Allied Convoys

Ibid

There were two attacks against Allied convoys in July, which were taken to suggest that an amphibious operation against the South of France would have to contend with air opposition. Both were failures. On 12 July, twenty-six aircraft were airborne from South of France bases. Seven attacked a convoy: three were destroyed by Allied action. The failure in this case was attributed in part to the successful laying of a smoke screen. On the night 31 July/1 August, 40 Ju.88s were detailed for a convoy attack.(1) Only a few aircraft reached the convoy. No ships were damaged. In the Eastern Mediterranean there was a reminiscent tone in the report of an attack on a convoy by 10 Italian Savoia torpedo bombers, probably based in the Athens area.(2) It was clear from the abortive nature of the two attacks off the Algerian coast that the decline in quality of crews and of their navigation previously noted was still appreciable; this confirmed reports of similar attacks on our shipping in the West at the time. No doubt, too, the general preparation for a move northwards of the bomber bases along the Mediterranean made concentration difficult. The He.177 had proved a failure as an anti-shipping aircraft and production of the Do.217 had ceased.

Fliegerkorps II, which had failed in the initial stages of 'Overlord', was transferred on 31 July from its command in the South of France to Bulgaria, a move construed to reflect the continued German apprehension of Allied landings in the Balkans, which would become still more feasible if Turkey broke with Germany. No reinforcements of either bombers or fighters to the South of France were observed.

The Destruction of the Po River Bridges: Operations 'Mallory' and Mallory Major'

The Air/Ground Strategic Situation on 15 June

It will be recalled that on 14 June the Combined Chiefs of Staff had ordered the completion of the destruction of the German Armed Forces in Italy south of the Pisa - Rimini Line and that new directives had been issued to the Air Forces to conform with the general situation. As from 22 June, the responsibilities of Tactical Air Force for the disruption of rail communications included the River Po and the Genoa - Alessandria Line.

M. 22112/M. A. A. F.,
22 June 1944.
(A.H.B./ILJ11/1,
Vol. VI,
Tab. 'A').

- (1) They carried special long-running torpedoes.
- (2) On 20 August, fourteen S.M.79s were definitely based in Italy.

The Germans were seen to be preparing for a stand on the Gothic Line, from Pisa, or perhaps Spezia, to Rimini. A study of the communications network in the Po Valley was begun, to decide what air action could be planned to cut off the enemy supply. Owing to the great complexity of systems, the area could not be successfully interdicted on the route by route basis which had been employed in Central Italy and the Northern Apennines. Strategic Air Force, moreover, had decided that the most effective method of producing long term and continuous interdiction was the complete destruction of bridges or viaducts with long spans.

Estimate of the situation - rail communications in N. Italy
15th A.F./A - 2,
11 June 1944.
(A.H.B./IIJ11/11,
Vol.VII, Tab. 'CC')

The Po Valley and its Railway System

The Po, the principal river of Italy, wound through a broad plain for some 420 miles. Hemmed in by protective embankments and running in many places high above the level of the plain, it formed a major natural obstacle across the North of Italy. All routes leading from Italy (with the exception of those leading through Genoa to France) must cross it.

Report on Operation 'Mallory Major'
H.Q., M.A.T.A.F.,
15 Jan 1945
(A.H.B./IIJII/11)

The main lateral lines were the Milan - Verona - Venice line running east to west, and the Milan - Bologna - Rimini line running west - south east. The most important north - south routes were the Brenner line and the lines entering Italy from the east, connecting with the Milan - Venice lateral line and feeding south via Ferrara. In the west, the main port - Genoa - was connected by trunk lines with Milan and the Swiss passes to the north, and with Turin and the Mont Cenis and Riviera lines into France. The main lines were interconnected with numerous single - track railways. The most vulnerable points in the whole area system were, generally speaking, where they crossed the frontier and where they crossed the Po River.

The Po River Bridges

The bridges crossing the Po included the heaviest structures ever bombed in the Mediterranean theatre. Between Turin and the Adriatic, 22 bridges spanned the river, ranging in length from 1000 to 3700 feet, many of them well over 2,000 feet long. Eleven were permanent structures built of steel lattice girders, with masonry or concrete arches. None were of the suspension type. Six were combination road and rail bridges, and at three other sites road and rail crossings lay close enough together to offer a single target. In most instances they had unusually long spans and would consequently be more difficult to repair, with the light type of construction used by the Germans, than the more southerly bridges. It was believed that once a span of any of the permanent bridges was knocked out, the bridge would never be repaired again by the enemy during the war. (1) On the other hand, the excellent design and construction presented a strong challenge to bomber aircraft. The other half of the Po crossings were pontoon bridges lately constructed by the Germans to supplement existing road bridges. Short sections rested on simple concrete or wooden pontoon boats, each section being anchored to a concrete block in the river.

Ibid

(1) This proved to be the case.

The Plan for Operation 'Mallory'

TAF/3/2/AIR
Operational
Directive No. 14
H. Q. M. A. T. A. F.,
17 June 1944.

The fruits of study of the northern railway system were the plan of 17 June to disrupt the enemy's flow of supplies by the destruction of six railway bridges across the Po and one across the Trebbia River, supplemented by destruction of the Recco or Zoagli Viaducts. If these links could be destroyed, it was believed that all rail communications between the upper and lower Po Valley and to the east of a line Genoa - Piacenza would be completely severed.

Nos. 57 and 42 Wings were to destroy four bridges each. No. 87 Fighter Wing was to furnish escort for No. 57 Wing - with Thunderbolts if necessary -, diversions for missions of No. 42 Wing, and conduct strafing and/or dive bombing operations against enemy airfields in the general target area. This co-operation by No. 87 Wing would come into play as soon as its commitments in the Elba operation were terminated.

Cancellation of Operation 'Mallory'

C. G. S. 287
23 June 1944.

In view of the rapid withdrawal of the enemy throughout the last three weeks of June and the fair prospects of success, the Commander-in-Chief Allied Armies in Italy decided that the operation was not timely. With any luck, the armies might press through the Apennines into the Po Valley and would then welcome the opportunity of seizing any intact bridges if they could forestall the enemy before he had time to demolish them. In any case, German demolitions were easier to repair than our own air bomb damage, it was said. The Air Forces' view remained that if the crossings were not attacked, there was little or no hope of our breaking through the Apennines within a measurable period of time. These bridges were a major factor in the enemy supply, reinforcement and communications system and their destruction could not fail to prove a serious embarrassment to him. Allied Armies in Italy earmarked 2nd Parachute Brigade for an airborne seizure of one bridge.

Army Agreement with Air plan to destroy the Po Crossings⁽¹⁾

Ibid and
TAF/3/2/Air
Operational
Directive No. 15
H. Q., M. A. T. A. F.,
11 July 1944.

Operation Order
No. 2 A. A. I.,
14 July 1944.
Allied Strategy
Brit. Hist. Sect.
Centr. Med.
(A. H. B. IIJ11/58/9,
App. C-6).

On 14 July, it was circulated that the armies in Italy were to be so weakened by the withdrawal of forces for Operation 'Anvil' that although we might force a passage through the Apennines we had insufficient strength to exploit across the Po without a pause. The hope was thenceforward to bring the enemy to battle between the Apennines and the Po, driving him against the obstacle of a bridgeless river. This decision had already been communicated to the Air Forces who issued the directive on 11 July for Operation 'Mallory Major', aimed at the destruction of all the Po Valley bridges.

Air Plan for Operation 'Mallory Major'

Road and rail bridges over the Po from Piacenza eastwards to the sea (including the two over the Trebbia River at Piacenza) were assigned to the medium bombers. The 42nd Wing⁽²⁾ was assigned initially ten

- (1) Refer to Figure 4 for bridge locations.
(2) Marauders - based at Decimomannu and Villacidro, in Sardinia.

bridges extending from Piacenza to Guastalla; the 57th Wing⁽¹⁾ was assigned thirteen bridges extending from Borgoforte to Taglio,⁽²⁾ that is, the more easterly bridges. Rail and combined rail/road bridges were first priority targets, normal road bridges second and pontoon bridges third. These priorities might be varied at the will of Wing Commanders when weather or tactical reasons made it desirable. Initial attacks were to be sufficiently heavy to ensure a high probability of destruction. Fighter-bombers were to supplement the attacks, with the objects of preventing repair to damaged bridges and destroying reserves of pontoons in the vicinity of bridges, heavy craft difficult to replace. Other bridges in the Po Valley were also to be attacked in an extended programme.

Photographic reconnaissance had revealed the presence of about 100 enemy single-engined fighters in the northern bases;⁽³⁾ the most heavily defended zone was the Bologna - Ferrara area,⁽⁴⁾ where about 65 Me.109s were based.

Mallory Major: Operations

The Opening Phase. 12-15 July

Report on
Operation
Mallory Major
M.A.T.A.F.,
15 Jan. 1945.
(A.H.B./ILJ11/11).

In the first four days, virtually complete interdiction was obtained, the medium bombers concentrating on the nineteen bridges from Piacenza to the sea. In favourable weather, a daily average of almost 300 sorties was flown at an all-out level. The attacks of the first two days rendered eleven bridges impassable. The pontoon bridge at San Nazaro was completely destroyed; the pontoon boats were swamped and anchorages broken. Three other bridges were at least half destroyed; the remainder sustained lesser damage. By 15 June, 12 bridges were either totally destroyed, or gaps of over 500 feet long had been torn in them. All the others but one were cut, blocked or otherwise damaged to such an extent that traffic over them was impossible. The remaining bridge, (a concrete and steel structure at Ostiglia which carried the Bologna-Verona line), remained open after four attacks, but the line was out by the destruction of a bridge a little south of the Po. After 15 July, from Piacenza eastward, no north - south through rail traffic across the Po was possible until the operation closed. Fighter-bombers executed only four attacks over these four days, and all but one of these bridge operations were close to Bologna. Results proved the attacks too light against such formidable targets.

General Operations against Po Bridges 16-27 July

Ibid.

On 16 July, Tactical Air Force began cutting crossings west of Piacenza and key bridges throughout the entire Po Valley, so as to paralyse east-west as well as north-south traffic. Time was of paramount importance, for they had to render the primary targets permanently unserviceable

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- (1) Mitchells - based in the Ghisonaccia area, in Corsica.
 - (2) See Figure 4.
 - (3) At Reggio Emilia - 30 Macchis: at Castel San Giovanni - 20 Me.109s: at Piacenza - 15 F.W.190s: at Airasca - 15 F.W.190s: at Levadigi - 20 F.W.190s.
 - (4) On Bologna/Borgo Panicale and Poggio Renatico and its satellites.

before the enemy could bring up his heavy flak from south of Bologna. Three missions opened the extension of operations into the westward area on 16 July with 68 sorties against the road/rail bridge at Bressana.(1) Three arches were destroyed and a gap of 600 feet created. Direct hits blocked the road/rail bridge at Torreberetti.(1) By rendering the Monferrati bridge unserviceable by attacks on 16 and 17 June, 42nd Wing stopped all south-bound traffic from Milan.

The medium bomber programme included, apart from 'Mallory Major', the entire valley bridge system; when the bridge at Bozzolo(2) was destroyed and the viaducts at Desenzano and Peschiera(3) were cut, all rail connections between east and west, north of the Po, were interrupted. Lateral traffic south of the Po was simultaneously disrupted by destruction of the bridges at Sassuolo(4) and over the Trebbia River at Piacenza, (both south of the Po), and by cuts in four bridges further west serving lines from Turin.

Ibid.

The Weight of Air Attack on the Po Bridges

This was the first and only occasion of its nature of such magnitude in the history of the campaign. As the Allied Air Force had the longest experience of co-operation in land battles, its technique and weight of attack should be taken note of; for in such major actions many air problems came to a head and were resolved, and standard patterns and equations established which will hold until greatly improved aircraft, offensive and defensive tactics and construction and repair methods are evolved.

The attacks on Casalmaggiore, Cremona and Polesella bridges give an indication of what could be achieved at the time, it being remembered that the medium bombers, in Italy, had had ten months continuous experience of such operations. Casalmaggiore road/rail bridge was attacked twice on 12 July by 54 Marauders with a total of two hundred and fifteen 1000 pound bombs. The rail bridge was of steel lattice truss, with piers and abutments of masonry and concrete and was 2100 feet long. The road bridge (pontoons) was a little longer. In the first attack the steel bridge received seven direct hits, two spans collapsed, leaving a 450 feet gap. Several hits on the pontoon section left a 1000 feet gap. The second attack destroyed two more spans; the gap increased to 900 feet, and more pontoon sections were torn from their moorings. The key Borgoforte rail bridge was attacked 13 times between 12 and 27 July. In one attack on this last day by 33 Mitchells, one hundred and thirty-two 1000 pound bombs were dropped. A double string fell across the centre of the bridge. Both approaches were cut. Cloud cover, smoke screens, attacks by small formations of enemy fighters and inaccurate aiming had left this bridge damaged but partially serviceable. The attacks of the last day put it out of action. The one attack on Ficarolo pontoon road

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- (1) See Figure 4. M
 - (2) On the Cremona-Mantua line.
 - (3) On the main doubletrack railway from Verona to Brescia.
 - (4) On the secondary Reggio-Modena line.

bridge on 15 July was enough to almost completely destroy it. Twenty-four Mitchells dropped one hundred and eighty-five 250 pound general purpose bombs. The bridge was first blown, then washed away.

Value of the Norden Bomb-sight(1)

By that time, the appeals made earlier in the campaign for more up-to-date equipment were beginning to bear fruit. Some Mitchells and Marauders carried Norden bomb sights and achieved considerable accuracy from altitudes of 9000 to 12000 feet, when the ground could be seen. The basic bombing unit was a six aircraft formation, with the leading aircraft carrying a Norden bombardier sighting for range and deflection and the remainder of the flight releasing when the bombs of the leader were seen to drop. Scrupulous selection of bomb weights and fuzings and the closest attention to the proper positioning of aircraft to compensate for release time differences were an integral part of the machinery which went to produce the spectacular results.

The Fight against the German Repair System

Report on Operation 'Mallory
Major' M.A.T.A.F.,
15 Jan. 1945.
(A.H.B./IIJ11/11)

The Air Forces could do no more than execute the operation and, for so long as forces were available, maintain the severest damage for a sufficient period to render repair unlikely. Whether this damage proved ultimately fatal or not to the enemy supply system depended mainly on the Allied armies' ability to take full advantage of the position created and on the German's ingenuity in using minor routes, carrying out adequate repairs and installing reserve pontoons to restore the flow to normal, and other emergency measures.

The full implications of the Armies' problems must be sought in the Cabinet histories of the period. This present narrative will confine itself to the air effort and balance the record with evidence from the German side as to what methods were adopted to circumvent the effects of the operation.

On 17 July, some of the more solid Po bridges were still repairable in a relatively short time. Consequently, while the area of general coverage was being extended, it was essential to return to some primary targets and neutralise them before the heavy flak was reinforced for their protection. It took eleven attacks with a total of 482 tons of bombs to create permanent blocks in the parallel bridge at Piacenza. The road bridge was broken on 16 July, only one of the eight steel girder spans remaining intact. The rail bridge was only partially blocked when all attacking aircraft were assigned the second pier from

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- (1) Early hopes that the Norden bomb-sight would effect a radical improvement in bombing precision in overcast conditions had not been fulfilled. It was a visual bomb-sight and, unless the ground could be seen, it could not assist in improving bombing accuracy. Furthermore, it had certain disadvantages as a visual aid at night. It could, however, be interconnected with the American equivalent of ~~HES~~ (e.g. in the B-29) so that if the ground could be seen occasionally through gaps in the cloud, the disc speeds could be set and greater accuracy achieved than by purely blind bombing with radar. Ibid and Ltr. Gp. Capt. D. Finlay to A.H.B., 7 Oct. 1952.

H2S

the south end, which had escaped all attacks until the day of success - 19 July.

Another especially obstinate target was the dual bridge at Ostiglia. Between 12 and 26 July, fourteen missions were flown involving 361 sorties. Although most missions hit the bridge at some point, it remained usable until the 26th, when two spans were at last blown out. Borgoforte, equally resistant, was repaired and usable until 26 July in spite of every effort to put it out; on 26 July, medium bombers destroyed one span. The road bridge at Pontelagoscuro, linking Ferrara with Padua, was repaired on 18 July, but rendered impassable again on the 20th and almost totally destroyed on the 30th.

Communication Status after 27 July

Ibid

The following is the position as the Allies believed it to be after 27 July. All railway bridges over the Po east of, and including the one at, Torreberetti were impassable. By the time ground forces entered the southern quarters of Florence on 4 August, eastward communications from Turin were limited to roundabout routes to Alessandria and Novi Ligure and the main and secondary route to Milan. On a radius of 40 miles from Milan, all rail routes to the south and east were out. The northern Apennine route remained cut, but the Bologna-Pistoia route remained open down to Pitecchio, and on the Bologna-Prato route there was only one cut. The northern line of interdiction ran from Imperia to Ceva-Acqui-Tortona-Bressana and along the Po to the sea.

East of Piacenza, roads across the Po were almost as completely - though not permanently - immobilised. On 22 July, a rapidly constructed bridge of boats was reported in use at night at Ostiglia. On 23 July, all permanent bridges from Ostiglia to Cremona were reported destroyed and no appreciable efforts at repair in hand; only two ferries, each capable of carrying a vehicle of up to two and one half tons were plying. Further west, considerable efforts were directed to constructing temporary crossings. Here the single road bridges, not included as targets in 'Mallory Major', had a longer life-expectation.

Fighter-bomber Operations under 'Mallory Major'

Ibid

The phase of the plan for fighter-bomber attacks on reserve pontoons failed to materialise. The role of supplementing the medium bomber effort with the object of preventing repair to damaged bridges was carried through, although it became clear that it was useless for these lighter aircraft to attempt to destroy massive structures surviving attack by medium bombers.

In the first days of July, XII Tactical Air Command's activities moved northward, with the object of interdicting the Genoa-Pisa line and isolating Bologna from the north. As from the introduction of 'Mallory Major', the main effort was switched to the Po Valley railway network. The scope of fighter bomber effort expanded from 16 July in sympathy with the growth of the medium bomber offensive. Bridges north of the Po were hit for the first time on 22 July; from then on, the majority of fighter-bomber bridge targets were bridges of less strength than the massive Po structures, and all north

of the river. Forty missions in all were flown on this task from 16 to 27 July. The pontoon bridges were demolished at an early stage by the medium bombers; the most effective attacks the fighter-bombers could execute were those supplementing and enforcing the interdiction already created.

They cratered tracks on either side of the major bridges and cut the lines leading to them, thus achieving three main results; firstly, increasing the German repair organisation's difficulties; secondly, extending the distance to be covered by any means between two trains brought to a halt; and thirdly, discouraging the Germans from proceeding with repair on a major line, thus increasing the strain on minor routes and the motor transport facilities, and rendering daylight traffic by the latter medium increasingly necessary.

The communications paralysis aimed at was partially achieved. On 16 July, the trunk line from Milan was cut in four places south of Piacenza, eleven cuts were reported between Parma and Casalmaggiore, and lines funneling north to Mantua over the Borgoforte bridge were cut in several places. The effort was increasingly widened day by day and, on 27 July, the lateral line just north of the Po was blocked at six points and several north-south routes disorganised. Extensive bombing of rolling stock and motor transport over the area ensured widespread paralysis, which ensured for a period the most favourable conditions for exploitation. As an index, it may be quoted that 221 cuts in railway tracks were achieved by 87th Fighter Wing alone from 11 to 31 July in the Po Valley.

The German Supply Situation after 'Mallory Major'

At the end of May, Kesselring had been compelled to borrow about 3,000 tons of extra motor transport space from the General of the German Air Force in Italy, German Naval Command South, the Tadt Organisation and the Transport Corps Speer. Although the gradual shortening of their lines of communication was an advantage to the Germans, only the utmost vigilance, and ingenuity and a very active administrative and repair system, coupled with restriction of road movement to hours of darkness and bad weather, enabled them to supply the front without breaking into their reserves. This flow of supply was being achieved at the time of the opening of Operation 'Mallory Major' and was maintained even after the dramatic destruction of the Po valley bridges. There were sufficient stocks south of the river to prevent any immediate shortage, but a special situation was from this point created which was to impose considerable delay in supply traffic, but which could be, and was, overcome.

The German armies possessed at the end of July no undestroyed bridge or a bridge which could be used even temporarily. The whole supply traffic from Army Group depots and rear area installations to Army, Corps and Division installations and vice versa had to be moved during hours of darkness by ferries and over a sensitive pontoon bridge in the Borgoforte area.

German Methods of overcoming the Effects of 'Mallory Major'

Cable railways⁽¹⁾ were installed across the Po to carry supplies and save fuel: one operated at Borgoforte, others at

The German System of Supply in the Field - Italy, 1943-1945. G-2/AFHQ., Feb. 1946. (A.H.B./ILJ11/58/39)

Report by Qu. 1 - 14th Army quoted in Ibid p. 80 - 82 Br. Hist. Sect/ C.M.F. (Administration) (A.H.B./ILJ11/58/39)

Ibid

(1) Seilbahnen

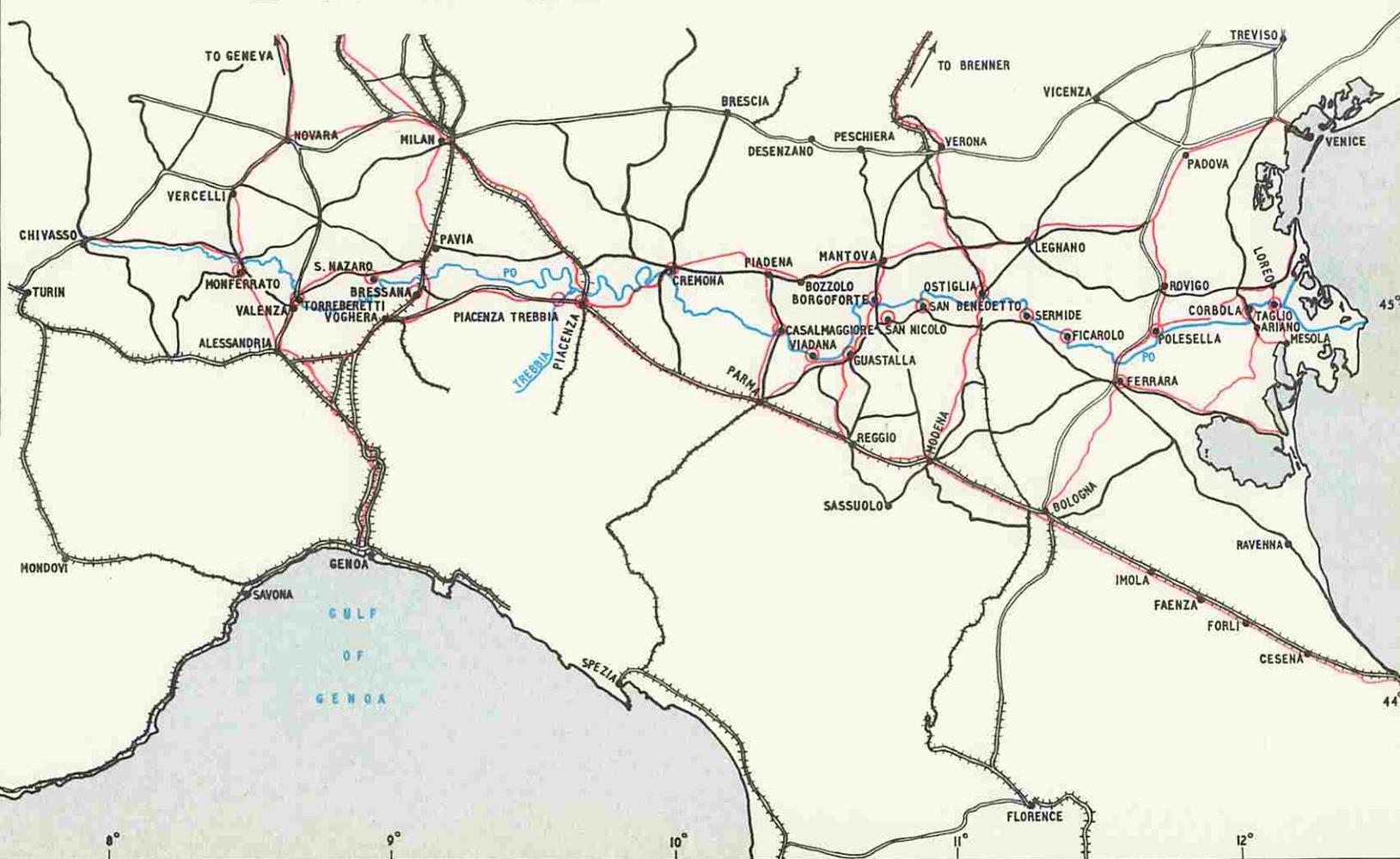
PO RIVER BRIDGES ATTACKED IN OPERATION MALLORY MAJOR 12-27 JULY 1944

LIST OF PO RIVER BRIDGES

BRIDGE	ROUTE	TYPE OF BRIDGE	TOTAL LENGTH OF BRIDGE IN FEET
TAGLIO	LOREO - MESOLA	ROAD	1260
CORBOLA	ADRIA - ARIANO	ROAD & RAILWAY	1049
POLESELLA	ROVIGO - BOLOGNA	ROAD	1000
FERRARA	FERRARA - ROVIGO	ROAD	984
FICAROLO		RAILWAY	1390
SERNIDE		ROAD	1200
OSTIGLIA	BOLOGNA - VERONA	ROAD & RAILWAY	1770
SAN BENEDETTO	MANTUA - MODENA	ROAD	1180
SAN NICOLO	MANTUA - MODENA	ROAD	1880
BORGOFORTE	MANTUA - MODENA	ROAD	1500
		RAILWAY	1178
GUASTALLA	MANTUA - REGGIO	ROAD	2560
VIADANA	MANTUA - PARMA	ROAD	2700
CASALMAGGIORE	PIADENA - PARMA	ROAD	2140
		RAILWAY	2100
CREMONA	PIACENZA - CREMONA	ROAD & RAILWAY	2100
SAN NAZARO		ROAD	922
PIACENZA	BOLOGNA - MILAN	ROAD	3750
		RAILWAY	2400
BRESSANA	PAVIA - VOGHERA	ROAD & RAILWAY	2518
TORREBERETTI	ALESSANDRIA - NOVARA	ROAD & RAILWAY	1758
MONFERRATO	VALENZA - VERCELLI	RAILWAY	NO RECORD
PIACENZA TREBBIA		ROAD & RAILWAY	

LEGEND

- STANDARD GAUGE DOUBLE TRACK STEAM
- STANDARD GAUGE DOUBLE TRACK ELECTRIC
- STANDARD GAUGE SINGLE TRACK STEAM
- STANDARD GAUGE SINGLE TRACK ELECTRIC
- BRIDGES
- ROADS



Ostiglia/Revere, Cremona and Piacenza. They were controlled by a maintenance centre,⁽¹⁾ responsible for re-loading operations. The main centre (at Borgoforte) was split into two parts, one on the north bank, one on the south bank, both under unified control of a special supply staff.⁽²⁾ This staff had under control an M/T company based on the north bank, which collected supplies from Army Group depots and delivered them to the south bank by ferry and/or cable railway. The company also guaranteed continued supply in case of damage by air attack or by serious change in the water level of the Po.

An additional ammunition distributing depot was set up east of Mantova on the north bank to feed the re-loading points at Borgoforte and Ostiglia. The cable railway worked both ways,⁽³⁾ and was of especial value when the great variations in the Po level held up ferry traffic. The important railway ferry, at Ostiglia, carried ammunition trains to the south bank without re-loading. There were emergency bridges, but these could not be counted on. A similar organisation was planned for Ostiglia/Mirandola, but was not found practicable, as sufficient personnel could not be found to man it.

As a final measure, additional railway ferries were put into service at Ferrara and Piacenza: in the most favourable circumstances, each ferry could move two trains in one direction and one in the other, during the night. Other emergency measures which were hardening into routine included ferries for the transport of the wounded, plying between casualty collecting points⁽⁴⁾ on both banks, a tank ferry and pipe lines for liquid fuel.⁽⁵⁾

German Fighter Opposition

Report on
Operation
'Mallory Major'
M.A.T.A.F.,
15 Jan. 1945.
(A.H.B./IIJ11/11)

The Me.109s in the Bologna-Ferrara area and the F.W.190s at Piacenza and Airasca made a few efforts to hinder operations, but without much effect. Small formations of them made unaggressive passes on some days. The main efforts were against the Corbola, Ferrara and Sassuolo missions. On 14 July, the Corbola mission was attacked near Modena by a score of fighters, with no loss to 57th Wing and two enemy aircraft probably destroyed. On the way to and from Ferrara bridge on 12 July the mission was attacked by twenty-two F.W.190s, but no losses were incurred. On 19 July, the mission against Sassuolo bridge was attacked by about ten fighters over Corragio. Here again, no losses were incurred.

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- (1) Versorgungsstützpunkt. In May the repair organisation had been decentralised, and greater executive power vested in these local centres.
 - (2) Nachschubstab z.b.V.
 - (3) Its maximum capacity was 150 tons per night: air raids and technical hitches reduced the nightly average to about 80 tons.
 - (4) Krankensammelstellen.
 - (5) Schnellkupplungsrohrleitungen.

German Flak Reactions

Ibid

The only points on the valley traffic system where the flak was at all serious were Ferrara, Verona and Ostiglia. At Ferrara one Allied bomber was lost and 11 holed: at Verona 14 were holed. At Ostiglia the flak was impressive and accurate and in four missions an average of a dozen aircraft were holed. It was very curious that at Borgoforto the flak was not considered worthy of comment by crews. The fears of the Allies that time would enable the Germans to bring up flak in quantity was unfounded. The flak units were, of course, heavily engaged at the front, withdrawing towards the Gothic Line.

CHAPTER 2

THE BATTLES FOR THE GOTHIC LINE

AIR AND ARMY PLANNING FOR OPERATION 'OLIVE'

Introduction

Ever since the invasion of Italy began, the Allies had known that the Germans would defend with great stubbornness a position based on the Northern Apennines, to deny us entry into the Po Valley. It had been under preparation since the early autumn of 1943. Sooner or later it would be necessary to force it. When Rome fell, it became at once the Allies' main preoccupation and it was hoped, on the strength of the success of the Spring offensive, that its breach would be but a minor incident. This optimism ended⁽¹⁾ when the Germans reinforced and the Allied forces in Italy lost the three best U.S. divisions and all three French divisions, including the only mountain division in Italy,⁽²⁾ as well as substantial air forces. The Allied Armies and Air Forces had now arrived in positions from which an attack on this line - known as the Gothic or Green Line⁽³⁾ - could be mounted. An early plan to attack it in the centre was dropped on 4 August in favour of a new one - Operation 'Olive'.⁽⁴⁾ The Eighth Army was to make the main thrust at the east end of the line. Fifth Army was, later, to mount a subsidiary attack up the axis Florence - Bologna.⁽⁵⁾ Desert Air Force was to furnish maximum support to both armies.

The Gothic Line

Up to May 1944, work on the Gothic Line had been spasmodic. On 17 May, Hitler warned his commanders in Italy that there was no such thing behind them as a fortified Apennine position and that they would have to labour mightily. He ordered a complete and final blocking line. Any Allied entry into the Po plain, he said, would have incalculable military and political consequences. Work was accelerated and on 11 September the Gothic Line was taken up more or less along the whole front.

The final position⁽⁶⁾ and strength were, running from west to east, as follows: the approaches to La Spezia along the narrow coastal belt were barred by a system of anti-tank defence in depth; apart from this, defences throughout the rest of the Line were not built in any appreciable depth. From the region of Carrara the line swung south-east through the Apuan mountains to a strong point at Borgo Mozzano astride the axis north from Lucca. From there, the Line ran across the northern Apennines linking up positions forward of the passes. The Futa Pass position was by far the strongest point in the Gothic Line

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- (1) Allied strategy Pt.III Section A. Brit, Hist. Section C.M. (A.H.B IIJ11/58/14).
 - (2) 4th Moroccan Mountain Division.
 - (3) Gotenstellung or Grüne Linie.
 - (4) At a meeting on Orvieto airfield.
 - (5) Taking over XIII Corps.
 - (6) Refer to Figure 8.

and included anti-tank ditches, concrete casemates and tank turrets. The main positions on the roads leading to the Po Valley were:- the Porretta, north of Pistoia; the Vernio, north of Prato, the Futa and Il Giogo, north of Florence. This Il Giogo position was on a less ambitious scale, and it was by this axis to Firenzuola that the Futa position was eventually by-passed and rendered untenable. The routes to Forli and Cesena, were well defended by positions on the south side of steep, difficult hairpin bends. Lastly came the Foglia sector, where the Eighth Army's offensive was launched. This sector ran from the port of Pesaro along the northern slopes of the Foglia river valley. Defences were most concentrated near the coast. Kesselring sent an order to the 1st Parachute Division, holding the Pesaro sector, which said that the Gothic Line was the last hope before the Brenner, that it depended on them and that their positions were to be held for three weeks.

Planning for Operation 'Olive'⁽¹⁾

Planning for Operation 'Olive', mostly conducted by Eighth Army and Desert Air Force, was carried out in conditions of great secrecy. Its mounting involved complicated and difficult moves of the army and the air forces, as well as a large scale deception plan.

The ground plan was, briefly, for a simultaneous assault by three corps in the line. The II Polish Corps, by then in a weakened state, was to seize the high ground north-west of Pesaro; I Canadian Corps, in the centre, was to attack on the left of the Poles to capture the high ground west of Pesaro, reach Cattolica and drive up the coastal road on Rimini; V Corps, on the left, was to advance on an axis to the west of Rimini directed on Bologna and Ferrara. D-Day was laid down as 25 August. General Alexander was free to exercise his favourite strategy of the 'two-handed punch', which, in orthodox terms, meant the attacking of two points equally vital to the enemy either simultaneously or alternately in order to split the reserves available to the defence.

The Deputy Air Commander-in-Chief would have preferred a less cautious policy. If they would accept heavier losses and drive through in early August with the support of tanks and aircraft, they might possibly destroy the enemy in the Po Valley by the end of September, he said.⁽²⁾

Multiple Functions of Desert Air Force

XII Tactical Air Command, with several wings and detached squadrons of the R.A.F., had left Italy for the campaign in Southern France. The Desert Air Force was now responsible for the tactical support of both Eighth and Fifth Armies and of Polish Corps in the Adriatic sector. So as to apply the main weight of air effort to support of the Eighth Army Autumn offensive and, at the same time, maintain enough flexibility

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- (1) D.A.F., O.R.Bs/Ops. The Campaign in the Northern Apennines Pt. III. Section B. (A.H.B./IIJ11/58/15(A-B). Brit. Hist. Section, C.M. M.A.T.A.F./SASO O.R.Bs. G(Air) 8th Army History Aug. 1944/May 1945. (Cabinet Historical Section).
 - (2) J.C.S.3,4 Aug. 1944. (A.H.B./IIJ1/90/41).

to cover the double-army commitment, some redeployment was necessary. The air force was to play a major part in the maintenance of the secrecy of the moves of both the army and its own forces, enabling the necessary troop movement to take place relatively unobserved and according to schedule and preventing hostile photographic cover of the administrative build-up. The arrival of air force formations at, and their operation from, new airfields along the Adriatic coast would be plotted by hostile radar stations. The air support signals network, it had long been known, was one to which the enemy intercept service paid constant attention. It would therefore have an important part to play in the deception plan. Air operations would have to be very carefully planned and controlled so that no emphasis either in attacks or reconnaissance was laid on the eastern sector. So, for example, to counterbalance the effect of increased photography of the Adriatic enemy positions, dummy photographic missions were flown regularly in the area of the Futa pass.

Re-deployment of Desert Air Force

In order to carry out the obligations of its plan for participation in the attack on the Gothic Line, a progressive and secret deployment was carried out over the period 9 to 26 August. The majority of the Desert Air Force units were to be moved to airfields on the east coast in order to support the Eighth Army attack, then a proportion of them were to be switched back to the central sector to support the Fifth Army attack. These moves were to be divided into three phases. In Phase One, which ended on D minus 3 Day, most units were to remain on their actual fields, and an extensive programme of attacks on communications and dumps was to be carried out. In Phase Two, from D minus 3 to D plus 5 Day, the move of 'A' parties across to their dispositions on the east coast was to begin, followed by the arrival of aircraft on the morning of D-Day. The evening of D minus 1 Day, and D-Day to D plus 5 Day was to be a period of intensive operations. In Phase Three, D plus 5 to D plus 10 Day, it was hoped that a successful attack would by then have rendered it possible for certain units to move forward to fields in the Fano area, and others to be switched back to the central sector to support the Fifth Army attack. An aggregate of some 24 Baltimore light bombers, 50 Spitfires, 72 Spitbombers and 72 Mustangs and Kittyhawks (all of Desert Air Force), moved to new bases.(1) Twelve night-flying Beaufighters were based at Falconara; 48 Spitbombers remained at Foiano; 48 Boston and Baltimore light bombers (under command of XII Tactical Air Command) remained at Cecina. Tactical Air Force's two medium bomber wings - the 42nd and the 57th - remained in Corsica and Sardinia respectively, and were, when the time came, to switch from support of Operation 'Dragoon' in Southern France to support of Operation 'Olive'. Desert Air Force's South African Marauders - 36 in number - stayed at Pescara.(2)

(1) Appendix 9.

(2) Adv. H.Q., D.A.F., Ops. Instruction No.22, 17 Aug. 1944. (A.H.B/ILJ1/122/83/22(A), Encl. 18A).

It is hard to say how successful our deception methods were. Eleven thousand army vehicles a day plied towards the assembly area at Ancona. In spite of an elaborate system of code signs and words indicating a routine move, the unusual volume of traffic itself must have been obvious. Air force difficulties were, if anything, even greater. It is most unlikely that the sudden obliteration of all squadron crests aroused no curiosity, or that the inquisitive were satisfied with the universal answer 'Florence' to their queries. Far more dangerous than civilian enquiries were the German signals intelligence units, and, to circumvent these, all air support radio communications were to remain in the central sector until the enemy had been persuaded that the main army effort was being made along the Adriatic. An over-generous allotment of tentacles helped to foster a belief in heavy traffic in that sector. A tentacle was withdrawn from the Adriatic sector. But spare tentacles and rear links with others normally used for 'step-up' purposes remained on wireless silence where required until the operation had started. One complete road party joined with the new Army H.Q. at Chiaravalle on 18 August. Couriers plied daily between Siena and Iesi. Coast units continued to pass normal traffic, but no new ground stations were to open up until the move, in three stages, was complete.

No enemy air reconnaissance by day was plotted between 9 and 24 August, but on numerous occasions enemy night reconnaissance aircraft covered the approaches to the air concentration areas in the Adriatic sector. On 25 August at last light, two enemy aircraft were plotted on what must have been a tactical reconnaissance flight.

The Air Problem of Cover for two Armies

Eighth Army proposals for air attack on the Gothic Line began to come in from 30 July onwards. The first operation instruction from Desert Air Force to its units was issued on 17 August(1): the plan began to assume concrete form. A special problem to be resolved was how to balance the weight available to Desert Air Force against the expressed needs of the two Armies. From its own resources alone the needs of both could not be met. When the requirements of Eighth Army had been calculated, there was insufficient balance left over to 'provide a steady increase in the air action of Fifth Army front to correspond with land activities (just prior to D-Day Eighth Army) designed to simulate preparations for a major offensive'. They called, therefore, for additional effort from outside sources for cover plan bombing north of Florence. As D-Day approached and the whole effort of Desert Air Force was applied in support of the Eighth Army plan, the need for more medium bombers would arise. Tactical Air Force should, it was proposed, lend some of its Mitchells. D-Day itself, too, called, said Desert Air Force, for outside help. The attack on the Gothic Line itself would absorb their entire effort. What of Pesaro, the heavily fortified coastal pivot town and what of the softening-up of enemy communications ahead of the Fifth Army? Certainly supplementary forces were needed: they could only come from the forces engaged in the Southern France campaign.

(1) Adv. H.Q., D.A.F., Ops. Instruction 22, 17 Aug. 1944.
(A.H.B./ILJ1/122/83/22A, Encl. 18a).

Air Plan for Operations 'Olive' and 'Crumpet' (1)

Plans for the attack on the Gothic Line resolved themselves into two main groups - Operation 'Olive' and Operation 'Crumpet' - (the reduction of Pesaro). Operation 'Olive' was to be divided into three phases, namely, 'A' from D minus 7 to D minus 2, 'B' from D minus 2 to D minus 1 and 'C' from D-Day to D plus 2. The provisional plan of 20 August was passed to Corps. A meeting of G.S.Os - II (Air) from Corps at Eighth Army H.Q. considered it and evolved the final co-ordinated army/air plan which ran on the following lines.

Phase 'A' of Operation 'Olive' Plan (2)

The four objects of the Phase 'A' missions were strategical isolation, attacks on enemy supplies and movement, the interruption of work on the defence line, and direct support of ground troops. Strategical isolation was to be effected by a continuation of the attacks on railway communications (with special attention to the area bounded by Rimini - Bologna - Ferrara - Rovigo and then east to the coast) and the bridges over the Po. There were to be no attempts at road blocking or cutting.

The enemy was short of ammunition and petrol: air attacks on his supply routes had led to a serious weakening of his capacity to build up large reserves. Moreover, his problems of internal distribution, owing to our air interdiction, were immense.(3) The time had come to attack his more forward reserves and dumps. A list of targets provided details of major and minor petrol and ammunition dumps, workshops, ordnance stores and store sheds for both day and night attack, and general areas of military activity on the outskirts of Imola, Forli, Cesena and Bologna, these for night attack.

In the justified belief that defence work(4) on the Gothic Line was still proceeding, a list was prepared of nine areas within the defences, and attacks planned in such a way that no emphasis was laid on the eastern sector. The first three in order of priority covered the areas south-east and west of Pesaro.(5) An essential preliminary to the main operation was a 'facing-up' process by Polish Corps and, in support of it, a direct support effort was allotted, leaving over a limited weight for support on both fronts.

It was at this point in the campaign that a situation already reported in this narrative came to the fore again. They knew that the attack, when pressed home, would lead to enemy movement of several kinds. One of the difficulties encountered when we tried to disorganise this movement was that he seldom tried to move, because of our air reconnaissance,

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- (1) The neutralisation by air of the defences of Pesaro town. Air Plan Operation 'Olive' Adv., H.Q., D.A.F., 23 Aug. 1944. (A.H.B./IIJ1/122/83/22A, Encl. 29a). Operational Instruction No.2 Operation 'Crumpet' MATAF/3/3/Air, 25 Aug. 1944. (A.H.B./IIJ1/122/83/22A, Encl. 59a).
 - (2) A.H.B./IIJ1/122/83/22A, Encls. 29a and 59a.
 - (3) The Supply Situation, by Col. Faehndrich (A.Q.M.G., C-in-C., S.W.) (A.H.B.6 Translation No. VII/100).
 - (4) The major effort was by the Todt Organisation of conscripted labour, both German and foreign.
 - (5) The attacks did not, in the event, take place within this phase.

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till dusk, so that although late tactical air reconnaissance might see its start, it was too late to allow bombers to land in daylight if despatched. It was clearly seen that a much bigger night effort by both fighters and bombers was needed, so as to interfere with night movement to such an extent that the enemy was forced to revert to day movement as well, so spreading the change of profitable targets. Action was taken to increase night effort, but the inflow of night-flying operational aircraft was still too slow for the theatre to attain its ideal of a balanced air force.

Phase 'B' of Operation 'Olive' Plan

In Phase 'B', this greatly increased night effort, on which at all stages in the planning great emphasis was laid, was to acquire definite form. Until 20 August, the main effort of Desert Air Force's night light bombers was made over Southern France and Western Italy. As from the night ~~20/21~~ 20/21 August, more and more effort became available in direct support of Eighth Army, the normal sortie rate per night ~~attain~~ attaining an average of forty-eight.

The attempt at isolation of the battlefield, still a constant hope in service circles, was to become more tactical and less strategical in character in this phase. The idea of attacking the N.W. - S.W. main lateral routes, in particular the Bologna - Rimini - Pesaro axis, was abandoned in favour of one of concentrating on the trans-Appennine routes, which abounded in defiles. Heavy attacks by a large Tactical Air Force medium bomber force, it was urged, would both materially assist the cover plan and tie up the enemy supply system in front of Fifth Army. The limited ground support programme was to cover Polish Corps and neutralise points threatening our troops in action. Desert Air Force agreed to devote eight to ten missions daily to long-range guns on this front.

Phase 'C' of Operation 'Olive' Plan

For Phase 'C', to last from D-Day to D plus 2, over and above the combined resources of Desert Air Force and the contribution of Tactical Air Force, 60 night medium bombers of No.205 Group of Strategic Air Force were made available, for employment over the four nights as from night D/D plus 1. In the preparatory phases, the night medium and heavy bombers of No.205 Group were used to attack railway targets such as Bologna and Ravenna marshalling yards.

Pesaro, one of the keys to the enemy position, was to be neutralised by air and by-passed by the army.(1) Eighth Army requested Desert Air Force to execute an air blitz similar to the one at El Hamma on the Mareth Line in late March 1943.(2) It was first discussed as a paving of the way for the initial advance, but Desert Air Force's belief in its greater efficacy in conjunction with a breakthrough led to its being held in reserve for use in that event, in front of a smoke bomb-line put down by artillery.

Information on enemy hostile battery positions, defended localities, headquarters and reserve areas was none too

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- (1) Details of Operation 'Crumpet' plan follow.
 - (2) The Germans evacuated the Mareth Line on 27 and 28 March, and British forces occupied El Hamma on 29 March 1943.

plentiful or reliable; a large portion of the Desert Air Force fighter bomber effort was therefore to be on call. Support to ground troops in the opening stages of the battle was to be by cabranks of fighter-bombers and two Rover 'David' teams were allotted, one to V Corps(1) and one(2) for support of I. Canadian and II Polish Corps.

The night medium bombers of No.205 Group were to attack the Fesaro sector on the night of D plus 1/D plus 2 Day, and, thereafter, selected reserve areas, dumps and communications.

Operational
Instruction No.9
Operation 'Crumpet'
MATAF/3/3 Air,
25 Aug. 1944.
(A.H.B./11J1/122/
83(a), Encl. 59A)

Operational
Instruction No.23
Adv.H.Q., D.A.F.,
20 Aug. 1944
(A.H.B./11J1/122/
83/22(a), Encl.25A)

Operation 'Crumpet' Plan

Within the overall 'Olive' Plan, the mission of Operation 'Crumpet' was defined as the neutralisation of the troops of the 1st Parachute Division and their defences in and around the town of Pesaro, annihilation of as many of the enemy and as much equipment as possible and prevention of those forces from being used as reinforcements elsewhere. The land defences consisted of a wide arc of machine gun positions round the town outskirts linking with the main defence line north of the Foglia line, an anti-tank ditch and pillboxes. The arc of defence ran south of the town and the waterfront was tightly defended against possible amphibious landings.

The general plan was to carry out a more or less continuous bombardment of the defences, (the area of which was divided into four portions)(3) throughout a five hour period, with one mission of twelve aircraft over each target every ten minutes from 0850 hours to 1330 hours. The total number of aircraft sorties envisaged for the two wings participating, No.57 and No.42 Bombardment Wings, was three hundred and ninety-six. No fighter escort was arranged. Friendly ground forces would not in theory be closer than 2,000 yards from the outer boundary, shown in Figure 5A. Special ground aids in the form of strips, searchlights and coloured smoke floats displayed by a Dukw craft anchored off Fano were arranged.

Signal A.H.Q.,
D.A.F. to
M.A.T.A.F.
A.525, 25 Aug. 1944.
(A.H.B./11J1/122/83/
22(a), Encl. 48A)

The fixing of the date for the first 'Crumpet' operation proved difficult. On 25 August the most likely date was 28 August. Many considerations affecting the passage of the medium bombers from their bases in Sardinia and Corsica had to be studied and the plan was worked on down to the finest detail, and reports by partisans and Italian engineers consolidated. In the meantime, Army requests for heavy bomber support against Pesaro were believed by Desert Air Force to be possible to meet without any prejudice to the projected medium bomber attacks. In the event, there were no attacks on the town's defences before D-Day and the 'Crumpet' attack timed for D-Day was postponed owing to changes in the ground situation. The reduction of these targets was left largely to the R.A.F. Wellingtons of No.205 Group. On 27 August, Operation 'Crumpet' was cancelled as for the following day and, although planned for the 29th, was again cancelled. Further modifications were caused by the ground situation and, on 31 August, Tactical Air Force Headquarters in Corsica were informed that it was not required. On 1 September, the parachutists

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- (1) No.1.
 - (2) No.2.
 - (3) Refer to Figure 5A.

withdrew from the town and the series of alerts and signals at last came to an end. Such fruitless changes had to be accepted as part of the routine of war. Time-consuming and wasteful as they seem, they must be set in their true perspective against the multiplicity of cases where action resulted. The medium bombers, as the narrative on air participation in the Southern France campaign has shown, were very profitably employed.

PRE-ASSAULT AIR AND ARMY OPERATIONS

Ground Operations 9 to 25 August to gain Contact with the Gothic Line

It is now the point at which to pick up the thread of ground operations, which were carried in Chapter 1 up to the situation in Florence on 4 August. On 6 August, the next phase of operations was laid down⁽¹⁾ as a co-ordinated series of attacks by both armies, to secure the high ground north and north-west of Florence and the Monte Albano and Monte Pisano features. 18 August was looked to as a likely date for opening operations north of the Arno river, for a full fighter-bomber effort could not, owing to the needs of Operation 'Dragoon', be made available before then. Fifth Army was to watch for any enemy reaction to Operation 'Olive' which would afford it the opportunity to advance across the Apennines on Bologna. Operation 'Olive' was not to be referred to in writing.

Fifth Army front remained quiet. On Eighth Army front, the only noteworthy change was an advance by the Poles across the River Cesano on 10 August. On the same night, the Germans withdrew from the north bank of the Arno in Florence to a line on the Mugnone canal running through the northern outskirts of the city. It was some days before the main part of the city was cleared, for Fascist snipers were active and the Germans carried out raids into the city. The Polish attempt to advance from the Cesano and across the Metauro River took until 23 August. With a front stretching 15 miles inland, their stage was now set for an assault on Pesaro. X Corps in the centre moved towards Bibbiena. XIII Corps side-stepped eastwards, handing over the sector west of Florence to II U.S. Corps.

At 25 August, the total of enemy divisions in Italy totalled to twenty-three German and three Italian. Of these, fourteen were in the front line and five in battle reserve. On the Allied side, there were twenty divisions and eight brigades.

Desert Air Force Operations in Italy 5 - 25 August (2)

Desert Air Force directed its operations from an Advanced H.Q. at Siena until the 25th, when it moved to Chiaravalle. During the period under review, its operations, carried out under handicaps of intermittent bad weather and lack of enemy day movement, were, although never spectacular, of consistent value to the ground forces, the Poles in particular. The Polish Corps, for various reasons, was faced with the thorniest

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- (1) Future Operations 48/G (Ops) Adv. H.Q., A.A.I.,
6 Aug. 1944. (A.H.B./IIJ11/58/14, App.D-1).
(2) D.A.F./Ops. O.R.B.

problem and had a good deal of ground to cover against stiff opposition. They were closely supported every day in varying strength by Kittybombers and Mustangs, whose crews attacked all the usual battle area targets with acknowledged valuable results. The Spitbomber squadrons concentrated mainly on railway, road and coastal communications and joined with Kittybombers on 7 August in an attack, (continued the same night by Baltimores), on heavy guns causing a great deal of annoyance to the Poles by firing into the Ancona, Falconara and Iesi areas. When, on the 9th, the Poles began their thrust towards Fano, most of the Kittybomber effort⁽¹⁾ was concentrated against gun positions. After a lull imposed by two days of very bad weather, sorties were pushed up on 12 August and the next day topped the five hundred mark. The daily armed reconnaissances by Spitfires were intensified and the pattern of attacks along the Rimini - Modena - Ferrara railway circuit began a process of gradual intensification.

The landings in Southern France reduced Italian operations for a few days, but as the enemy withdrawal was methodical and the Allies not yet prepared to strike in force, operations from this period until 25 August continued to lack any outstanding character. Odd activities by coastal barges and German night reconnaissance aircraft, as well as by a few night harassing Ju.87s were noticed and suitably dealt with. Night bombers - Bostons and Baltimores - although in no great force, had some luck in sighting and bombing enemy road movement, which showed signs of acceleration as the month drew to its close.

Air Operations on D minus 1 Day (2)

With their Advanced H.Q. at Chiaravalle, the Desert Air Force lined up in the same area for the offensive now stood at one wing of Kittyhawks, one wing combining tactical, photographic and artillery reconnaissance Spitfires, two detachments of Beaufighters, an extra squadron of Spitfires, and a wing and one-half of medium and light bombers.

Their effort on the day before D-Day was intentionally inconspicuous, following the normal routine, (mostly between Marradi and Bologna), of road blocking, armed reconnaissance against road and railway movement, attacks on railway bridges and support to the Eighth Army on the Polish sector. There was a little more M/T on the roads than usual and 33 lorries were reported destroyed, as well as 20 petrol cars and trucks on the railways; the latter was very timely, in view of the enemy petrol crisis brought about by our over-all air offensive on all fronts.(3)

Indirectly bearing on the situation were the day attacks by 48 Marauders on the marshalling yards at Forli and Faenza and the combined attack that night(4) on the railway centre, harbour and canal terminus at Rimini on the coast, the port above Pesaro. This was one of a series; the general effect will be considered later. Nothing was done on either front to suggest the impending assault.

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- (1) 14 missions - 90 sorties.
 - (2) D.A.F./Ops. O.R.Bs.
 - (3) Enemy document - The Transport Situation by Col. Stange, (Movements Control Italy). (A.H.B.6 Translation No.VII/100).
 - (4) By fifty-three Wellingtons, seventeen Liberators and five Halifaxes.

ENEMY AIR FORCES ON THE EVE OF OPERATION 'OLIVE'

Source:
German Air
Force
Quarter-
master's
Returns
(A.H.B.6)

Order of Battle

At the end of the third week in August, the Luftwaffe could muster only 70 serviceable aircraft(1) and its satellite, the Republican Fascist Air Force, about the same number.(2) General Von Pohl, the Luftwaffe Commander-in-Chief, shifted his H.Q. from Casalecchio near Bologna to Soragna, northwest of Parma, so as to both be in a position to forestall any surprise move by the Allies and to be in closer touch with Kesselring, who had transferred to Salsomaggiore.

By the beginning of August, the Luftwaffe organisation had taken a shape which it was to retain for some weeks, a shape which like the disposition of the Army divisions, showed no radical alteration before the opening of Operation 'Olive' suggesting that they appreciated the intention of a major assault in the Adriatic sector. The tactical reconnaissance forces were operating from Bologna and Ferrara. The second group of the Fighter Geschwader 77 was being withdrawn from the

(1) Order of Battle - Luftflotte 2 as at 20 August 1944 in Italy.

Close Range Reconnaissance

Unit	Strength	Serviceable	Aircraft
1/N.A.G. II	12	6	Me.109
2/N.A.G. II	14	9	Me.109

Long Range Reconnaissance

2/(F)122	6	3	Me.410
4/(F)122	10	4	Ju.88/Ju.188
6/(F)122	6	4	Ju.188

Fighters

II/J.G.77	34	26	Me.109
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Night Ground Attack

1/N.S.G.9	11	6	Ju.87
2/N.S.G.9	11	6	Ju.87
3/N.S.G.9	11	5	Ju.87
	<u>115</u>	<u>69</u>	

(2) Order of Battle - Republican Fascist Air Force as at 20 August.

Fighters

J.G.1.	14	13	Me.205
	23	12	G.55
J.G.2.	37	36	Me.109G.

Bombers

K.G.	17	0	Cant Z.1007
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Torpedo Bombers

T.G.	14	6	S.M.79
	<u>105</u>	<u>67</u>	

wreckage in Southern France for operations in Italy. The three Ju.87 staffels were at Ravenna, Reggio Emilia and Modena. The airfield organisation(1) south of the Apennines was dissolved, and the north was divided into four area airfield organisational centres: West, with its eastern boundary on longitude 9 degrees East; East, with its western boundary along the River Brenta and the edge of the Alps as far as Tarvisio; Centre, with the River Po as southern boundary; and South, to the south of the River Po. Aircraft fuel stocks had practically reached an irreducible minimum.(2)

The Germans had lost Central Italy. This fact, coupled with the rapid shrinkage of the reserves of aircraft in Italy, meant that Luftflotte 2 was now top-heavy. The suggestion made by Von Richthofen in June that it should be dissolved was adjudged reasonable and, on Kesselring's recommendation, the Air Fleet headquarters was sent to Vienna for disbandment.(3) In its place, a merger of the staff of the C.-in-C. Luftwaffe in Central Italy with Luftgau H.Q. XXVIII was effected and H.Q. Commanding General of the German Air Arm in Italy(4) came into being. Its head was under the direct control of the O.K.L.(5) and he commanded German operational and ground units and flak, and was responsible for the servicing of the Republican Fascist Italian Air Force. On 15 September, he took over the vacated H.Q. of Luftflotte 2 at Malcesine on Lake Garda.

Long range reconnaissance continued to be a high priority task and the Ju.88s and Ju.188s, fitted with 'Hohentwiel' apparatus and flying high, struggled to cope with a situation far beyond the possibilities of their low strength. Ports in the south and targets heavily defended by our fighters were left to Ju.88s. Day reconnaissance was carried out by the few up-to-date Me.410s which could be spared for the theatre and these, from Bergamo, reconnoitred the Ligurian Sea, Corsican harbours and occasionally the Adriatic coast as far as San Benedetto. The Me.109s of the Close Reconnaissance Group, who suffered heavy losses, were those most directly concerned in the German watch on Eighth Army and Desert Air Force moves. Development in the enemy Italian Air Force was at a standstill.(6)

AIR SUPPORT OF EIGHTH ARMY OFFENSIVE

The Attack on the Gothic Line and the Advance to Rimini

On 25 August at 2300 hours, the offensive began and for nine days went according to plan. Thereafter, the enemy's sharp reaction, assisted by the terrain and heavy rain, slowed up and stopped the Eighth Army's advance. New plans led to a renewed advance to the threshold of the Romagna country.

The Gothic Line
Battles
Brit.Hist.Sect.CMF
Pt.III, Sect.B3
(A.H.B./IIJ11/58/15
(A-B))

- (1) Flughafenbereich
- (2) On 4 September OKL advised Luftflotte 2 that owing to Allied air attacks on hydrogenation plants, the loss of the Rumanian oilfields and low production, extreme economy on all fronts was imperative.
(Ref. A.H.B.6 Translation VII/82, pp. 18-19).
- (3) Gen. Von Pohl series of reports (A.H.B.6.)
- (4) Kommandierender General Der Deutschen Luftwaffe in Italien.
- (5) OKL - Ober Kommando Luftwaffe - Air High Command.
- (6) Gen. Von Pohl series of reports (A.H.B.6.).

The great features before Rimini which were stormed with the aid of the air forces may be considered for our purposes as outposts of the Gothic Line. Operations fell into four distinct phases. The first phase was from 25 to 29 August, when our forces advanced to the River Foglia and across some twenty miles of country up to the Gothic Line. Between 30 August and 3 September, the Line was breached at many points and the Army advanced across the River Conca. Between 4 and 12 September, the first battles of Coriano and Gemmano were fought. Between 13 and 31 September, the second battle of Coriano and the battle of San Fortunato were fought. The Fifth Army assault opened on 13 September. As a result of the double drive, by the end of September the Germans had abandoned the whole of the Gothic Line defences with the unimportant exception of the extreme western portion.

Eighth Army Advance to the River Foglia - 25 to 29 August.

Ibid.

The Eighth Army moved forward at 2300 hours on 25 August and by dawn on 26 August all divisions were deep across the River Metaure. Energetic action with full air and naval gunfire support was applied against the withdrawing enemy, so that by 29 August the River Foglia had been reached by the Poles and Canadians. V Corps was late arriving, for road conditions were so poor and the congestion so great that wounded were taking up to eight hours(1) to reach a surgeon. This advance caught the enemy in the middle of a combined withdrawal and relief and was marked by only light ground casualties. For several days, the enemy continued his withdrawal, apparently unaware of our weight and intentions.

Air Support Organisation on the Eve of Operation 'Olive'

H.Q. A.A.I.
Operation
Instruction
No.65
(date
uncertain)
(Cabinet
Historical
Section)

In view of the magnitude of the combined operation shortly to be recorded, it will be worthwhile to glance briefly at the lay-out of the Army Air Support Controls. Forward Desert Air Force continued to be located with Main H.Q. Eighth Army and moved with it. Directives came down to Desert Air Force from the Commanding General of Mediterranean Allied Tactical Air Force, after the latter had consulted with the C.-in-C. Allied Armies in Italy.

No.1 M.O.R.U.,
O.R.B.

A detachment of H.Q. Forward Desert Air Force with some staff from XII Tactical Air Command was located with H.Q. Fifth Army. The unit, known as 'Ops A', was responsible for air units directly supporting Fifth Army, who had a liaison officer at Forward Desert Air Force. No.287 Wing, a Mobile Operations Room Unit, co-ordinated normal pre-arranged air programmes in the Polish Corps sector.

Army air support controls were laid out as follows. Fifth Army Air Support Control Section(2) controlled for Fifth Army: No. 2/5 A.A.S.C. for Eighth Army Main Sector: support for the Polish Corps sector was controlled by the Polish A.A.S.C., with one British Air Support Officer attached to its H.Q. There were rear links tying-in inter-army problems: close support air units had both British and American Air Liaison Officers from Fifth Army on temporary attachment. The main air support net was controlled from G (Air) Branch H.Q., Allied Armies in Italy, with duplicated out-stations at Fifth and Eighth Armies, Fifteenth Air Force and Tactical Air Force.

(1) Average time at the period was $3\frac{1}{2}$ hours.
(2) Abbreviation - A.A.S.C.

No. 285 Wing R.A.F. controlled all tactical and artillery reconnaissance squadrons from one central airfield, as well as co-ordinating all aspects of air reconnaissance. It also provided photographic reconnaissance for Eighth Army, and XII Photo Squadron, in conjunction with Fifth Army Photographic Centre, performed a similar function in their sector. Specific landmarks for day and night were allotted to prevent confusion, A-N for Eighth Army and O-Z for Fifth Army. (1)

Air Support 26 to 29 August.

From first light on 26 August, Desert Air Force put forth its maximum effort. Over 180 light and medium bomber sorties were flown in attacks on selected areas including gun and defences still under completion. Waves of fighter-bombers attacked guns and strongpoints. Armed and tactical reconnaissance missions maintained unbroken cover of the battlefields and lines of communication. Nineteen artillery reconnaissance missions were flown and, under their direction, 11 hostile batteries were engaged. Opportunity targets were few, for the Germans remained stunned for a few days and the two Rover teams only operated on four occasions. One hundred and fourteen Marauders bombed roads and bridges in the Apennines so as to create road blocks. The measure of the opening battle effort may be gauged by the fact that most of the 664 Desert Air Force sorties were directly concerned with the Gothic Line defences. That night the softening-up of Pesaro began. The air contribution was made by 39 Wellingtons and 21 Liberators. Their 257 tons of bombs joined a succession of naval artillery strikes and the attack was renewed the following two nights by almost equivalent numbers of aircraft.

With the Poles advancing past Fano, and the Canadians disengaging from their road tangles, the main air support was concentrated on acceleration of their movements. There was still little movement of transport or sign of reinforcement by road. 27, 28 and 29 August were crowded days. On the 27th, 567 sorties were flown and a wide range of the normal battle area targets were attacked with considerable success, apparent from the very numerous fires and detonations. Twenty to twenty-five lorries daily and a total of six locomotives and twenty trucks were destroyed. Night patrolling Beaufighters met with a few Ju.87s. Marauders and Baltimores were of special value in destroying gun nests and emplacements. By 29 August, the total tonnage dropped on the narrow front in the Pesaro area had reached nearly 2,000 tons.

R.A.F. WELLINGTONS' NIGHT ATTACKS ON PESARO

Pesaro (2) Town

No. 205 Gp.
O.R.Bs and
Appendices.

The main army attack on Pesaro had been timed for 2 September, by which time it was hoped that the Poles, having already by-passed it, could swing round to their right and

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- (1) No. 2/5 A.S.C. War Diary and Air Summaries.
 - (2) On the Adriatic coast 30 miles north of Ancona: built on a plain to the S. of the River Foglia, a plain 2 - 3 miles wide from N. to S. and 8 miles long S.W. up the Foglia valley. A town of ancient foundation rebuilt by Belisarius in the 6th century. Lucrezia Borgia lived here as the wife of Sforza, and in 1573 the poet Tasso recited his 'Aminta' before the court of the Duke of Urbino. Known in our own day for its Majolica pottery and silk and as a seaside resort.

envelop it. Operation 'Crumpet', by medium bombers from Corsica, was suspended, but the presence of a German parachutist division round and in Pesaro, where the defences of the Line were known to be strong, could not be ignored. Pesaro must be softened-up. The target was not the town, its art treasures and civilians, but the parachutist concentrations and their defence works in the areas adjacent to it: these areas were marked on special photographic maps and a plan devised for the attack. (1)

Mission Intentions, A.O.C., H.Q., No.205 Gp., O.R.B., 26, 27, 28 Aug. 1944

The R.A.F. and S.A.A.F. Group of Wellingtons, Liberators and Halifaxes

After close on four months in Bari in company with H.Q. Fifteenth U.S. Air Force, No.205 R.A.F. Group H.Q. moved to the Foggia area in April 1944; there it was in closer proximity to its wings and squadrons, reinforced in July by No.2 South African Air Force Wing and No.34 S.A.A.F. Squadron. (2) The full record of this famous group's operations demands its own historian, so great was their scope and intensity, executed under conditions of equipment always a lap behind their counterparts in the U.K. and U.S. The attacks on Pesaro offer a good opportunity of viewing them in more detailed relief than is generally possible in this narrative. (3)

- (1) Refer Figure 5A.
 (2) All flying Liberators.
 (3) Order of Battle No.205 Group R.A.F., C.M.F. August 1944

<u>Unit</u>	<u>Location</u>	<u>Aircraft</u>
No.205 Gp. H.Q.	Foggia area	"
No.205 Gp. Communication Flight	"	(With No.205 Gp. H.Q.)
No.231 Wing	Tortorolla	"
No.37 Squadron	"	Wellingtons
No.70 "	"	"
No. 236 Wing	Foggia	"
No.40 Squadron	"	Wellingtons
No.104 "	"	"
No.240 Wing	Amendola	"
No.178 Squadron	"	Liberators, Halifaxes
No.614 "	"	" "
No.330 Wing	Regina	"
No.142 Squadron	"	Wellingtons
No.150 "	"	"
No.2 S.A.A.F. Wing	Celone	"
No.31 (SAAF) Sqn	"	Liberators
No.34 (SAAF) "	"	"
Nos. 57 and 61 R.S.U.)	
No.37 A.S.P.)	
No.11 R.A.F. Rest and Leave Camp)	
No.4 S. & T. Column)	all Foggia area.
R.A.F. Regiment (H.Q. No.1322 Wing 2907, 2914, 2932/3 (LAA) Sqdns.)	
No.124 M.U. San Severo)	
H.Q. 4 Coy 7th A.F.S. (serving No. 205 Gp))	

Note

All operational airfields given above were in the Foggia area, most of them improved or constructed since the capture of the area.

A.O.C.

Brigadier J. T. Durrant, D.F.C., South African Air Force took over command of No.205 Gp. from Air Cdre J. H. T. Simpson, D.S.O. with effect from 3 August 1944.
 Air I was Wg. Cdr. D. R. P. Mills, O.B.E. up to 14 September and Wg. Cdr. H. E. Turner D.F.C. w.e.f. 15 September, 1944.

OPERATION OLIVE

FIGURE 5

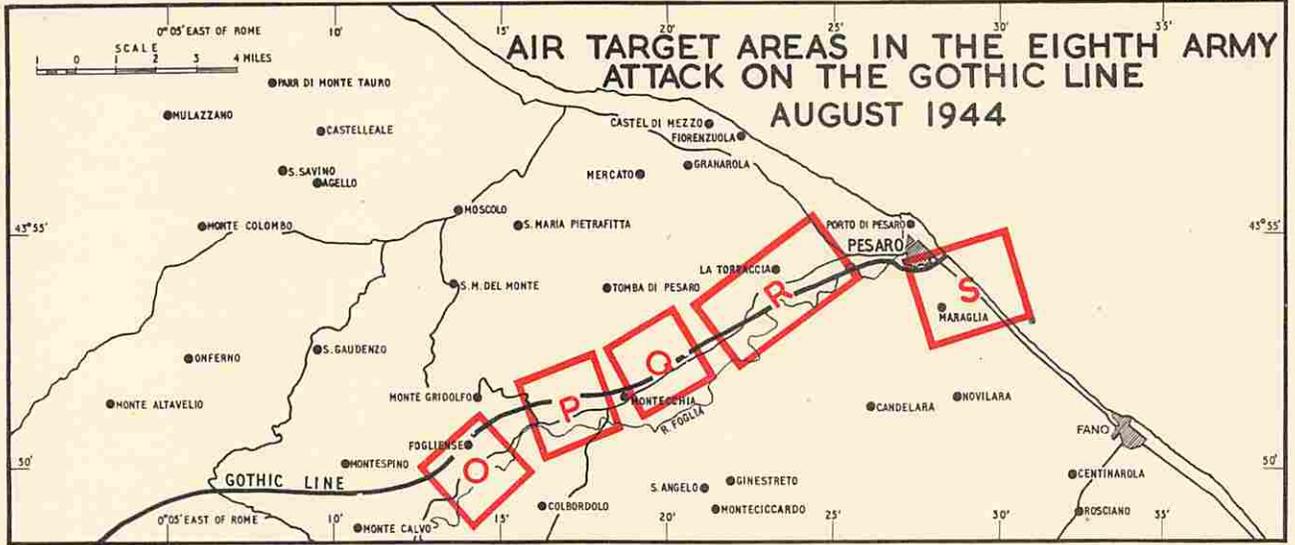


FIGURE 5A

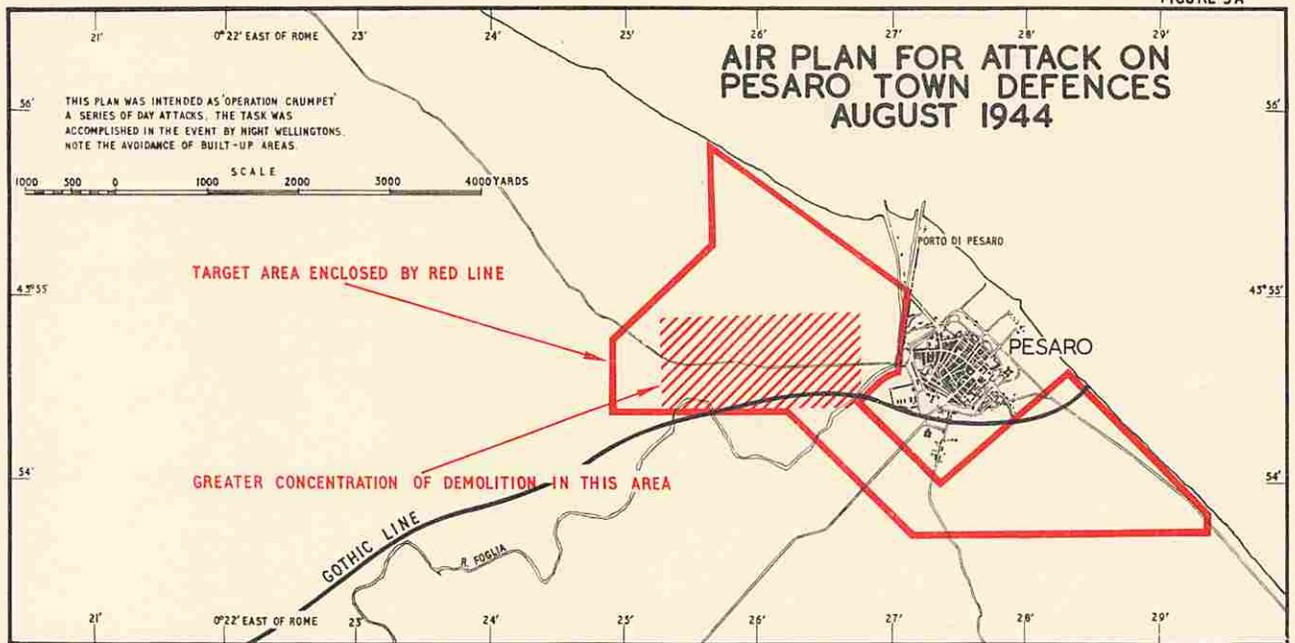
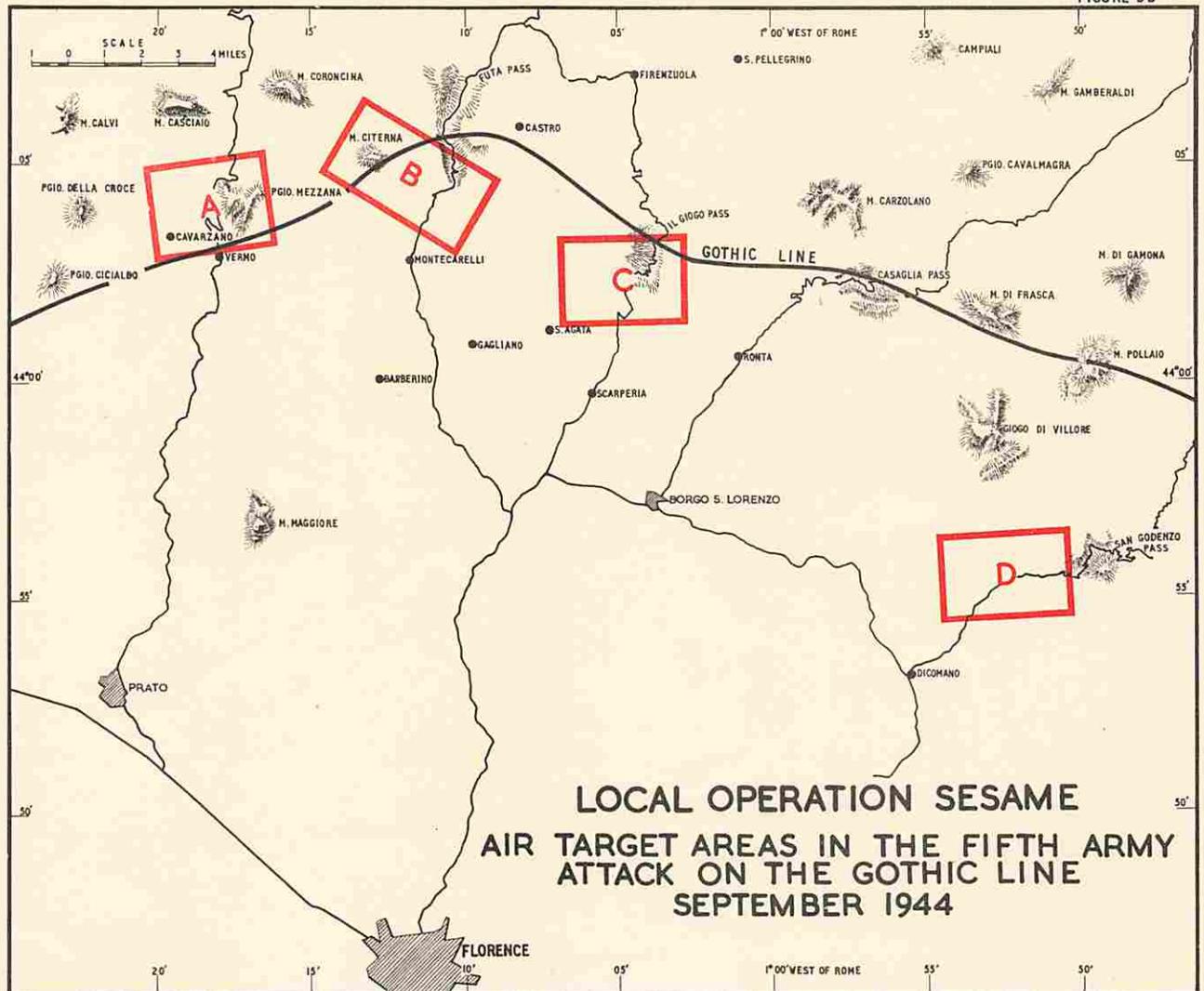


FIGURE 5B



An interesting stage in direction and target finding methods had just been reached which would prove, it was hoped, a turning-point in group navigation. On 11 August, a new 'Gee' chain, 'having been liberated from all offending gremlins', came into full operation. On 23 August, three Liberator aircraft fitted with 'H2X' arrived (without spares). As regards the flow of reinforcements, 42 Wellingtons were received during August from the U.K. This must be set against 54 aircraft lost and 30 damaged but repairable. Aircrew casualties were heavy - 245 missing and 14 killed. The accident rate was satisfactory.

The three Night Attacks on Pesaro(1)

Orders for 26 August were to carry out maximum harassing attacks on the enemy troops 'throughout the night'. No.2 S.A.A.F. Wing was to execute a three-minute blitz. The next day they were to destroy troops, equipment and supplies, to give the enemy no rest and continue the softening-up process. A three-minute blitz constituted the major part of this second night's attack. On the third night, orders were unchanged and the plan was again for a three-minute blitz. The town was not to be bombed and its immunity was ensured by a red target indicator being dropped on its centre and green indicators on the perimeter of the target area. Felonare and Pescara were the emergency airfields. The distance out was 227 miles.

The first night - 26/27 August -, 39 Wellingtons, 21 Liberators and six Halifaxes harassed the area - about eight miles behind the front line - for eight hours on end. The initial bombing led to a large explosion followed by a ten-minute series of smaller ones. The follow-up units covered the whole target area. The next night, the harassing operations continued and at 2300 hours a 'blitz' attack concentrated into three minutes was delivered by 60 aircraft. The results seemed, by the number of fires and explosions resulting, to have been fair. Weather and illumination were good. The third attack on the night 28/29th closed the series. It, too, achieved good concentration against only slight opposition from flak and all aircraft returned safely.

On 31 August, all three Allied corps encountered fierce resistance on the hills from Tomba di Pesaro to Mondaino, where ran the main Gothic defences. While the front was pushed forward, the Poles left Pesaro to its own devices. With the help of the Canadians, they cut the Pesaro - Rimini road. Pesaro itself was found evacuated on 2 September. Much equipment was found destroyed or damaged and many casualties had been inflicted, all as a combined result of the three night air raids and the naval bombardment.

AIR OPERATIONS IN THE EASTERN SECTOR UP TO 12 SEPTEMBER

The Breaching of the Gothic Line, 30 August to 3 September

The enemy realised that something more than a local offensive was afoot and moved reinforcements to the threatened sector. Neither these nor the 'Backs to the Wall' Order of the Day issued by the Commander of the German LXXVI Corps could save the Gothic Line. On 30 August, Allied patrols crossed

The Campaign in
the Northern
Apennines
Pt. III Sect. B.
Erit Hist.
Section Central
Med. (A. H. B. /
IIJ11/58/15(A-B))

(1) No. 205 Gp. O.R.Bs and appendices.

the Foglia and captured the first positions of the line before the enemy himself could occupy them. Reinforcements entered the line, but were swept back and all commanding features cleared. Our forces, reinforced by armour, crossed the Conca river and prepared for a breakthrough. To achieve this the enemy resistance had first to be broken on the Coriano Ridge: beyond it lay the even more forbidding Fortunato Ridge, barring the way into Rimini. All the way to Rimini the Desert Air Force was to join battle to the limit of its powers against an enemy who was beginning to react with customary vigour and ingenuity. The possibilities of making an amphibious right hook north of the Gothic Line were studied, but as by 31 August our operations were going well, the plan was cancelled.

Air Operations 30 August to 3 September⁽¹⁾

With the enemy now seen to be manning the Gothic defences in earnest, most pre-arranged targets were cancelled on the afternoon of 30 August. The fighter-bomber effort was placed mainly at the disposal of the Rover controls; the medium bombers were switched to Faenza marshalling yards. No decisive results of the intensity of air support were visible until the next day, when the first important breaches in the Gothic Line were made and the River Foglia crossed in force. Rover 'David' No.1, supporting V Corps on the left flank, had a very successful day, and was able to give nearly all its cabranks of fighter bombers opportunity targets. Polish Corps was supported by a large light and medium bomber force and by concentrated fighter-bomber attacks on pinpoint targets between 1600 to 1800 hours.

Advanced H.Q. Desert Air Force moved to Senigallia on 31 August. It recorded its general impression that the over-all effect of their intensive close support and the indirect support afforded both by its own and Tactical Air Force bombers had been satisfactory from the Army point of view. Much lighter resistance than expected had been encountered. Allowing for the natural elasticity of the line of an enemy caught in a process of flux, there was plenty of local confirmation that, as a joint operation, the advance had so far gone well. The worst was yet to come, however, and the high compression of effort could not be sustained indefinitely. Demands of support for the preliminary moves of Fifth Army began to come in. On the day in question, Spitbombers of No.7 Wing carried out unspectacular, but constructive attacks on Fifth Army front. Light and medium bombers continued indirect support by continuous strikes on marshalling yards such as Forli and Ravenna, to sap the enemy supplies.

On 1 September, Desert Air Force's support effort reached the peak figure of 690 sorties. On that day, on the 2nd and the forenoon of the 3rd, Spitfires, Kittyhawks, Mustangs,

(1) 2/5 Army Air Support Control War Diary, Aug-Sept. 1944.
G - (Air) 8th Army War Diary, Aug-Sept. 1944.
(Cabinet Hist. Sec. 1002/4c/202)

Baltimores and Marauders carried out a general 'blitz' (1) on German defences just ahead of our troops. The situation was hardening; it was urgent that, if possible, the fundamental minimum of enemy stores, petrol and ammunition should be bitten into, confusion sown in the distribution system and the enemy's freedom of tactical command neutralised. To this end, continuous armed reconnaissance was flown by day and Beaufighters patrolled by night. On the first two days, road movement was agitated, and some thirty-six lorries, two locomotives and a barge were reported destroyed and more damaged. Armed reconnaissances by Baltimores and Bostons stretched from coast to coast by night, with particular attention paid to the Rimini - Forli - Prato - Bologna areas: this work narrowed on the last day of the period to the Bologna - Ferrara - Rimini triangle. The gradual intrusion of Rimini into the operations was significant. It was perceptibly becoming a priority target. Its harbour was attacked, as well as Imola, Cesena and Budrio marshalling yards. Operation 'Crumpet' (the reduction of Pesaro's defences) was cancelled, for some of the areas it had been planned to attack were by then occupied by our troops and others were too close to the front line for safety.

Heavy rain on the morning of 3 September put all our forward airfields out of service. The Marauders, Baltimores and Spitfires of No.7 Wing could not operate, but some 250 sorties in all were somehow achieved by other aircraft. The close support and reconnaissance was directed round Rimini and over the triangle of which it formed one angle. Spitfires of No.241 Squadron scored a lucky hit on a train filled with petrol and ammunition, which blew up.

German Strategy in early September.

From the enemy's viewpoint, the Florence - Bologna and the Pesaro - Rimini axes were the two most dangerous sectors. While keeping an eye on the feeler moves of Fifth Army, he removed three divisions from his centre and right, together

German
strategy
Brit, Hist.
Sect. C.M.F.
(A.H.B./IIJ11/
58/21)

(1) Notes on the technique for an Air Blitz (September 1944)

(a) Bombline

The principle of the air blitz is the establishment of a bombline, in front of which aircraft can operate freely on any target that presents itself.

The bombline will be marked by blobs of white smoke made and maintained by artillery smoke shell. These will be about a mile apart, extending across the whole front, as nearly in line as the natural features of the ground will allow.

The bombline will be 3,000 yards in front of forward troops. The bombline will move forward as a whole, on a timed programme, lifting about every 15 minutes.

There will be a flying controller whose role will be to report on the effectiveness of the smoke bombline through 'Rover David' to the formations responsible for laying the smoke. The controller will also control the aircraft engaged on the blitz.

(b) D-Day trial

A trial Bombline will be put down on D-Day with the object of determining whether it is, in itself, enough. The width of the trial bombline will be 10 miles.

(c) The air attack

The air blitz will be of about 2½ hours duration. It must be intense.

The principal methods of attack will be fragmentation bombing and strafing.

After the blitz a lull in air attacks for about 2 hours must be accepted.

with a reserve division and elements of two others (all from Italy) to reinforce his left. Here the threat was immediate, especially strategically: if the Germans were forced off the Apennine Line (and there was clearly a danger of that happening) they would be forced to retreat in a north-easterly direction. Any other axis of retreat would drive them into a corner formed by the Seventh Allied Army in Southern France and the frontier of neutral Switzerland, while the north-eastern approaches to the Reich were left open. A withdrawal from the Gothic Line must, therefore, take the form of wheeling back the right flank while holding tenaciously on the left.

The first Battles of Coriano and Gemmano: 4 to 12 September.

Owing to fatigue, the slow arrival of tanks, difficult terrain and the stubborn enemy resistance, the approach to Coriano was a difficult process. ~~(S)~~ By 8 September, the enemy were counter-attacking strongly. Attack after attack by Eighth Army on the main heights failed. Reinforcements were bogged down in the poor, muddy roads. First class German troops held a position of great natural strength to such effect that by 12 September the Allies realised that their plans would have to be revised, and that drastically, if the Line was to be crossed, a firm position in Rimini, on the other side of the Coriano, Gemmano and San Fortunato ridges, established and the armies were to debouch into the Po plain. The task was, then, to attack the Coriano line, break through Coriano itself and the spur to the north of it: then to clear the Morano river, the Ausa river and the San Martino - San Lorenzo feature. Not until all these were reduced could an attack on San Fortunato begin.

Air Operations 4 to 12 September in Eastern Sector. ~~(S)~~(1)

For the greater part of this period, with the exception of 7 and 8 September, the Coriano and Gemmano defences were attacked by bombers of all types in preparation for the ground attack which took place on the night 12/13 September. The air bombing of San Fortunato overlapped it, running with hardly a break from 10 to 18 September: this was left in the main to the light and medium bombers. The targets in this latter area were gun and reserve areas behind the Marecchia River and the south-western spurs of the Fortunato feature. Naval bombardment supported I Canadian Corps.

4, 5 and 6 September saw intensive air activity on familiar lines and all squadrons took advantage of the fine weather to attack the stiffening enemy defences. They fought at a great advantage, for there was almost no air opposition. A few enemy fighters that came within range and eight Ju.87 night harassing bombers fared, as might be expected, badly at their hands; the German air defences in the north were inadequate to prevent damage to grounded aircraft at an unidentified airfield close to Udine in the north. Flak in the Rimini area, though, was evidently dense, as the increasing number of damaged aircraft testified - sixty on one day. The minuteness of the defence

~~(1) Allied casualties in Eighth Army since 25 August were 569 officers and 7,323 men killed, wounded and missing. Enemy casualties included 3,700 prisoners.~~

(1) ~~(S)~~ G - (Air) 8th Army History. (Cabinet Historical Section).
2/5 A.A.S.C. War Diary and Air Summaries.
No.1 M.O.R.U., O.R.Bs. DAF/Ops O.R.Bs.

The Gothic Line
Battles - 8th
Army. Brit.
Hist. Sect.
C.M.F.
(A.H.B./IIJ11/
58/15(A-B))

SECRET

75

targets attacked made any detailed assessment from day to day impossible, but photographs of the whole area appeared to Advanced Desert Air Force Headquarters to reveal as scarred a countryside as anywhere within Italy, with the exception of Cassino.

Just as the toll on the roads and railways was acquiring satisfactory volume, rain and low cloud, on 7 September, held up the air offensive. Airfields in this Adriatic sector were very susceptible to rain. Pierced steel planking was in short supply. The only point that functioned fully was the concrete runway on the Kittyhawk base. These poor conditions lasted for two days, then improved; gradually the effort on fighter-bombing, armed reconnaissance, locomotive and lorry bombing and shipping attacks rose. Mobile observation posts well forward directed Kittyhawks and Spitfires. The weight of attack drew closer to the Rimini bottleneck, but distant parts such as Casarsa were not neglected. Oil tanks were set on fire there. By 13 September, the combined close support effort on the two fronts had risen to nine hundred sorties.

It is now time to examine the position on the Fifth Army front, where the troops had been taking up key positions for an all-out attack on the central and western sectors of the Gothic Line.

AIR SUPPORT OF THE FIFTH ARMY OFFENSIVE

Air Support of Fifth Army 16 August to 12 September⁽¹⁾

From 25 August until 19 September, Desert Air Force supported both Armies. On 20 September, XII Fighter Command was set up in Italy and assumed the function of supporting Fifth Army, freeing Desert Air Force to concentrate on operations in the eastern sector. The early and successful conclusion of Operation 'Dragoon' had had the un hoped-for result of liberating air units for the still desperate battle in Italy. Fifth Army was, with the incorporation of XIII Corps, once more a mixed Anglo-American force.

From 16 to 25 August, a period of Desert Air Force commitment, XIII Corps received direct support mainly in the form of fighter-bomber counter-battery missions directed against guns in and around the area to the east of Route 65: these attacks achieved generally good results, according to ground reports. Fifth Army II Corps shared in the support and, as will be noted shortly, Coastal Air Force aircraft took an increasing share of responsibility in operations directly bearing on the land campaign. Some requests came direct from Fifth Army H.Q. These were for attacks on supply dumps and vehicle parks on XIII Corps front. Two fighter-bomber wings entered operations to train prior to transfer to Eighth Army front. A special Rover 'David' was allotted to XIII Corps to assist, and from an advanced observation post it supported the 1st British Infantry Division. Routine tactical and artillery reconnaissance missions were flown, the latter against targets assigned by the 6th Army Group Royal Artillery.

(1) Adv. H.Q., D.A.F., O.R.B. Operations of XIII Corps, Brit. Hist. Sect. C.M.F. (A.H.B./IIJ11/58/20(A-B)).

When Eighth Army attacked on the night of 25/26 August, the responsibility for requests for XIII Corps direct air support shifted to Fifth Army. From then on until Fifth Army attacked on 13 September, air support on their front was preparatory and directed towards the assistance of the Army as a whole, rather than any particular corps. For this reason, the major part of the fighter bomber effort was expended on road and railway communications and movement within and on the approaches to the battle area. Both indirect and direct support was afforded. On 9 September, the medium bombers of Tactical Air Force began a series of attacks on supply points, barracks and reserve areas south of Bologna, in which Fifth Army saw the mirage of safe, spacious and comfortable winter quarters ahead of them. The effect of these attacks was, in the nature of things, non-immediate: of more obvious significance to the army formations were the attacks by medium bombers with general purpose and fragmentation bombs on enemy defensive positions. Although interrupted by the steadily worsening weather, the tempo of these attacks increased between 9 and 12 September against targets to the south of the Futa Pass and in the vicinity of Firenzuola (north of Futa) and the Giogo Pass (Il Giogo). Up to this period air attacks had been designed so as to conceal as far as possible the actual point of the main attack, but this latest emphasis on the two great passes could have left no doubt in the enemy's mind.

The Fifth Army Attack - 13 September 1944

History of
5th Army
Washington
Infantry
Journal Press
1948.

II Corps' main attack on the Gothic Line began on the morning of 13 September. The strongest enemy defences were at the Futa pass. General Mark Clark decided to make his main thrust to the east of the Futa road, up the Firenzuola road through the Giogo pass. XIII Corps applied its main weight to assist II Corps and open the Marradi road. At first, the attack made little progress, but XIII Corps crossed the almost trackless mountains and established themselves on the watershed. On the 17th, Monte Pratone, the point of junction between the German Tenth and Fourteenth Armies, was captured and the enemy line broken. Poggio Signorini, Monte Altuzzo and Monte Celli fell and with them went possession of the Giogo pass. Enemy reinforcements failed to halt Fifth Army, who captured Firenzuola on 21 September. On 27 September, with the capture of Monte La Battaglia, ten miles short of Imola, the advance was halted by violent counter-attacks and communication difficulties: two days later, it was decided to switch the weight of attack to Route 65 for a direct thrust at Bologna. The fate of the strong Futa pass position had been sealed on 21 September by the capture of Monte Gazzaro. A week later, Fifth Army stood along a line some five miles north of Pistoia and thence over the mountains north of Lucca to the western coastal plain about three miles short of Massa, where the western end of the Gothic Line was covered by strong defences anchored on the sea. Thereafter, progress was slowed down, but by the end of the month the Gothic Line had been completely turned at its eastern end and pierced over a wide front in the centre. The enemy had decided to abandon the prepared positions that still remained in his hands, except for a small sector on the extreme west. It was a great Allied success, won at a great price, but difficult to exploit.

Operational
Instruction
No. 10,
8 Sept. 1944.

MATAF/Ops. and
S.A.S.O./
O.R.Bs

Bombing
Directives for
11 and 12
September.
M.A.T.A.F.,
O.R.B. App.
T.W.A.C.T.
L.878.

Air Operation 'Sesame' in Support of Fifth Army Assault

The neutralisation of strong points in the Gothic Line in the path of Fifth Army was the role of 42nd and 57th Bombardment Wings, who were to be afforded area fighter cover by Desert Air Force. Their attack on 11 and 12 September was known as Operation 'Sesame'. The defences to be attacked were in the area to the north and north-east of Florence. They had a margin of not less than 8,000 yards from the nearest friendly troops to work within. The two alternative parts of the plan - one for attacks by both wings on the areas on and around the two principal passes at H Hour and the other for two consecutive days before the assault - allowed for snap decisions according to Army dispositions. The second alternative was chosen, and on 11 and 12 September Nos. 42 and 57 Wings carried out the operation. This was only a part of the general air offensive. It cannot be claimed that the role of air in those opening phases was preponderant. With the exodus to France of so much of XII Tactical Air Command and the savage fighting proceeding on the right flank, it could not be otherwise. Both armies could account themselves fortunate that air doctrine was so stretched as to afford them the volume of close air effort actually provided at the expense of other commitments. (1)

On the day Fifth Army attacked - 13 September - 221 fighter-bombers attacked pre-arranged targets such as gun, mortar and smoke artillery positions, concrete emplacements and pillboxes in the vicinity of the two passes. From 1015 hours onwards, our reconnaissance aircraft reported scattered but steady road movement eastwards towards the republic of San Marino and from thence to northwards, as well as considerable traffic on the lateral Bologna roads south-west from Highway 9, southwest of Rimini. On 14 September, as the situation on Fifth Army front assumed clearer form, as many as 151 pre-arranged targets were attacked by Desert Air Force fighter-bombers. There were attacks from the two teams controlling the cabranks totalling to 168 strikes. Results were reported by Army observers as generally satisfactory on the mountain sector of V Corps, but only fair ahead of 4th British Division, where no direct hits were registered. The Army reported over-all success, however, against troop concentrations, gun positions and strongpoints, the reduction of which made their progress correspondingly simpler. The weather on this day was favourable, but it worsened on 15 September. Many requests came in for attacks on pin-pointed guns. These were met, but some pilots failed to see the guns reported. In the meantime, deep armed reconnaissance continued. One in particular beyond Venice returned claiming the destruction of seven M/T, a locomotive and ten rolling stock. Movement towards and through San Marino and loaded

(1) For example, on 11 September, D.A.F. ordered that Mustangs of No. 239 Wing were to cease long range reconnaissance pro tem and that there was to be no flying north of the Po River. The Army was to be given more close support if possible and more attacks were to be made on communications immediately behind the line. On consideration of previous results, this was, from a long-term point of view uneconomical, but it must be remembered that the Army had grown so used to our air superiority and all it implied that close support in large quantities had become an almost physical necessity.

troop carriers behind the lines of the two armies suggested that the Germans had not only decided to man the main line, but were taking up rear positions, too. On 17 September, low cloud covered the entire V Corps front and there were no air operations in the area. The Army continued to battle through the Giogo pass and gradually to by-pass the Futa position.

AIR PARTICIPATION IN THE BATTLES FOR RIMINI

Second Battle of Coriano and the Battle for Rimini 13 to 21 September

The Gothic Line
Battles - 8th
Army Brit. Hist.
Sect. C.M.F.
(A.H.B./IIJ11/
58/15(A-B))

On the night of 12/13 September, Eighth Army re-opened its attacks on the Coriano ridge. This move, combined with the Fifth Army assault north of Florence, marked the beginning of a week which was later referred to as one of the heaviest fighting on both fronts experienced. The Canadians and V Corps succeeded in gaining a foothold on the Coriano ridge. The second phase was to exploit across the River Marano. The Germans gathered in evident determination to deny us Rimini and stood firmly on a line running from the mountain on which the small republic of San Marino reposes, to the sea by Rimini. Their position was rendered as uneasy as possible by the week of bombing during the first battle of Coriano and the fight for San Gemmano. On information supplied by a prisoner of war, an attack on the headquarters of 26th Panzer Division by 22 Spitbombers was staged on the afternoon of 13 September. Although adjacent houses were destroyed, the H.Q. itself remained unscathed.

By midday on 13 September, all the first objectives were taken. Fierce enemy fire held up the Canadians attempting to cross the Marano near the coast, but failed to hold further attacks by Greeks, Canadians and British, who began to cross the Marano on 14 September. By 15 September, the Gemmano ridge was cleared and Montescudo, already heavily attacked by air, had fallen. But by 19 September, enemy forces to the volume of six good divisions in the San Fortunato sector and three in the Coriano sector barred the road to Rimini.

The Battle of San Fortunato

Ibid

The battle of San Fortunato, which amounted to the battle for Rimini, lasted over three days of very violent ground and air fighting. Air attacks were carried out on 17 and 18 September on the fiercely defended slopes. At the end of 18 September, the Army had a small bridgehead over the Ausa river. Using the only ford, they attacked on 20 September: while the 56th fought to retain its hold on the crest east of Coriano, the 1st fought a bitter, costly battle against enemy high velocity guns on the crest and had to abandon its attempt. Pressure by the Canadians, however, led to infiltration up to San Fortunato. On the 20th, they surrounded the defenders and rounded them up on 21 September. That night the Germans withdrew from the town of Rimini.

Rover Controls in the Battle for Rimini

2/5 A.A.S.C.
War Diary

At the time there were two Rover controls - Rover 'David' and Rover 'Paddy' (known for a short period as Rover 'Jimmy') on the Eighth Army front and one - Rover 'Joe' - on the Fifth Army front. 18 September saw the baptism of a new Rover - 'Frank' - which dealt entirely with enemy guns. At the height of the battle, it was found that Rovers 'David' and 'Paddy' could not cope with the number of targets given them by brigades

and divisions. It was becoming increasingly important to ensure that the heavy batteries actually attacked by our fighter bombers were the batteries troubling our troops. At the time the cabrank was full, some improved means of getting counter battery information to the aircraft by the fastest possible method was needed. To achieve this, Rover 'Frank' was situated at an A.G.R.A., (1) and the controller and the counter battery officer worked side by side.

The method of employment was in five stages. Firstly, the counter battery officers at the A.G.R.A. furnished the Army Air Support Control with the most up-to-date list of enemy heavy batteries which could be produced by 2359 hours each night: secondly, missions were briefed to attack one of these batteries: thirdly, they were briefed to 'call in' on Rover 'Frank' on their way to the target: fourthly, they reported to Rover 'Frank' the gun they were briefed to attack: fifthly, Rover 'Frank' checked to ensure that the guns were still active and, if they were, the mission carried out the attack; if not, or if some other battery had become particularly troublesome, Rover 'Frank' cancelled the initial target and rebriefed the mission in the air, from photographs.

Considerable Reduction of enemy Shelling as a Result of controlled Air Attacks

Ibid

The first Rover 'Frank' attacks were carried out on 18 September on the Canadian Corps front in 138 fighter-bomber sorties. In the afternoon, many attacks on gun positions in the Trebbio - Marecchia valley gun area were allotted. These guns were giving particular trouble to advanced Canadian troops. Eleven heavy batteries were engaged at one quarter of an hour intervals between 1500 and 1800 hours. These followed on morning attacks by 72 light and medium bombers and became a regular institution. There seems no doubt whatever that they were a success and reduced considerably enemy shelling on the army front.

Another refinement in air/ground co-operation was the discovery by some army corps that, by attaching a Forward Observation Officer to the Rover 'David' team, superior support could be provided, for the F.O.O. could take on, with his artillery, targets which the Rover turned down either because they were too close to our own forward troops or in some other way unsuited for air attacks. The F.O.O. could lay smoke to indicate a difficult target to the fighter bombers with the minimum delay. Programmes combining bombing with shelling could by this method be easily laid on: it was, for example, frequently effective to shell a target a few minutes after a bombing attack, just as the enemy was emerging from his slit trenches.

(1) A.G.R.A. - Army Group Royal Artillery, normally a unit operating a collection of medium guns for counter battery work. All artillery not under control of a division was grouped into A.G.R.A.s. under control of Army H.Q.

Progress of Air Attacks on the Fortunato Ridge⁽¹⁾

The first heavy attack on the Fortunato Ridge was on 11 September, when four squadrons of light and medium bombers attacked the defences. Thereafter, daily attacks were made to reduce resistance; these were assisted on 14, 16, 17, and 18 September by a complete bomber group from Tactical Air Force. The two main target areas were the reserve and gun areas behind the Marecchia stream, (over which it was intended to force the enemy) and the south-west span of the Fortunato ridge. On 13 September, light and medium bombers attacked morning and afternoon, and the fighter bombers worked over the river beds (or 'wadis') round Montescudo. On 14 September, a heavy concentration of bombs on the ridge was achieved and, as on the previous day, many hits were scored on bridges and roads, and many fires observed. One hundred and forty-four light and medium bombers of Tactical Air Command and 96 of Desert Air Force participated. The six squadrons of No.244 R.A.F. Wing Spitbombers, who had surpassed their previous day record⁽²⁾ (on 13 September) by putting out 251 sorties on 45 missions, did everything humanly possible to meet the increasingly clamorous Army requests for close support in the area. The weather, now increasingly erratic, prevented bomber attacks on 15 September, but some fighter bomber pilots operated five times that day. The next day, too, cloud was low in the afternoon and there were accordingly fewer close support targets, but 96 Tactical Air Force and 120 Desert Air Force light and medium bombers flew behind the enemy lines to destroy rolling stock and communications.

The two most critical and spectacular days for the Air Forces were 17 and 18 September. Weakened though the enemy was by the joint bombing and bombardment, the Allies had so far failed to dislodge him and were suffering grievous casualties themselves. The whole period, indeed, saw the bloodiest and most expensive fighting in the whole campaign to that date and set the Eighth Army back seriously for many months to follow. On 17 September, both the forward and reverse slopes of Fortunato ridge were bombed and strafed by 132 fighter-bombers. First the forward slopes, then the summit and then the reverse slopes were bombed. Coloured smoke bomblines were laid by aircraft. One hundred and sixty-two Tactical Air Force bombers bombed the gun area west of Rimini, and in the afternoon three major gun areas were attacked by Desert Air Force bombers, all with good results. Guns were often hard to find at the time; the Germans had long been masters of camouflage, and used every cover, including haystacks and church-towers, to conceal guns or observation posts. The results were very encouraging, many fortified buildings were blown up, many direct hits confirmed on pillboxes and machine gun positions and the whole feature studded with fires and explosions.

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- (1) Nos.244 and 239 R.A.F. Wings O.R.Bs. 2/5 A.A.S.C. Air Summaries and War Diary.
 (2) 247 sorties for 26 missions at Bou Grara, Tunisia on 16 April. 1943.

The only effort the Luftwaffe could put up in retaliation was an attack by two aircraft on 56th Division troops at 1115 hours. (1).

18 September saw the crowning day's effort, when Tactical and Desert Air Forces put up 804 sorties between them. The effort was divided between a concentrated attack in two early morning phases against San Fortunato ridge, pre-arranged light and medium bomber attacks on gun areas along the railway line west of Rimini and in the Trebbio-Marecchia valley, and cab-ranks of fighter-bombers supporting Canadian and V Corps. The first phase against Fortunato ridge was carried out by three entire Wings of fighter-bombers, between 0600 and 0700 hours, and took the form of synchronised bombing and strafing attacks on both the forward and reverse slopes. Spitbombers flying at ten-minute intervals edged a course between Kittyhawks and Mustangs. The second phase, from 0700 to 0745 hours, saw a change of tactics. While a very heavy artillery concentration came down on the forward slopes, air bombing and strafing was confined to the reverse slopes, now playing, as already noted, a significant role in German tactics. No.145 Squadron scored a fortunate hit on a house which proved to be an ammunition dump. This was one of many direct hits reported. The Army was enthusiastic over the general success and a repeat performance of a part of the bombing was cancelled, as the desired result was becoming apparent. The weather worsened later in the day. Air crews noticed how the nights were drawing in, the air growing colder and cloud base increasing. While No.244 Wing in the Fano area worked at extreme stretch, a similar effort was being recorded by No.239 Wing based at Iesi. They made a point of attacking troops in slit trenches and gun positions pinpointed by the army, a high proportion being not possible to define as such from the air. Squadron No.230 reported our own troops as cheering as our aircraft went in. That day Eighth Army enjoyed a very high proportion of Desert Air Force's effort - 546 sorties out of a total of seven hundred and thirty-two.

The Army established a firm foothold on the feature by the close of 18 September. It was intended that the night

(1) Luftwaffe Order of Battle.
Italy, 20 September 1944.

	<u>Strength</u>	<u>Serviceable</u>	<u>Type of aircraft</u>
<u>CLOSE RECCE.</u>			
Nahaufklärungs Gr.11	-	-	
1/11	11	9	Me.109 G.
2/11	13	12	Me.109 G.
<u>LONG RANGE RECCE.</u>			
Fernaufkl. Staffel			
2/(F)122	6	3	Me.410
4/(F)122	9	7	Ju.188 & Ju.88T.
6/(F)122	9	6	Ju.188.
<u>NIGHT GROUND ATTACK</u>			
Nachtschlacht			
Stab/N.S. Gr 9.	1	1	Ju.87.
1/NS Gr 9.	10	6	"
2/NS Gr 9.	12	9	"
3/NS Gr 9.	9	7	"
TOTAL:-	<u>80</u>	<u>60</u>	

Source: German Air Force Quartermaster returns (A.H.B.6.)

bombing programme in the area by Baltimores and Bostons on the previous night should be repeated, but this was impossible as their airfield was unserviceable. The strain of the previous fortnight's intensive air effort was evident among flight commanders. Aircraft serviceability was dropping noticeably. It was fortunate that the combined efforts to beat down the defences of Rimini finished when they did and Army calls diminished.

Air Operations in Support of Fifth Army 18 to 30 September, 1944.

No. 2/5 A.A.S.C.
War Diary

Notes on XIII
Corps Air
Support.
British Hist.
Section,
Central Med.
Pt. III, Sect. G.
(A.H.B./IIJ11/
58/20 (B))
(App.A-3).

While the bulk of the staff of the Fifth Army Air Support Section was American, XIII British Corps had its own British G.S.O. II (Air) to represent it at Fifth Army H.Q. The air support communications for XIII Corps (Br.) remained British and were supplied at the time under review by No. 2/5 Army Air Support Control, and later by No. 9 Army Air Support Control. Although American air summaries and war diaries of their controlling units are not at this date available, it is possible with the help of the records of No. 2/5 A.A.S.C. to present a reasonably coherent picture of air operations in support of Fifth Army generally. (1)

From the inception of the Fifth Army attack on ~~12~~ 13 September, until 31 October, XIII Corps received only a small proportion of direct air support, the main reason being the adherence of Fifth Army to the principle of calling for the main air effort in support of the main ground effort. For this reason, Rover 'Joe' functioned in support of II (U.S.) Corps from an observation post as from 13 September. The calls on it from the artillery, and from the regiments and divisions in II Corps were very numerous.

Pre-arranged fighter bomber direct support for the British Corps was also meagre, for experienced units accustomed to close attacks were already operating with the American Rover control and less experienced units were committed to attacks on rear enemy communications and other targets outside the zones of contact. The situation looked as if it might improve at the very point when bad weather intervened to cut down the volume of air support on all fronts. Tactical and artillery reconnaissance were decentralised to a greater extent than fighter-bomber support and an equitable system to suit Corps requirements ensured more beneficial results to XIII Corps in this field.

From 20 September onwards, the weather deteriorated progressively. Low cloud over the Apennines rendered many missions abortive and airfields frequently unserviceable. No medium bombers operated in direct support. Rover 'Joe' moved forward on 20 September in sympathy with II Corps, by then through the main passes and the stiffest defences of the Gothic Line. The enemy continued to withdraw all along the line: on XIII Corps front, fighter-bombers, mainly on pré-arranged missions, attacked roads and junctions to prevent or hinder this movement. Guns were attacked in the Casola Valsenio area and communications, and gun and bivouac areas in the vicinity of Palazzuolo, Marradi and Tossignano. At night, light bombers harried movement and communications centres, but were handicapped, as were the day operating aircraft, by difficult terrain and bad weather.

(1) At this period, but not in 1945.

Coastal Air Force Thunderbolt Support for Fifth Army

M.A.C.A.F.,
O.R.B.,
September 1944.

At the beginning of September 1944, the total squadron strength of Coastal Air Force was lower than it had been since May 1943. After rising to the peak of 56 squadrons in January and February 1944, it had steadily declined as the role of Coastal Air Force shrank. After the attack on Southern France, the strength fell to 33 squadrons.⁽¹⁾ The Germans had lost all their coastal air bases, watching stations and repair bases along the South of France. Coastal shipping and the threat by E- and R-boats to our surface craft and radar watches on enemy signals in that area had been reduced. Eight squadrons were rolled up. Fruitful work was at once found for those remaining. The Thunderbolts of 350th Fighter Group, switched to support of the Fifth Army, covered the rear areas from Bologna to the sea. In addition, 63rd Fighter Wing carried on a week of very successful anti-shipping operations in the Gulf of Genoa.

From 1 to 5 September inclusive, 350th Fighter Group⁽²⁾ carried out seventeen missions, dropping three hundred and twenty 500 lb. bombs in 160 sorties against buildings, bridges, ammunition dumps, storage dumps, workshops, factories, motor transport and railway rolling-stock. In these operations they lost only two aircraft, in an attack on workshops at Bologna. All the targets were North of the 44th parallel.⁽³⁾ The number of direct hits claimed was quite high. As an example of the effort this week, it is sufficient to consider the attacks in the area N. and N.E. of the west coast port of La Spezia, a centre of ammunition production and storage. Ammunition shortage, as the Allies had already experienced and were still to experience, could be a serious affair.

On 4 September, 16 aircraft⁽⁴⁾ reported some 20 hits on a dump 14 miles N.E. of the town, and 16 others⁽⁵⁾ reported 21 direct hits on a dump 12 miles N. of the town. On 5 September, eight aircraft⁽⁶⁾ started fires at a dump N. of La Spezia and eight others,⁽⁷⁾ attacking an ammunition factory N.E. of it, reported eleven hits in the area and five on buildings. These results bore directly on Fifth Army's successful efforts to weaken the enemy defences on the Gothic Line.

THE AIR OFFENSIVE AGAINST ENEMY SEA AND INLAND WATER TRANSPORTMilitary Importance of German Sea Transport

One problem that Mediterranean Allied Air Forces had never entirely solved was how to neutralise the enemy sea transport system which fed substantial supplies by the Tyrrhenian and Adriatic Seas to the front line. The value of this maritime effort to the two German armies may be gauged by the average monthly figures quoted by captured German

The German
System of
Supply in the
Field G-2
A.F.H.Q.,
Feb. 1946.
Brit. Hist.
Sect. C.M.
(A.H.B./IIJ11/
58/39)

- (1) R.A.F. - S.A.A.F. - R.A.A.F. 18 U.S.A.A.F. 7 F.A.F. 8
- (2) Under operational control of 63rd Fighter Wing.
- (3) The squadrons participating were 345th, 346th and 347th.
- (4) 345th Squadron
- (5) 346th Squadron
- (6) 347th Squadron
- (7) 345th Squadron

SECRET

84.

officers for the first four months of 1944, viz. 8,000 - 12,000 tons to Fourteenth Army along the west coast and 4,000 - 6,000 tons to Tenth Army along the east coast, i.e., about 12 per cent. - 18 per cent. of the total supplies for both armies. In the first half of 1944, the system controlled by the Ober Quartiermeister OBSW had involved the following dispositions.

On the west coast Genoa was the main on-loading port, Leghorn was the second, while La Spezia, with its well laid-out storage tank and pump installations, served chiefly as on-loading port for fuel. Civitavecchia and San Stefano had been the main off-loading ports. As the available flak forces were insufficient to protect them both at the same time, San Stefano, in view of the greater possibility of camouflaging ships in the harbour against air attack, became the only off-loading port. On the east coast, supplies from Venice for Tenth Army were unloaded chiefly at Ancona, and from thence sent overland, since Pescava was often bombed by Allied aircraft and constantly under observation by Allied fighting surface craft and since other ports such as Giulianova and San Benedetto, also attacked from the air, could only take very shallow draft vessels. Up to June 1944, sea supply had been very important to the armies in the western sector.

In the second half of 1944, from July onwards, as the Allied armies and air forces moved northwards, the shrinkage of the German front, increasing losses and damage from air attacks by Coastal Air Force, medium bomber units and the R.A.F. night Wellingtons of the Fifteenth Air Force, the reduction by attrition and by air and sea attack in the number of escort vessels, the virtual disappearance of fighter cover, and the increased Allied control over the west coast which followed the success of Operation 'Dragoon', all narrowed down the possibilities of supply by sea.

Now that Viareggio and Leghorn had fallen, La Spezia on the west coast and Ravenna on the east coast became the most southerly off-loading ports. Step by step with the deterioration of the sea transport situation, the rail transport situation was also becoming, on account of the continuous air interdiction programme, more acute for the Germans. For example, the running of supply trains to Genoa could only be achieved at times by repeated transloadings. Where speed was important, motor transport, mostly by night, became the most economical, fastest and safest way, since the Allied night operating air force was far too small to stop all night movement by road or by sea.

The efforts of Coastal Air Force to reduce the volume of coastal shipping by reconnaissance and attacks on ships and ports have been from time to time referred to, although space has not permitted a full record of all their activities. It was the opinion of many German officers and officials that the Allied Air Forces caused the greatest interruptions and damage to their sea transport along the coasts of Italy. Troops, by Hitler's orders, were no longer transported by sea. The transport of coal had become increasingly precarious owing to attack by air, and the patrolling of the south-east coast of Istria by our motor torpedo boats was eventually stopped. Large ships were no longer used in view of the losses, particularly in the vicinity of ports near the fronts. The consequent increased use of smaller craft called for a greater use of escort vessels, and meant lower capacity.

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Notwithstanding their difficulties, the Germans kept La Spezia, Venice and Genoa working until their evacuation. Attacks on ships were more effective than our attacks on port installations.(1) Even the heaviest air attacks on Genoa and Venice, while they put enemy ships out of action, only interrupted loading and unloading for a short time. Here, as in the case of the railways, repair methods had reached a high state of efficiency. Two-thirds of the losses to sea transport were ascribed to the Allied Air Forces and one-third to surface fighting craft, who were especially active in the Adriatic. Craft in the area Savona - La Spezia had so far come off fairly lightly. The hubs of the Genoa, Trieste and Venice system were not attacked in sufficient weight from the air to cause a complete breakdown of shipping supply.

Air Attacks on German Sea Transport in the Tyrrhenian Sea

Against this background, the programme of attacks on German shipping by Coastal Air Force in September may now be seen in perspective. Profiting by the focus of attention on the campaign in Southern France, the German coastal transport forces increased their activity in early September. An air force was found to deal with this traffic. No.328 Wing (the second)(2) based at the end of August at Alghero in Sardinia, came under the command of 63rd Fighter Wing. It comprised five squadrons(3). The general tendency, as deep sea shipping targets grew noticeably less, was for this Wing to concentrate on general reconnaissance and intruding, a task which included attacks on enemy shipping, and vessels of war and human torpedoes along the French Riviera. On the last day of August, three of these squadrons were switched to the Gulf of Genoa. For about a week they concentrated on the area, spreading their slight forces so as to be as comprehensive as possible. They achieved some success, sinking four vessels(4) and hitting fourteen, for the loss of four aircraft. Thereafter, sea transport in this area was much more difficult to find, a fact which seemed to prove the worth of these operations as a deterrent and to explain the emergence soon thereafter of a noticeable use of inland water transport by the enemy.

Reconnaissance of the Gulf of Genoa and the bombing of Sestri Levante had been proceeding throughout the latter half of August, most of this work being carried out by the South African Ventura crews. Results became more evident on 1 September, when in the early hours of the morning two Venturas bombed Sestri Levante, one attacked ships in Santa Margherita harbour and one bombed Savona. Three Wellingtons also attacked shipping in the Gulf, but could not observe results. A good deal of shipping was sighted, but Venturas failed to score any hits. Wellingtons bombed barges off Imperia. On 2,3,4 and 5 September, ships alongside the quays at Santa Margherita in convoy en route for Genoa and scattered in the Gulf, were all attacked by aircraft. Reports of the day strikes were less definite than those of the night-flying

(1) Because these were not repeated often enough in great weight.

(2) Formed at Protville, Tunisia 1 June 1943: disbanded 12 October 1944.

(3) 272 (Beaufighters, Day); 14 (Marauders); 458 (Wellingtons - R.A.A.F.); 17 (Venturas, S.A.A.F.) and 284 (Marauders and Walruses).

(4) 1 F-boat, 1 E-boat, 1 barge and 1 coaster.

Wellingtons and Beaufighter formations. Wellingtons of No.36 Squadron attacked an 8,000-ton merchant vessel south of Varazze on the night 4/5 September and scored several hits amidships. Venturas reported seeing a merchant vessel ablaze in the vicinity later and it is believed this was the same ship. The same night, three Beaufighters of No.272 Squadron sank an 800-ton coaster, and left a 1,200-ton ship burning fiercely. Other Beaufighters sank a barge.

This night's work was a typical example of the efforts of No.272 Squadron's Beaufighters that week against merchant ships, barges escort vessels and ports. Fierce anti-aircraft fire was usually reported, for the Germans had provided their vessels with generous defences. The most notable achievement of the period fell to this squadron as it was about to move across Italy for operations across the Adriatic.

The Sinking of the Liner Rex by Coastal Beaufighters.

For some time past, the 51,000-ton Italian liner Rex⁽¹⁾ had lain in Trieste, heavily protected by anti-aircraft artillery. On 4 September, a photographic reconnaissance pilot sighted her in tow by two tugs and with a destroyer escorting her on the way out. Again, on the evening of 6 September, she was sighted off Capodistria, south-west of Trieste. The indications appeared to Air Intelligence to be that the Germans intended to use her as a blockship. To prevent this, and bearing in mind Allied intentions to occupy and use the Trieste area to accommodate its air forces later, it was decided to attempt to put her out of action. The task was allotted to No.272 Beaufighter (R.A.F.) Squadron of Coastal Air Force. They left their airfield at Borgo in Northeast Corsica for Falconara airfield in Italy on 7 September.

Eight Beaufighters were airborne at 1025 hours on 8 September with an escort of eight Mustangs. As the formation approached the Rex, by then lying close inshore off Capodistria, a German F-boat opened up intensive fire, but was speedily put out of action by the escort. There was very heavy flak from Trieste harbour, but none from the Rex, suggesting a curious oversight on the enemy's part. The Beaufighters pressed home their attack and with their 25 lb. rocket projectiles scored 59 hits on the ship, of which 55 were reported as below the water-line. The Rex began to burn. The coastal Beaufighters turned for base, where they landed without damage. Although the Rex had been fatally hit, it needed the added efforts of eight Beaufighters of the Balkan Air Force⁽²⁾ to administer the coup de grace with 64 rocket projectiles. They left her on fire from bows to stern, with a 90 degrees list to port. No.272 squadron were officially credited with the destruction of the Rex.

Other Allied Attacks on Enemy Shipping and Sea Transport in the Adriatic

The enemy sea transport situation in the Adriatic was rather different from that in the Tyrrhenian. There was more activity at this period, both by coastal vessels and warships. As a sample of the air measures taken to meet the operations

- (1) She held at one time the Blue Riband for the Atlantic crossing.
 (2) Of No.283 Wing (Nos.16, 19 and 39 Squadrons).

of the enemy surface craft, - still an active menace, - it will suffice to consider several occasions when R.A.F. Wellingtons broke up organised attacking formations.

No. 221 Sqn.
O.R.B. and
M.A.C.A.F.,
O.R.B.

By the latter half of August, the Allied rate of supply build-up in the port of Ancona was beginning to disturb the Germans. From 19 August, operations were, from time to time, executed by E-boats based on Pola to halt this process. Our surface patrols made several inconclusive contacts with them before the night of 22/23 August, when, under the cover of a night of bad weather, three E-boats reached Ancona and launched torpedoes, hitting the outer mole but causing no serious damage. They were chased off by coastal guns and destroyers. Wellingtons⁽¹⁾ on patrol across the approaches to the Istrian peninsula had sighted two others, but both they and our naval patrols missed the three who reached Ancona.

Coastal Air Force was correct in its surmise that a distinct phase had been developing since 19 August and extended Wellington night patrols over the Upper Adriatic from Ancona to Fiume. Enemy operations continued. On the night 23/24 August, just off Cittanova, Wellington crews sighted two possible E-boats, but lost contact. On the night 25/26 August, four Wellingtons, also of No. 221 Squadron, sighted four E-boats off Trieste.⁽²⁾ They attacked with ten 250-lb. bombs, hitting one E-boat, which disappeared in flames. On the night 26/27 August, a formation of four E-boats attempted to attack Ancona, but were driven off in time by Wellingtons. Again, on the night 27/28 August, four Wellington crews sighted three E-boats off the Po delta⁽³⁾ and attacked them with ten 250-lb. bombs, but observed no hits. Several attacks on probable torpedo boat destroyers at the time failed to register hits.

This air offensive discouraged the German naval forces from attempting similar attacks for almost a month. Then, when a relaxation of vigilance might have proved serious, a ground radar station picked up three plots, which turned out to be E-boats, about 35 miles northeast of Bari. Two Wellingtons and three rocket projectile Beaufighters were despatched to strike. One Wellington proceeded direct to the given position, found the E-boats, attacked, but scored no hits. This Wellington homed the Beaufighters to the position, illuminating the E-boats. After the Beaufighters had attacked them, the E-boats turned and withdrew at high speed. The second Wellington, positioned so as to meet such a contingency, intercepted and bombed them without scoring a hit. After this episode, there ensued a period of only spasmodic E-boat activity. Wellington patrols combed the eastern coast of the Adriatic, but could hardly have had much success; there the situation, from the German point of view, was deteriorating fast. Russian troops, after sweeping across Rumania, had linked up with Yugoslav partisans. The Adriatic islands were being systematically evacuated by the Germans or captured by the Yugoslavs.

As regards the attacks on enemy coastal shipping in the Adriatic generally, it may be said that, apart from systematic operations by the Balkan Air Force linked with the general air

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- (1) Of No. 221 Squadron.
 - (2) At 45° 38' N - 13° 38' E.
 - (3) At 44° 55' N - 12° 35' E.

policy towards the Balkans as such, they were on the same lines as those in the Tyrrhenian Sea, that is to say, carried out by small, enterprising formations on a sweeping system of cover, but there were, at this period no repeated mass attacks on the ports, the real centres of the problem, on a scale sufficient to neutralise them, or do more than temporarily hamper movement.

Rise of German Inland Water Transport⁽¹⁾

German Supply
System in the
Field G-2
A.F.H.Q.,
Feb. 1946
(A.H.B./IIJ11/
58/39)

The reorganisation and extension of the inland water transport system in Upper Italy at this period was a sure indication of the cumulative effect of our air attacks up to that point. The German and Fascist Italian commands were taking thorough steps to ensure the passage of military and civilian supplies throughout the difficult period ahead, when Allied air rail interdiction and attacks on sea transport were unlikely to diminish. Air crews had frequently bombed barges, tugs and lighters on canals and were to do so increasingly from now onwards. The full meaning of these attacks will be clearer if a brief glance is taken at the situation preceding and following August 1944.

Transportflotte Speer

Ibid

The Speer Transport Fleet had been created by the Reich Minister for Armaments and War Production - Herr Speer - to use as extensively as possible, in collaboration with the Italian Fascist Government and civilian organisations, the river and canal lighters and tugs on the River Po between Ostiglia⁽²⁾ and the Po delta, and the canals in the Adriatic coastal area. The Speer Fleet was mainly engaged in carrying building materials for the construction of defence positions by the Organisation Todt (OT) in the area between the River Po and Venice, as well as industrial materials and locally produced armaments and civilian goods on Lake Garda and the canals in the area of Milan. Any space not required for army purposes was placed at the disposal of private commerce. It can be seen, therefore, how closely in practice certain targets attacked by the Allied Air Forces in Italy served both military and civilian needs. In principle, up to August 1944, inland water transport worked only over short distances, for only a few self-propelled barges or tugs were available, and on the canals barges were usually towed by animals from the tow path.

By August 1944, the needs of the battle and of civilian economy, and the cumulative strain on the road, rail and sea transport systems due to air interdiction and fuel and equipment shortages pointed to the need for more and speedier transport, increased waterway journey distances, and a more rigid organisation, more tugs, guard personnel and traffic control centres. All these Transport Fleet Speer could not provide.

Naval High Command South's⁽³⁾ Assumption of Control of Inland Water Traffic

Ibid

In August, a large section of military supply traffic was placed under control of Naval High Command South, which

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- (1) Binnenschiffahrt
 - (2) Whose bridge had been so heavily bombed in Operation 'Mallory Major'. The Germans used both cable railway and ferry when the bridge was unserviceable.
 - (3) Marine Oberkommando Sud or M.O.K. Sud.

organisation became responsible for all River Po traffic from Ostiglia to the estuary, and traffic on rivers and canals in the area between Ferrara, Rovigo, Padua, Treviso, Portogruaro, Cervignano, Grado and the Adriatic coast. The Grado - Chioggia route was of especial importance for Army Group supplies. Inland water traffic on the other rivers and canals remained under control of Transport Fleet Speer, who in turn became responsible to the General Commanding Transport in Italy.⁽¹⁾

The military traffic was controlled from a Headquarters at Venice⁽²⁾ with a Controller of Po Traffic⁽³⁾ at Adria in charge of a number of report centres. This system became cumulatively more important as our attacks brought about frequent interdictions between Trieste and Venice and destroyed or damaged bridges over the Rivers Piave and Tagliamento. Solid supplies were transloaded in Grado Belvedere from railway to canal barge, while liquid fuel was transloaded in San Giorgio di Nogara for onward transport to Venice, whence it was forwarded by sea, railway or motor transport. The whole planning, operational method and system of bidding for cargo space for this inland water traffic was essentially the same as for sea traffic.

The section of traffic handled by Transport Fleet Speer under the General Commanding Transport in Italy was delegated to a number of shipping officers on the Po west of Ostiglia, Lake Garda and at Milan. It was increasingly concerned with the supply of foodstuffs, building materials (mostly civilian), and the evacuation from Upper Italy to the Alpenvorland.⁽⁴⁾ An approximation of the proportion of supplies carried by inland water transport for the army gave the proportion for the Milan area as 29 per cent of all waterborne traffic, and as about 35 per cent for Lake Garda and the Po as a whole. It was, then, into these percentages that Allied air attacks were to eat as time passed.

AIR ATTACKS ON THE SAVIO AND RENO RIVER BRIDGES

The Romagna Country⁽⁵⁾

After the crossing of the Marecchia River, Eighth Army and Desert Air Force faced a long and discouraging period of nearly four months' fighting. The weather deteriorated steadily as another of the worst winters in living memory drew closer. The Romagna country ahead was a new kind of terrain. Its difficulties were endless and its moods variable. Thirteen considerable rivers crossed the Allied road between Rimini and Bologna. They were all certain to be most formidable in winter. Our troops were drawing up to the Ruso and the Fiumicino, supported closely by aircraft.

The river country presented a series of tank and infantry obstacles, some natural, some man-made, and there were five belts of country, each with different characteristics, none of them helpful to Desert Air Force or Eighth Army. The ground

The Campaign in
the Northern
Apennines
Pt. III Sect. B
Brit. Hist.
Sect. C.M.
(A.H.B./IIJ11/
58/15(A-B))

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- (1) General des Transportwessens in Italien.
 - (2) Leiter der Binnenschiffahrt.
 - (3) Leiter der Po.
 - (4) Foothills of the Alps - a military region - refer Figure 7.
 - (5) Refer to Figure 6.

was a special problem; experts came out from England to find a way out of the troubles it caused. Some idea of the conditions on airfields and roads can be gauged when it is realised that most of the soil and sub-soil, as also in most parts of the Po valley, was of clay. In dry weather it formed a fine, thick dust which rose readily to a considerable height; after the first shower the surface became greasy, slippery and treacherous; in really wet weather, or as a result of floods, the ground became a morass into which men, vehicles and aircraft sank deep. In winter, one day's heavy rain was liable to hold up operations for days, as the ground dried out very slowly. The system of close cultivation, the presence of innumerable high trellises for vines and fruits and the elaborate system of irrigation made the country ideal for defence, but difficult for offensive operations.

Desert Air Force Plan to destroy the Savio River Bridges

In the line of the Eighth Army advance lay the River Savio. The sector from the key town of Cesena southwestwards would have to be crossed in the thrust towards Forli, Faenza and Bologna. It seemed to the Desert Air Force that a concentrated and sustained effort against the crossings here would have the effect of forcing the enemy to stand and fight, or would at any rate impede and inconvenience his movement to an extent which would have far-reaching effects on the battle.

This project was agreed to, without enthusiasm, by the Eighth Army. They entertained a doubt whether the effort involved over a long period (for there was still plenty of opposition to overcome before they could hope to draw up to the river) would be justified. They were also disinclined to surrender the advantage, always real when a mobile and bitter struggle was in progress, of tactical air support, which they felt was needed more immediately in the forward battle area. On the other hand, they recollected, programmes of strategic interdiction such as Operation 'Strangle' and its similars on a smaller scale had undoubtedly made great and effective contributions towards the success of past ground operations, and they saw no justification for turning down, without a trial, a project of a more tactical character, which might lead, among other things, to a wholesale capture of troops and equipment if the enemy failed to get them across the river.

The Desert Air Force plan called for the use of medium and light bombers (Marauders and Baltimores) and fighter bombers (Kittyhawks, Mustangs, Spitfires and Thunderbolts). The main bulk of the German Tenth Army was situated some ten miles in front of the river over which its immediate lines of communication ran. Eight masonry road bridges crossing the Savio and a road bridge crossing one of its tributaries near the junction with the river, were available to the enemy. If these bridges could be destroyed, the enemy might be prevented or hindered from either switching divisions to support Fourteenth Army around Bologna or withdrawing in orderly fashion before Eighth Army.

Progress of Air Operations against the Savio Bridges

The programme began on 22 September and lasted for over four weeks. At first there were ten bridges (including the nine attacked). The enemy reaction to the attacks was strong and effective: at the end of the first week there were twelve bridges intact and serviceable. The Germans continued, as the programme developed, to construct temporary foot and road

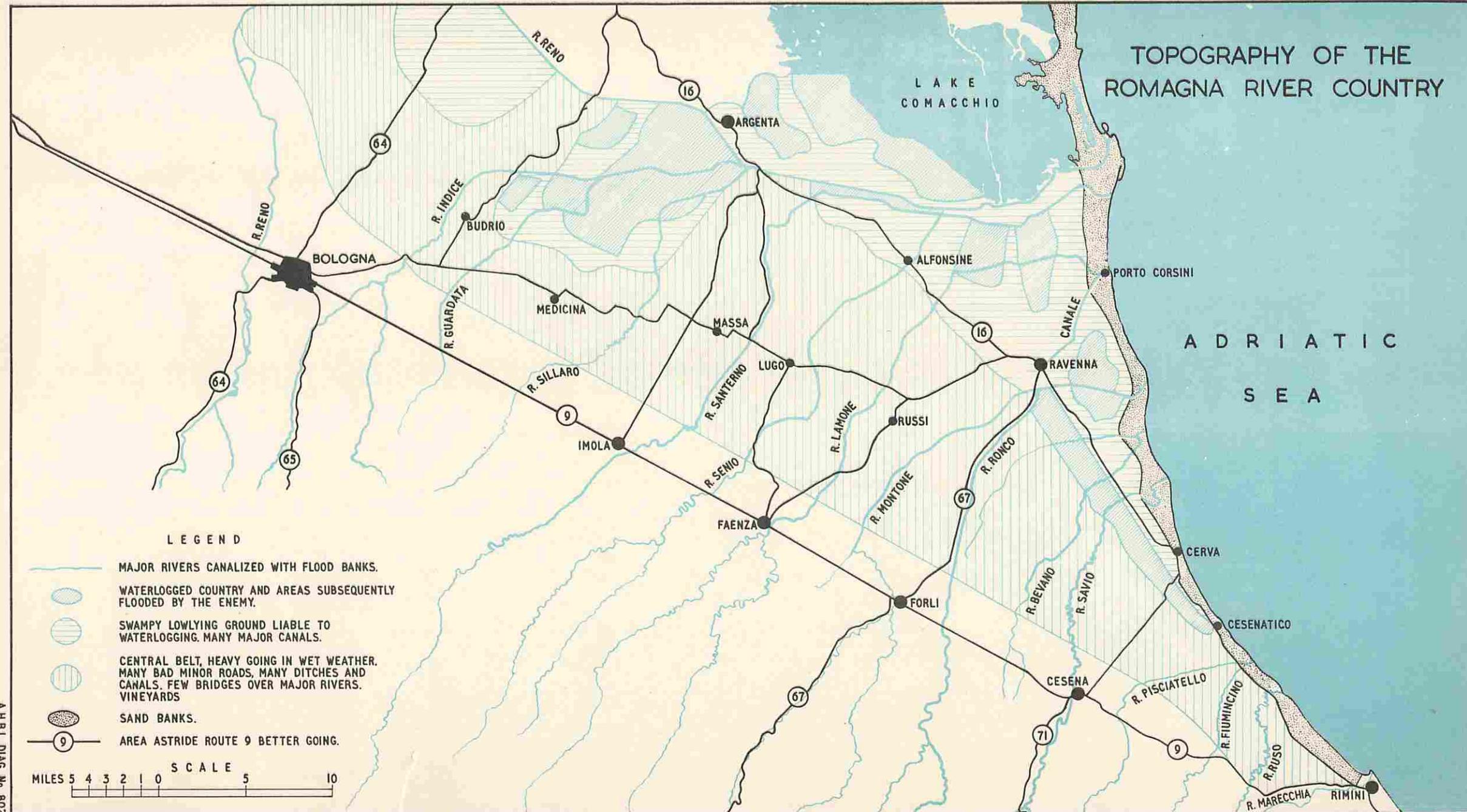
Report No. N.26
H. Q. M. A. A. F.
Operational Research
Sect. /14.2.5,
15th Nov. 1944.
(A. H. B. /11J1/122/
83/23(a) Enc. 6A)

G - (Air) 8th Army
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May 1945.
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Sect. 1002/4C/202

D. A. F., O. R. Dts.

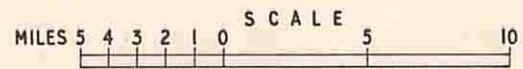
Ibid.

TOPOGRAPHY OF THE ROMAGNA RIVER COUNTRY



LEGEND

-  MAJOR RIVERS CANALIZED WITH FLOOD BANKS.
-  WATERLOGGED COUNTRY AND AREAS SUBSEQUENTLY FLOODED BY THE ENEMY.
-  SWAMPY LOWLYING GROUND LIABLE TO WATERLOGGING. MANY MAJOR CANALS.
-  CENTRAL BELT, HEAVY GOING IN WET WEATHER. MANY BAD MINOR ROADS, MANY DITCHES AND CANALS. FEW BRIDGES OVER MAJOR RIVERS. VINEYARDS.
-  SAND BANKS.
-  AREA ASTRIDE ROUTE 9 BETTER GOING.



bridges, (above and under water), to use river fords and smoke screens to conceal working parties and for other purposes of deception. By 27 September, two new military bridges and four fords were under way or operating. By 1 October, smoke screens and pontoon bridges had appeared, as well as bridges concealed close in to the banks by day and put into position by night. By 13 October, the number of temporary bridges had increased to such an extent that it was decided to concentrate future attacks on those bridges only which were capable of carrying the enemy's guns, tanks and heavier equipment. By 15 October, nearly all the road bridges had been either destroyed by air attack or washed away by the torrents caused by heavy rains. By 16 October the heavy bridges had been neutralised, with the exception of the Cesena South road bridge, which had been specifically exempted from attack by Eighth Army: although previously damaged it was still serviceable. On 19 October the town of Cesena was entered. Almost exactly four weeks after the opening of the Savio bridge air programme, forward troops reached the river in force. The Germans got back without undue loss of men or material. The Allied bridgeheads were effected by wading or by means of our own pontoon bridge. They were able to use none of the German's permanent bridges: all temporary bridges had been washed away.

The Weight of Attack on the Savio Bridges

Ibid

To arrive at a decision as to whether the results justified the effort, the weight of attack must be weighed against the effects and the Army's estimate of results must be considered, too. The effort was, as the following figures show clearly, very expensive. Fierce anti-aircraft reaction narrowed down the percentage of significant hits and many bombs of too light calibre were used.

In the first few days, 43 Marauder and 24 Baltimore bombers were employed without succeeding in damaging the two bridges attacked. The Marauders dropped one hundred and sixty 1000-lb. bombs and the Baltimores ninety-six 500-lb. bombs. The Marauders claimed direct hits on the north end road and approaches of one bridge, but photographs revealed failure to hit the bridge itself. The Baltimores' attack was fruitless.

The fighter bombers had greater success, and after reporting on 15 October that all permanent bridges were unserviceable, kept a watch. This watch and their attacks were both broken by spells of very bad weather. They saw no repairs by day; all the same, the Germans managed to get men and materials across. The weight of fighter bomber effort amounted to 609 sorties and 950 bombs.⁽¹⁾

(1)	Kittyhawks	Mustangs	Spitfires	Thunderbolts	Total
Sorties	341	129	97	42	609
Bombs:					
1000 lb.	240	82	0	0	322
500 lb.	273	174	97	84	628
Total No.	513	256	97	84	950
Total weight (in American tons = 2000 lb.)	188½	84½	24½	21	318½

An analysis of results proved conclusively that 1000-lb. bombs were more effective than 500-lb. bombs in the destruction of masonry bridges, re-emphasising previous similar reports on analogous operations. Six hundred and twenty-eight 500-lb. bombs were dropped as against three hundred and twenty-two 1000-lb, yet the latter destroyed five bridges against the former's one (this already damaged by a 1000-lb bomb).(1)

Every bomber crew knew that anti-aircraft fire affected their accuracy, but few knew to exactly what degree. The opportunity was taken to investigate for the benefit of future operations. The test used the centre of the bridge as the aiming point and worked out against the known flak opposition the probable errors in range and in line. It can be seen in the footnote at what significant rates the errors increased with the battery volume. A good sample of bombplots were taken (less than two-thirds) over the period 22 to 26 September from the photographs of craters in the neighbourhood of six bridges.(2)

Value to Eighth Army of Air Attacks on Savio Bridges

Ibid.

No fully considered testimony from Army Sources as to the value of the air attacks on the Savio bridges is yet available, but from records of the time it is possible to appreciate the impressions of some of the Army authorities at the time. We do know that the Army agreed reluctantly, to the experiment and that the German position was inherently weak before the attacks. The air threat to the bridges had certain results. It increased his engineering commitments, constricted his planning and hardened his defence. His intentions became clear when a captured draughtsman of the German 278th Division

(1) Effort in relation to results

	All attacks	Attacks with 1000 lb. bombs
No. of bridges U/S	6	5
F/B sorties per bridge U/S	101.5	56
No. of bombs per bridge U/S	158	64.4
Weight of bombs (in short tons = 2000 lb.).	53	32.2

(2) Accuracy of fighter bombers

Sorties/Bombs			Dropped	Plotted	Probable Error in		Opposition
K	M	S			Range	Line	
24/40			40	25	140'	90'	0
"	6/12	12/12	24	13	100'	95'	3 L.A.A.
24/60	18/36	6/6	102	55	240'	180'	3 L.A.A. + ?
24/35	6/12	-	47	23	220'	180'	6 H.A.A. 3 L.A.A.
21/33	6/12	-	45	35	300'	180'	12 H.A.A. 27 L.A.A.
18/54	12/22	-	76	45	350'	200'	12 H.A.A. 27 L.A.A.

K = Kittyhawks M = Mustangs S = Spitfires

The probable error in line is a distance chosen such that one-half of all bombs traced have line errors less than this distance, while the other half have greater line errors.

revealed the existence of three successive stop lines.⁽¹⁾ On 15 October, he had already taken the precaution of moving his artillery back across the river.

The Air Force held to their plan to retain the southern road bridge in Cesena intact for the use of Eighth Army. It was not their fault that it was not available when the time came. The Army's early intention had been to take Cesena first, then establish bridgeheads across the river lower down. At dawn on 19 October, the Army made for this bridge, but were held up short of it by gunfire. They reached the bridge the next day only to see it blown up as they arrived.

Considering these events not long after the period, Eighth Army Headquarters could not accurately assess the full effect on the enemy. It admitted the inconvenience caused him, but concluded that the dividends paid were out of all proportion to the effort invested and thought it not too harsh a judgement to say that it was, from an army point of view, a wholly improper use of a tactical air force at a time when the army it was charged with supporting was engaged in close combat with a determined enemy. It was true that the scale of effort was very high in proportion to the results. On the other hand, one must not forget to evaluate the long-term value of the experiment to both army and air force in this still formative period of the fighting, in terms of what an air force could and could not do.

Operation 'Divorce': Air Attacks on River Reno Bridges

A.H.B./IIJ1/122/
83/23(a)

The terrain of the Romagna country ahead made the Air Forces river-minded. The Germans held and kept the initiative here and will be seen later to flood vast areas in the Allied path. There was a growing understanding in the Allied Air Forces that every effort must be made to come to grips with the problem of the bridges across the major rivers. At the same period as the plan for attacks against the Savio River bridges was laid - 19 September - Desert Air Force Intelligence Section set out the importance of the River Reno bridges. These began near its mouth just north of Ravenna with Passo di Primaro. Thereafter the river ran westwards and northwestwards under the bridges of Maddalena del Bosco, Anerina, Lavezzolo, Mandria, Molinella, Alberino, Malalbergo and Poggio Renatico; soon after, it bent south and passed through Bologna. The most important of all - the Malalbergo⁽²⁾ - had been destroyed, but a secondary bridge there was well on the way to completion. In fact, the majority of the Reno bridges were already being duplicated and intensive bulldozing going on so as to make tracks down to water level.

Fatal Delay in Execution of Operation 'Divorce'

Ibid.

The battle for the Gothic Line had become the battle for Emilia and Lombardy. In the enthusiasm of the moment, with the weather still holding, Desert Air Force aimed at a sharp concentrated attack on the bridges without delay. This, they held, would sever the essential lines of communication

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- (1) Christa II, Hedwig and Hedwig II. The last was a line across the eastern outskirts of Cesena and along the east bank of the Savio on either side.
 - (2) The bottleneck on the enemy's most important highway - No.69 - from Bologna to Ferrara.

precariously maintained across the pontoons and overhead railways of the River Reno, and delay the enemy's withdrawal across the Po - which many believed imminent - so enabling the Armies to pin him down and destroy him. The elements of suddenness and sufficient weight to destroy twelve bridges in two or three days, before heavy flak could be moved in for their protection, were essential. Only Poggio Renatico was well defended. If the weather broke or delays ensued, it might be too late.

There were delays, the weather did break and it was soon too late. On 19 September it was hoped to put the operation into effect within two or three days. The programme against the Savio bridges absorbed all the time and effort for 'Divorce', so it was not until 21 October that the first Reno bridges were attacked. The operation began well. That day the Alberino bridge was completely destroyed and two others severely damaged. From the next day onwards, frequent and intermittent rain and low cloud interfered with cumulative effect, rendering continuity impossible. The attempt gradually petered out. New targets became more urgent. Operation 'Divorce' was not heard of again until April 1945, when circumstances rendered it once more feasible. (1)

Enemy Analysis of the Role of Air Forces in the Withdrawal.

The pressure of the Allied offensive slackened gradually after 21 October. Heavy fighting continued until 27 October without any appreciable gain of ground on either side. Both sides had come to the end of their strength and the weather conspired with this state of exhaustion to bring about a stalemate. The Germans held on to a few points on the Gothic Line in the mountains and held up all Allied progress just when a final breakthrough to Bologna had been hoped for.

Analysing the main factors which had influenced events since the Eighth Army first opened its assault on the Gothic Line, the Commanding General of the Tenth German Army, (2) in a survey written for the U.S. Historical Division after the war, considered there were five that counted primarily. Firstly, the Allies had and retained the initiative; secondly, the German Army Command forecasted our intentions correctly, but owing to the almost complete lack of air reconnaissance, agents' reports and the inadequacy of other sources of intelligence were unable to confirm and exploit their theories; thirdly, the difficult mountain terrain prevented rapid redeployment of forces; fourthly, the Germans lacked air support and suffered from shortages and inferiority in personnel and equipment; fifthly, the Allied air forces imposed a damaging strain on their supply system. Notwithstanding all these handicaps the high morale and excellent performance of most German units played a considerable part in the successful frustration of the major Allied plan to break through into the Po Valley before the winter (3).

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- (1) H.Q.M.A.T.A.F., Operation Instruction No.18. 3 April 1945. (A.H.B./ILJ1/122/83/23(a), Encl. 9(b)).
 - (2) General Von Vietinghoff.
 - (3) The Fourteenth Army's withdrawal to the Northern Apennines Part B Gen. Von.Vietinghoff (A.H.B.6 translation)

CHAPTER 3

THE CHANGING STRUCTURE OF MEDITERRANEAN ALLIED
AIR FORCES

COMMAND

Introductory

The record of operations to this point in late 1944 has given only slight indications of the important steps in the evolution of the Air Forces as an organisation and of their international character. This organisation was unique of its kind and a brief glance must now be taken at its structure and the changes forced by the course of the war upon its form. The system of command will first be defined, then the entity of R.A.F. Mediterranean Middle East considered alongside the American system of command; thereafter the drift towards separatism will be noted. This will be followed by a brief study of the various international co-operating air forces⁽¹⁾ and a record of how a new tactical command came into being to replace the XII Tactical Air Command.

Supreme Command in Practice⁽²⁾

In late 1944, it was commonly accepted practice to have one Supreme Allied Commander in each theatre of war. This was no new conception, for it had been discussed before the war in British Staff Colleges and the Imperial Defence College and considered by some to be the right solution to be applied to the British Services alone, quite apart from any question of Allies. In the Mediterranean this concept was not realised in its pure form, inasmuch as, while in U.K. and South East Asia there was one Supreme Commander with, under him, co-equal commanders of air, sea and land forces, in the Mediterranean the Supreme Allied Commander Mediterranean doubled the roles of Supreme Commander and Land⁽³⁾ Forces Commander; in other words, there was no equivalent of Naval C.-in-C. Med. and Air C.-in-C. Med. on the Army side. When, on 12 December 1944, General Alexander was appointed SACMED, the system continued. The position of the Supreme Commander and the three Service Commanders-in-Chief was very much the same in principle as that of the Minister of Defence (the Prime Minister) and the three Chiefs of Staff in the U.K. As Foch said in the First World War, the supreme commander was the leader of an orchestra. He received his directives from above and, with the advice and assistance of three very senior officers, it was not, as a Chief of Air Staff pointed out, 'necessary for him to be able personally to play the bassoon'. The decisions he had to make related to broad questions of strategy and military policy, which occasionally spread to the political field. He was the representative of the Combined Chiefs of Staff and implemented their policy, which in theatre matters was normally, but not invariably, formulated on his advice.

In the planning and execution of the plans he broadly formulated, the Army, Navy and Air Commanders shared common

(1) Appendices 14 and 25.
(2) MAAF/JCS.1391, 24 Sept. 1944. (A.H.B./IIJ1/273/3/29(B)).
(3) Now 'Ground'.

Headquarters at Caserta. The 'predominant partner' was, naturally enough, first Sir Henry Maitland Wilson, then General Alexander, who both acted as co-ordinator. It might be said that this was making war by committee, but the practice could never be harmful so long as it was composed of competent people with full responsibility for execution, as in fact it was. Naturally, a modicum of good will and give-and-take was an essential ingredient of smooth functioning. In operations over the sea the Naval Commander co-ordinated. In an opposed landing on a hostile shore, where the object was to get troops ashore and maintain them there, the soldier co-ordinated. (1) Where the principal emphasis was on air support to the partisans and the establishment of air bases on the Yugoslav mainland, it was logical that Air Officer Commanding Balkan Air Force should be the co-ordinator. But none of these officers was entitled, as was the Supreme Commander, to report on the general strategy as a whole or was qualified to exercise and accept responsibility (as at Cassino) for results. (2)

Royal Air Force Mediterranean Middle East (3)

The R.A.F. units in the Mediterranean came under a central command and administration known as R.A.F. MEDME. Its main administrative H.Q. had been absorbed into M.A.A.F., but not integrated. Under this H.Q., administration had been broken down to correspond with the levels of command, both in the Mediterranean and Middle East commands. Where British and American forces had been integrated, (as in the Coastal Air Force), appropriate R.A.F. administrative elements had been included in the H.Q. of the command concerned. The maintenance and supply of R.A.F. MEDME was divided into a base organisation serving all the various forces and operating directly under H.Q. R.A.F. MEDME, and field maintenance and supply units were included in each subordinate formation.

ORGANIZATION

Integration of Anglo-American Operations (4)

The British and American administrative Headquarters, H.Q. R.A.F. MEDME and H.Q. Army Air Forces Mediterranean Theatre of Operations (5), existed side by side in M.A.A.F. Headquarters. This latter also housed an integrated Operations, Plans and Intelligence Division and a combined Signals Division, all under unified control. All maintenance and administrative matters were dealt with by co-ordination rather than by combined action.

Strategic Air Force Headquarters was entirely American (Fifteenth Air Force), with an R.A.F. officer attached to co-ordinate the operations of No. 205 Group (night bombers). Balkan Air Force was entirely R.A.F. except that it exercised operational control over a few American units engaged on

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- (1) Thus in Operation 'Dragoon', the Commander of Seventh Army co-ordinated in Force 163.
 - (2) See Appendix 11 for Organisational Chart of A.F.H.Q.
 - (3) MAAF/A-9 (Final), 18 Aug. 1944. (A.H.B./IIJ1/273/6/29 (A)).
 - (4) Refer to Appendix 10 for M.A.A.F. Organisational Chart.
 - (5) AAF/MTO.

Draft study on the future of M.A.A.F. Plans Section H.Q., M.A.A.F., 22 Sept. 1944 (A.H.B./IIJ1/273/6/29(B))

special operations. Coastal Air Force, although still integrated in theory, was becoming increasingly an R.A.F. concern with the withdrawal of U.S. elements, and was gradually shrinking in size.

H.Q. Tactical Air Force had an integrated R.A.F./U.S. staff, but its various commands, i.e. the U.S. Medium Bomber Wings, Desert Air Force and the new American Tactical Air Command then in course of formation, were either entirely American or entirely R.A.F., except that some R.A.F. units were likely to be placed under operational control of the new U.S. Tactical Air Command. All U.S. units of Tactical Air Force, however, formed part of the U.S. Twelfth Air Force. The Commanding General Tactical Air Force was also Commanding General Twelfth Air Force and maintained a completely separate Twelfth Air Force H.Q. Desert Air Force was fully administrative, dealing direct with Headquarters, R.A.F. MEDME on administrative matters. H.Q. M.A.T.A.F., therefore, co-ordinated operational policy, but exercised very little direction over organisational or administrative action within the British and U.S. forces comprising Tactical Air Force. These aspects were handled through Desert Air Force and Twelfth Air Force H.Q.'s respectively direct from H.Q. R.A.F. MEDME and H.Q. A.A.F./M.T.O. and tended to conform to national policy, particularly on the U.S. side.

Location of Elements

Ibid

Strategic Air Force was now fully based in the Foggia - Bari area and was fed with aviation spirit by pipe-line from the port of Manfredonia. Although a partial move northwards had been occasionally advocated, this area was to remain its base until the end of the campaign.

XII Tactical Air Command had moved through Corsica into France and its Italian H.Q. was in process of being dissolved in favour of a new command. Desert Air Force was in Italy and planned to move northeastwards with the Allied Armies. The U.S. medium bombers were still located in Corsica and Sardinia, but their future was being actively discussed. They still formed part of the U.S. Twelfth Air Force. The Troop Carrier Wing was still in Italy. Tactical Air Force H.Q. was still mainly in Corsica, with an operational link in Italy located with Allied Armies in Italy. This link could do little else than pass on to Tactical Air Force requests by Desert Air Force for medium or long range fighter bomber effort, a ponderous and unrealistic arrangement. It was becoming increasingly clear that Tactical Air Force could not continue effectively to control both operations in Italy and in France.(1) Indeed, it had virtually relinquished effective direction of Desert Air Force.

The Balkan Air Force, located in Eastern Italy, controlled offensive operations in the Balkans other than operations by Strategic Air Force. It also controlled Special Operations for supplying Partisan forces in the Balkans, Northern Italy and Central Europe. Essentially a British force, it had U.S. units attached to it and operated directly under M.A.A.F.

(1) A situation forecast by Air Marshal Sir John Slessor before Operation 'Dragoon'

Coastal Air Force was responsible for the defence of the Western Mediterranean behind the armies, and convoy protection, anti-submarine and anti-shipping activities in that area. It had a main H.Q. located in Italy and subordinate formations in North Africa, Malta, Sicily, Italy, Corsica and Sardinia. Command H.Q. had an integrated British-American staff and the Command had British, American and French formations and British and American equipment. The U.S. elements of Coastal Air Force were provided from XII Fighter Command.

H.Q. Mediterranean Air Transport Service was an integrated American and British organisation, located in Naples, which organised the air transport routes in the theatre on behalf of M.A.A.F. It was responsible for the provision of air transport and communication services, the provision and maintenance of reinforcement and ferry routes and staging posts throughout the theatre. It co-ordinated the operations of the two lifting agencies, Air Transport Command and No. 216 Group, they being supplemented in the Middle East by Middle East Communications Squadron under operational control of No. 216 Group, and elsewhere by some 100 aircraft of various types under the direct control of Mediterranean Air Transport Service.

R.A.F. Malta and Middle East

Ibid

R.A.F. Malta had very considerable communications and base facilities, but its operational role had been reduced to small air defence and convoy protection commitments under Coastal Air Force. Since the war had moved away from the Middle East, R.A.F. Middle East had reverted to an entirely R.A.F. Command and administrative base, with the following commitments: air defence, convoy protection, anti-shipping and anti-submarine activities in the Eastern Mediterranean and the Indian Ocean, internal security in the Middle East, the Levant and East Africa, and for training and maintenance for the R.A.F.

INTERNAL EVOLUTION

The Departure of XII Tactical Air Command and 42nd Bombardment Wing⁽¹⁾

The invasion of Southern France led to an important series of changes within the Twelfth Air Force. It was decided that the Twelfth was to remain in Italy and that a new provisional tactical air force was to be formed in France to support the Seventh Army. A part of the Twelfth was drawn off to form its nucleus.

It became obvious early in September that a new tactical air command would have to be formed in Italy to cover support of Fifth Army, a task, at the time of the landings in Southern France, which was being handled by Desert Air Force. Headquarters XII Fighter Command was selected as the headquarters. With the ground advances in France and Italy, coastal and defence commitments had decreased, hence the change was made without endangering any other vital element of the Air Forces.

(1) XII Air Force Administrative History Part I. H.Q. XII A.F. (A.H.B./IIJ1/136(A)).

As a result of these decisions, September and early October saw a good deal of re-organisation. On 12 September, Brigadier General Benjamin W. Chidlaw assumed command of XII Fighter Command. On 15 September, the 87th Fighter Wing⁽¹⁾, the 47th Bombardment Group, the 86th and 57th Fighter Groups and various other units were transferred from XII Tactical Air Command to XII Fighter Command, and on 20 September, the 27th and 79th Fighter Groups joined them. On the same day the Command began operations in support of Fifth Army.

During the period of re-organisation, the new Command was first unofficially designated as 'X' Tactical Air Command. As this 'X' was the American abbreviation of 'Tenth', confusion arose; the title became 'X-Ray'; this in turn gave way to the official designation of XII Fighter Command, which on 19 October was itself changed to the final form of XXII Tactical Air Command, which was retained until the end of the campaign. Operationally it was a combined command, since it had No.7 and later No.8 South African Air Force Wing and the 1st Brazilian Fighter Squadron attached to it for operational control.

The many provisional organisations which had been set up within XII Fighter Command among its air warning units were disbanded and the old official units from which they had been organised were re-established. Other units were lost. On 3 October 1944, the 79th Fighter Group was transferred to the direct administrative control of Twelfth Air Force and operational control of Desert Air Force; and the 417th Night Fighter Squadron and the 1st Emergency Reserve Squadron were transferred to the Twelfth Air Force as well.

It was mid-November before Twelfth Air Force actually lost administrative control of XII Tactical Air Command and other units assigned to the First Tactical Air Force, (Provisional).⁽²⁾ H.Q. 63rd Fighter Wing was reduced to a holding cadre and its personnel absorbed within the Twelfth Air Force. The 319th Bombardment Group, which had been a part of 42nd Wing from its creation in the theatre, was transferred to 57th Bombardment Wing and re-equipped with Mitchells in lieu of Marauders. Various other important moves are given below.⁽³⁾

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- (1) Who will be remembered in connection with Elba.
- (2) First Tactical Air Force was a consolidation of XII Tactical Air Command and the French First Air Force. It became operational early in November 1944. Refer The Army Air Forces in World War II - University of Chicago Press, U.S.A.F.
- (3) On 10 Nov. 1944, the following units were transferred to European Theatre of Operations U.S.A: H.Q. and H.Q. Sqn. XII T.A.C., H.Q. and H.Q. Sqn. 64th Fighter Wing; 324th Fighter Group; 415th Night Fighter Sqn. 111th Tac/R Sqn. and a considerable number of signals, fighter control and service units. This was followed by the transfer on 15 Nov. 1944 of H.Q. and H.Q. Sqn. 63rd Fighter Wing; H.Q. and H.Q. Sqn. 42nd Bombardment Wing; 17th and 320th Bombardment Groups; and the entire 310th Service Group.

Background to Italian Operations

The strategic air war from Italian bases against Greater Germany, Central Europe and the Balkans does not come within the scope of this narrative, but the strong American pre-occupation with this sphere, the merger of the Fifteenth Air Force with the U.K.-based American Eighth Air Force for common objectives and the divided loyalties that merger created, the Balkan Air Force (soon to reach out, establish a base across the Adriatic and support the advance of Tito's army), the factor of military co-operation with Russia, these cannot be left out of the reckoning. They were powerful factors in the air operations over the Italian mainland. In spite of exterior and interior stresses, the various air forces and national bodies, each with its own tradition and system, did hold together within the strong, flexible framework of Mediterranean Allied Air Forces, evidence of the patience, tolerance and plain good sense on all sides.

Directorate of Operations and Intelligence

The hub of all air operations in the Mediterranean was still the joint staff⁽¹⁾ headed since 17 July 1944 by Brigadier General Cabell.⁽²⁾ From the creation of M.A.A.F. this staff began fulfilling its functions to the full, continuing, in effect, on the same lines as at La Marsa. It exercised direction and control over intelligence, plans and combat operations, and was divided on those lines with Anglo-American seniority alternating all down the line. The Deputy Director of Operations was British.⁽³⁾ Chief Intelligence Officer was British,⁽⁴⁾ his Deputy American.⁽⁵⁾ Air Commodore Pankhurst's three sub-section heads in Plans were American.

Intelligence

Good intelligence was, as always, a pre-requisite of good planning and successful operations. The organisation of Mediterranean Air Intelligence was directly linked with the Joint Intelligence Committee, Joint Intelligence Board and Joint Scientific Intelligence Committee in London through Assistant Chief of Air Staff (Intelligence) in London as well as with parallel organisations in Washington. The material upon which it worked flowed in from photography, visual air reconnaissance, signals, agents, diplomatic sources, enemy and neutral press and broadcasting, censorship, our own air-crews, prisoners-of-war, captured enemy equipment and documents, and other sources. It flowed out to London and Washington for evaluation on a strategic basis and, if of immediate importance, to other theatre commands.

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- (1) But in the field of tactical operations, the control and initiative was gradually but decisively passing to M.A.T.A.F.
 - (2) Earlier by Brig. Gen. Laurie Norstad. Air Cdre. L. T. Pankhurst was D. of Plans.
 - (3) Gp. Capt. MacGregor.
 - (4) Air Cdre. K. Woolley.
 - (5) Col. H. B. Hull.

TACTICAL AND POLICY DEVELOPMENTS

Thunderbolt Tactics

It is of great importance in following the air operations to keep careful track of the growth of air tactics, the experiments made and the right application of their results. Two developments in Thunderbolt tactics must be noted at this point, namely anti-flak attacks and the reduction in the size of flights.

Flak Dispositions and Trends in November/December⁽¹⁾

The principal opposition to our air operations in Northern Italy continued to be the enemy anti-aircraft (Flak) defences. In spite of heavy losses in flak guns admitted by the Germans during the long retreat of June, July and August, the intensity of flak in the remaining principal defended areas and the actual number of defended areas increased. With the shrinkage of the size of the total area to be defended, similar concentrations were to be expected.

November saw three main movements of flak. Firstly, a substantial increase and intensified reaction along the Brenner Pass line:⁽²⁾ a general shifting from Northwestern to North Central and North eastern Italy, leaving only enough in the withdrawal area to defend main road and rail crossings and cover movements of troops and material; lastly, the shifting of flak in the battle area to meet tactical requirements, with the principal defended areas still important bridges. It was estimated that at the time the Germans had approximately 2,500 heavy and light flak guns in Italy.

In December, the build-up of heavy concentrations gathered momentum, especially in the Brenner area, testifying to the local German belief in flak as the best deterrent in the absence of a defensive fighter force. Our medium bomber formations were spurred thereby to an increase in their anti-flak operations and claimed to have reduced flak accuracy.

New Anti-flak Tactics

The Thunderbolt crews had already developed by November what they claimed was the best antidote. This was a well co-ordinated and skilfully executed machine gunning attack by their own aircrews in co-ordination with medium bomber attacks. Mandatory requirements were complete information on the medium bomber plan of attack, the flak defences to be neutralised and the light flak installations in the area. Specific attacks were more profitable than area attacks.

Reduction in Size of Flights

With a steady decrease in the weight of enemy air opposition, it was found possible to reduce the normal size of a Thunderbolt flight formation from twelve to eight and often four aircraft. Several benefits accrued. On normal reconnaissance for road or railway movement, manoeuvrability, and hence accuracy of aim, were both greater. With the same number of sorties available, coverage of enemy territory

(1) M. A. T. A. F. Monthly Operations and Intelligence Bulletin, Vol. I No. 1 (A.H.B./IIJ11/48).

(2) The reasons for these will be made apparent in the next chapter.

became three times as frequent when flights of four replaced flights of twelve. Smaller flights drew less flak fire, and when they did draw it, evaded it with greater ease. The number of targets engaged, the area covered and the frequency of coverage were all increased by this simplification, and a greater area of enemy ground kept in a more or less constant state of alert.

Decentralisation of the Photographic Reconnaissance Wing

The tendency of drift towards partial separation of British and American air functions has been commented on in the previous chapter. As early as 18 August 1944, the Chief of Air Plans at M.A.A.F. Headquarters had recommended that 'development should, so far as possible, tend to separate U.S.A.A.F. and R.A.F. forces into homogeneous commands of their own Service'. Although the two administrative channels were left to run on parallel lines, it was not deemed expedient to interfere with the integration and combination of operational staffs. One of the rare exceptions to this important policy was the decentralisation of the Photographic Reconnaissance Wing on 1 October 1944.

From that date, its functions were carried out by the respective photographic elements of Fifteenth Air Force, Twelfth Air Force and No. 336 (Wing (R.A.F.)). From 10 October 1944, units of the Twelfth and Fifteenth Air Forces (under the operational and administrative control of their Commanding Generals) were to meet the photographic intelligence requirements of their respective Air Forces; No. 336 Wing (R.A.F.) under the direct control of H.Q., M.A.A.F., was to meet those of the R.A.F. (1)

Proposals to convert Fifteenth Air Force to Superfortresses and jet-propelled fighters (2)

On 4 October, General Eaker wrote to General Giles:-

'I have noted the German's claim that he is concentrating on jet and rocket-propelled fighters. If this

- (1) The Mediterranean Photographic Interpretation Centre was to continue to function on behalf of agencies other than the Air Forces, for example Fifth and Eighth Armies, or in other words, its theatre commitments.

Photographic Reconnaissance Forces Organisation

The new pattern of organisation is interesting as one adapted to a complex military lay-out of two Allied armies, each with its supporting air force, with air and army group commands and both British and American controlling bodies all in the field at the same time. The various Headquarters were served as follows:-

M.A.T.A.F. and Fifth Army:	No. 336 Wing (R.A.F.))
	(under operational control of M.A.A.F.))
	No. 285 Wing)
	(under operational and administrative control of D.A.F.))
H.Q., M.A.T.A.F. and A.A.I.	3rd Photo. Group (No. 5 P.R. and 23 P.R. Squadrons only))
	(under operational control of M.A.T.A.F. and administrative control of XII A.F.))
XII Fighter Command	No. 12 P.R. Squadron (detached from 3rd Photo. Group))

M.A.A.F./A-9 (Final) para. 53a. Plans Section M.A.A.F., 18 Aug. 1944. (A.H.B. IIJ1/273/6/29(A)).

- (2) The History of M.A.A.F. Narrative (A.H.B./IIJ1/176/69).

is done, and there seems no reason to doubt it, I believe our best antidote, aside from all-out attacks on the factories building these planes, is to have available on forward aerodromes by April 1st several groups of our own jet-propelled fighters.'

This suggestion was acted on and two P-80's were sent to Italy for training purposes.

While General Eaker was in the United States between 21 October and 12 November, the idea was broached to him of the conversion of the Fifteenth Air Force to Superfortresses. This, it was said, might become necessary owing to short production of Liberators. On his return to Italy, on 13 November, he at once directed General Twining of the Fifteenth Air Force and Colonel Colonna, the Engineer Commander, to make an immediate study of the airfield problems involved and to submit a conversion plan for a minimum of five groups and a maximum of eight groups. On 25 November, at a conference in Cannes of all the Army Air Forces Commanders in the European and Mediterranean theatres of operations, it was decided to make the initial conversions in Italy. But no conversions actually took place before V-E Day.

THE WINTER OF 1944 - 1945 AND THE AIR ISOLATION
OF ITALY FROM THE REICH

THE STRATEGIC BACKGROUND

The 'Octagon' Conference at Quebec⁽¹⁾

As the battles for the Gothic Line reached finality, Allied strategists met at Quebec to orientate their efforts in a rapidly changing world situation. Between 11 and 16 September, they considered the reports of the campaign commanders and debated the best means of bringing about the defeat of Germany and Japan. The European war was by no means finished, but its end some time in 1945 was conceivable. Far reaching decisions were made on operations in the Pacific and Southeast Asia, where massive forces were to be built up and employed.

There was a restatement of the execution of the overall strategic concept which concerned the air forces fighting in Italy. Among the important decisions taken were a change in the control of strategic bomber forces in Europe, General Eisenhower's plan to continue his offensive through the winter, the decisions to leave enough resources in Italy to bring the campaign to a head and not to go into the Balkans in force, and an effort to co-ordinate the U.S. - Soviet - British military effort.

Decision affecting the Mediterranean Strategic Air Force

Prior to the launching of 'Overlord', control of all air forces operating out of the U.K. passed to General Eisenhower, thereby complicating still further the relation of Fifteenth Air Force in Italy vis-a-vis General Eaker and General Maitland Wilson. At Quebec it was decided to end this arrangement as lacking in force. Control of the Strategic Bomber Force in Europe was to be exercised by the Deputy Chief of Air Staff, R.A.F. and the Commanding General, U.S. Strategic Air Forces in Europe, the two acting jointly for the Chief of Air Staff, R.A.F. and the Commanding General U.S. Army Air Forces, the latter acting as agents of the Combined Chiefs of Staff.

Italian Campaign's Contribution to Overlord

As air and ground tactical operations in Italy were primarily intended to assist 'Overlord' and hold down potential German reinforcements to its combat area, Italy was always to a greater or less degree sensitive to the progress of Overlord. It could make substantial claims, apart from its military successes in their own right, to have made three major contributions to the success of 'Overlord'. These, the Supreme Commander in the Mediterranean defined, shortly afterwards, as follows. Firstly, Operation 'Dragoon', created from Italian sources, had freed the South of France ports, led to the capture of 50,000 prisoners-of-war and to the junction of Sixth Army Group and the Central Group of U.S. Armies west of Belfort far ahead of schedule. Secondly, it had continued

(1) Gunfire 220, 17 Sept. 1944. Text of final report of 'Octagon' Conference, CCS. 680/2 in C.O.S.(44)875(0). (Cabinet Hist. Archives).

C.O.S. 520/6
in C.O.S.(44)
875(0).
(Cabinet Hist.
Archives).

Signal MEDCOS
201 9 Oct. 1944.
(Cabinet Hist.
Archives).

the offensive in Italy after substantial ground and air forces had been taken from it, taken 10,000 prisoners-of-war, inflicted 30,000 more casualties and was retaining 28 enemy divisions in Italy, although two Panzer Grenadier divisions had passed to the West. What he did not stress, but what is very relevant, was that by virtue of the very existence and threat of this great and active front, coupled with the pressure of Russian forces in the East, partisan pressure in the Balkans and the threat from the Middle East, the grand total of enemy divisions actually held away from the Western Front area in the summer of 1944 was 55 divisions.⁽¹⁾ Thirdly, there was the direct threat presented by the air, ground and naval forces in Italy against the Balkans, retaining in October of that year some 450,000 German troops⁽²⁾ in that area.

Means and Ends in Italy

In considering the problem of Italy, the Combined Chiefs of Staff were always guided by the need of fine adjustment of means to ends. Too rapid success there would, if the Germans staged a successful withdrawal, shorten their lines and enable them to transfer divisions to the 'Overlord' area, where Brussels, Le Havre and Antwerp had fallen to the Allies and American forces had reached the German frontier.⁽³⁾ They saw no objection, therefore, to transferring battle-hardened veterans of the Fifth and Eighth Armies and Mediterranean Air Forces to the West from time to time. They crippled the immediate Italian offensive by so levelling up the odds and created problems and fruitless situations for the armies and air forces there; but the balance was effected and the Germans contained. It was also true that the Germans were containing us. In September, at Quebec, however, the Allied grand strategists were so impressed by the possibilities presented by General Maitland Wilson that they agreed that no major units should be withdrawn from Italy until the outcome of General Alexander's offensive, directed on Bologna and Rimini, was known. Landing craft then in the Mediterranean might stay there, in case the Germans withdraw beyond the Adige and it became necessary to occupy their freed forces by staging an amphibious operation in Istria.

General Wilson's Forecast of Campaign Development

The Supreme Commander Mediterranean considered that operations would develop in one of two ways. Either Kesselring's forces would be routed, in which case it should be possible for the Allies to pursue him towards the Ljubljana Gap and across the Alps through the Brenner Pass, leaving a small force to clear up Northwest Italy, or, on the other hand, Kesselring's army would succeed in effecting an orderly withdrawal; in the latter event, it did not seem possible that we could do more that year than to clear the Lombardy Plains. Difficult terrain and severe weather (the main deterrent to continuous air operations) would prevent another major offensive until Spring 1945.

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- (1) 25 in Italy, 19 in the Balkans, 11 in the South of France.
(2) 21 divisions plus some independent brigades.
(3) Near Aachen and Trier.

Ibid

'Octagon'
Conference
(Cabinet Hist.
Archives)

MEDCOS 201
9 Oct. 1944
(Cabinet Hist.
Archives)

Turning to the Balkans, General Wilson could anticipate a situation in which the bulk of the German forces there would be immobilised south of a line Trieste - Ljubljana - Zagreb and the Danube. There was a strong feeling in Army and Air circles in Italy that they could do much to precipitate such a situation; but there were no ground forces available in the Mediterranean to employ in the Balkans except the small force of two British brigades from Egypt (being held in readiness to occupy the Athens area and so pave the way for the commencement of relief and establishment of law and order and the Greek government), and the small land forces in the Adriatic, which were being actively used, primarily for commando type operations. Everything pertaining to the future in this region depended on the course of events in Italy. The Mediterranean was to continue to be the source of supply for the Allied forces who landed in Southern France.

Co-ordination of U.S. - Soviet - British Military Effort ⁽¹⁾

On 30 August, the Russians had captured Floesti in Rumania. In early September, after two days war against the Russians, Bulgaria was occupied and dutifully declared war on Germany. At Quebec, it looked as if the Russians would occupy all or most of Yugoslavia and this possibility, as well as the sincere wish to aid the Russian military effort, coloured our air and ground strategy. At the point under review, steps were initiated to co-ordinate the efforts of the Allies in Italy with Russia, with a Tripartite Military Committee based in Moscow and the elimination of delays as the first objectives. ⁽²⁾

Influence of 'Overlord' on Italian Operations

General Eisenhower's broad intention was to fight an offensive winter campaign, to press on with all speed to destroy the German armed forces and to occupy the heart of Germany. Considering that the enemy would concentrate the remainder of his available forces in the defence of the Ruhr and Saar, he had decided to strike there, breaking the Siegfried Line and seizing crossings over the Rhine. The Conference drew attention to the advantages of the northern line of approach into Germany as opposed to the southern, and the necessity for the opening up of the Northwest ports, particularly Antwerp and Rotterdam, before bad weather set in ⁽³⁾

Signal MEDCOS
201
9 Oct. 1944.
(Cabinet Hist.
Archives)

On 9 October, General Wilson stated that in view of the decisive operations intended in the 'Overlord' area, it was of vital importance that there should be no relaxation in the pressure of the offensive in Italy, which might enable Kesselring to release divisions to the West. Alexander had only one fresh division left; the rest had been fighting very

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- (1) For a well documented record of M.A.A.F.'s struggle to maintain civilised relations with the Russians, refer to Col. Parton's 'The History of M.A.A.F. 1 Sept. 1944 - 9 May 1945' narrative volume (A.H.B./IIJ1/176/69(B)).
- (2) 'Octagon' Conference minutes. (Cabinet Hist. Archives).
- (3) Marseilles, Toulon and Port Bouc had not yet filled the primary need for port space and were, in any case, 500 miles from the western front.

hard for several weeks. It was not wise, he considered, to count on more than an advance up to the line of the River Adige, the next probable enemy defence line by the end of November. Then a pause of at least three months was necessary as a preliminary to an offensive in the Spring. An amphibious operation against Trieste in 1944 was now impracticable. The violent fighting proceeding at the time might succeed in driving the Germans back into the Po Valley, but the weather had broken, the terrain of the Lombardy plain was wet, intersected with numerous ditches, and, owing to the presence of vineyards and olive groves, visibility was severely limited. No advantage could thus be taken of our superiority in armour. The bad weather was seriously limiting the scope of our air superiority.

Limited Objectives in Italy

SAC(44)112
A.F.H.Q.,
23 Oct. 1944.
(Cabinet Hist.
Archives)

Twelve days later, General Wilson, the Prime Minister and the Chief of the Imperial General Staff conferred and arrived at the conclusions that owing to lack of adequate formations, the onset of winter conditions offsetting our air and armoured superiority, the critical replacement and ammunition situation (the latter world-wide) it was not possible to carry the offensive beyond the Ravenna - Bologna - Spezia line. If it were not reached early in November, the offensive might have to be halted before it. They were to go over to an offensive-defensive on this line. Six divisions were to be withdrawn from the line and plans laid for an operation, with air support, into Yugoslavia in a wide turning movement.

External Events November 1944 to January 1945

To complete the background against which events in Italy must be seen in perspective, a rapid survey of the course of the war in Europe must be sketched in.

The plans of General Eisenhower⁽¹⁾ progressed successfully, but slowly. The campaign in Northern France ended on 14 September. The first V.2 rockets began to fall on London and Paris. On 17 September, the 1st Allied Airborne Army landed at Arnhem and Nijmegen. The Arnhem forces were reduced and the small fighting remnant withdrawn. The advance was blunted. Temporary stalemate ensued. Eisenhower turned to the reduction of Walcheren Island and the development of Antwerp to secure his rear supply lines. Bomber Command attained new heights of effort. The Allied Expeditionary Air Force was disbanded and Air Staff Supreme Headquarters Allied Expeditionary Force formed on 15 October. Unity of effort and concentration on narrower fronts followed. Airborne and seaborne landings were launched in Greece and the liquidation of German forces there carried out. We began to enter the Aegean. An end was brought to the successful mining of the Danube by Italian-based aircraft.

In the West, Aachen was captured. Offensives, heavily supported from the air, developed in the Metz - Nancy area, towards Cologne and Metz. All was going favourably, when a surprise counter-offensive opened in the Ardennes, the effects of which took until 26 January to annul. It was a highly dangerous threat not clearly foreseen, but it had, as

(1) Who had assumed operational control in N.W. Europe on 1 September.

will be seen, no correlation with the Serchio Valley offensive staged by the Germans at the same period. In February, the Allies resumed their offensive. Heavy air attacks preceded the ground movements towards the west bank of the Rhine, and began the isolation of the Ruhr. On 7 March, American forces crossed the Rhine. By 24 March, after a heavy air onslaught, the Lower Rhine was crossed and by 1 April the encirclement of the Ruhr completed.

Russian forces reached Warsaw on 11 January, cleared Hungary and Lithuania, occupied Vienna on 9 April and by 22 April were fighting in Berlin. They did not operate in Jugoslavia as widely as expected, but concentrated on the reduction of Hungary, relying on political stratagems to ensure them a durable stake in the Balkans, relinquishing Greece for the time being as an Anglo-American sphere of interest.

Stiffened German Resistance in Italy

The Allies were driving in the German defence perimeter on one long front from the Low Countries through France, Southern Germany, Northern Italy, Hungary, the Balkans and East Prussia. The least mobile sector of the front was in Italy. There the Germans continued to resist and reinforce in great strength of seasoned troops and armour.⁽¹⁾ Bologna was one of the strongest fortresses in the world. Behind the various river lines, work had been proceeding, since Hitler's directive of 27 July 1944,⁽²⁾ on defence positions in the foothills of the Alps, from Ala and Belluno to Venice, and on others utilising the course of the rivers; the plan was to make it more difficult for the Allies to penetrate into the Udine Valley, to protect the air base there and to gain time for the fortification of those in the foothills of the Alps - as they termed it, the Alpenvorland,⁽³⁾ Construction forces of the German Air Forces not already engaged on expansion of airfields northeast of the Verona - Po estuary were to be put at the disposal of the commissioners charged with the programme. In case there should be any doubt as to the remorseless way in which the Germans still worked for their survival, note should be taken of the terms of the executive orders which followed the directives:-

'The fortifications will be constructed by means of a levy on the population in accordance with the principles of total war. This can be accomplished only through intervention of the political authorities. The great successes of such mass employment is already becoming apparent in the East.

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- (1) Reinforcements for the German Armies from June 1944 to February 1945 were approximately as follows: June and July 1944 - 36,000: August 19,000: September 8,740: October 11,000: November 8,400: December 8,070: January 3,000 ↓ : February 4,000 +. The falling off in 1945 was mainly due to the fact that the divisions in Italy were already up to the then reduced establishment and in some cases above it.
 - (2) OKW.WF St/Op 772598, 27 July. (A.H.B./IIG1/67(B))
Captured German document.
 - (3) OKW.WF St/Op/772641/44, 29 July. Captured German document.

For this purpose all officers must overcome the usual views concerning jurisdiction and form of co-operation, and other inhibitions, must override all unnecessary organisational and administrative measures. The military authorities are in charge of the project.'

THE COURSE OF ALLIED STRATEGY IN ITALY FROM
NOVEMBER 1944 TO JANUARY 1945

Failure to reach the Ravenna-Bologna-Spezia Line

We may now rapidly trace the course of strategy within the theatre, against which tactical air and ground operations were carried out during the winter of 1944-45. The decision of 23 October to go over to an offensive-defensive on the Ravenna-Bologna-Spezia line has been noted. (1) This line was not reached early in November, so the offensive was duly halted before it, not in the event by the Allies' freewill so much as by the martial ardour of the Germans. In mid-August, informed circles at Mediterranean Allied Air Forces had considered it likely that by the end of September or mid-October the enemy would be forced out of the Po valley and northeast to the Udine area. (2) Nothing of the kind had happened. In the words of the Deputy Air Commander-in-Chief, the offensive was bogged down. We were battering our heads against a co-ordinated, strongly defended front. Everything pointed, he felt, to switching an appreciable proportion of our air forces from direct support of Allied Armies in Italy to support of the Balkan partisan offensive. The Supreme Commander was understandably reluctant to reduce army support in Italy immediately and the Army Group Commander would undoubtedly protest, he said, but there was a strong case for using one's air forces where they would hurt the enemy most. This meant building up Balkan Air Force at the expense of the Tactical Air Force and at the same time providing a measure of close support in Italy when needed; above all, it meant maintaining the air war against communications to a point surpassing the ability of the Germans to cope with the repairs, reducing their reserves and hindering troop movements. (3)

Operation 'Pancake' and last Efforts to capture Bologna

The period from 10 to 23 October was one of fierce fighting for Bologna, the capture of which would have put us in a key position tactically. The outstanding air operation in support was known as Operation 'Pancake', a term suggesting the object of the exercise - the flattening-out of the enemy defences there.

On 12 October, 697 heavy bombers, 300 medium bombers and 277 fighters operated against 74 targets. (4) In general, targets south of the 42 northing were allotted to fighter bombers and targets north of the 42 northing to heavy and medium bombers. The intention was to destroy supplies and equipment, annihilate enemy forces concentrated on the approaches to the city and effect a limited isolation of

Report 424/Appx.
'A' Fifth Army G-2

H.Q., M.A.A.F.
Operations
Instruction 13
10 Oct. 1944
M.A.A.F., C.R.B.
App.

- (1) SAC(44)112, 23 Oct. 1944. A.F.H.Q. (cabinet Hist. Archives)
- (2) M.A.A.F/A-9 (Final) Plans - MAAF, 18 Aug. 1944. (A.H.B./IIJ1/273/6/29A).
- (3) Signal PUNCH. JCS.718, 25 Oct. 1944. (A.H.B./ID7/342, Pt. 6).
- (4) 1661 tons of bombs were dropped.

the battle area. Ten targets were assigned to Fifteenth Air Force, six to the 42nd Bombardment Wing and four to the 57th Bombardment Wing. (1) Because of the powerful defences round Bologna, closest co-ordination of attacks was essential. It was the largest air effort in close support in Italy to that date.

Operation 'Pancake', Execution

Eight hundred Liberators and Fortresses were airborne. Bad weather compelled 100 of these to abandon their missions, but 697 bombed for the loss of four bombers and one escorting fighter. Weather and cloud cover frustrated the effort of the entire Marauder Wing. The Mitchell Wing was more successful; 149 reached the target. Seventy-two returned with bombs to base.

Some 270 fighter bombers rendered close support in harmony with the all-out attack by the bombers. The air assault continued thereafter, but on a much smaller scale, while the ground forces exploited the air preparations of 12 October.

The Army report on the operation is of great interest, not only for its assessment of the damage caused, but for a compilation of evidence from II Corps on the tonic effects on morale and ground advances of such operations. The material effects will be considered first. Bomber pilots reported hitting 13 targets, of which five were destroyed and eight damaged. Photographic interpretation confirmed this. Fighter-bomber pilots confirmed hitting all but one of their 60 targets of personnel and material. The report (2) concluded that this air support was 'eminently successful.' The targets were attacked in a 'timely, accurate and most effective manner, thus aiding materially the advance of Fifth Army in taking important terrain.'

Summarising the findings of this report; damaged roads tied up engineers, traffic jams were caused, movements delayed, command posts hit; supply was choked by damage to trains and distribution points; artillery was destroyed or hampered and its crews dispersed by the highly-respected phosphorous bombs; enemy bivouac areas were shattered, panic caused, strong points hit and defences softened, all these results aiding our infantry's advance. (3)

The Effect on the Morale of our Troops of Close Support

The commanders at all levels in 88th, 91st, 85th, 34th and 1st Armoured Divisions testified in varying terms, either that our air support over the period, (of which 'Pancake' was the outstanding model), led to a considerable improvement in the morale of our troops or lowered enemy ground resistance

(1) XV A.F. targets comprised vehicle workshops, stores depots, barracks, bivouac area, munitions factory and ammunition dump: 57th B. Wing targets - barracks, fuel dump, bivouacs and stores: 42nd B. Wing - munitions factory, ammunition stores depot, road and railway bridges.

(2) Signed by Brig. Gen. E. B. Howard, A.C.S., G-2.

(3) Oddly enough, there is no mention of this important air attack in the published Fifth Army history - 'Salerno to the Alps', Washington: Infantry Journal Press 1948.

and fire power, or both; evidence worth recording, for although the Germans fought admirably without air support, the Allies won the campaign with it.

M.A.T.A.F.
Operation Instruc-
tion No. 16
4 Dec. 1944.
M.A.T.A.F., O.R.B.
2 Jan. 1945.

A later operation of similar character planned for early January, and known as Operation 'Plaster', was cancelled as a result of changed intentions by 15th Army Group.

Allied Failure to capture Bologna

On 29 October, the date at which the offensive efforts of both Fifth and Eighth Armies were to cease was extended to 15 December and Fifth Army's all-out attempt to capture Bologna postponed to about 30 November; at that date Eighth Army was to launch an attack on Ravenna. General Alexander(1) rightly argued that there was no reason to suppose that the enemy would ever voluntarily withdraw to the line of the Adige and the Alps, and foretold that the following Spring would show that Hitler would carry abhorrence of such a policy to such an extent as to refuse to allow an Army commander even to withdraw from the Senio to the Santerno to avoid destruction.(2) On 13 November, we had just enough British ammunition for current Eighth Army operations and an all-out December offensive of about 15 days. Both our armies were very tired. Casualties were giving cause for concern. Forli fell to us on 9 November, but the December offensive was launched without possession of Ravenna. Indeed, the enemy sometimes counter-attacked and on 28 November retook Monte Castellaro and Monte Belvedere.

The failure of the requisite condition of good weather to mature spoiled the hope of a December air offensive. The German lines remained thereafter much the same until the Spring offensive of 1945, with the exception that they lost Faenza(3) and Ravenna.(4) Bologna remained irreducible and in maintaining the state of equilibrium the Allied Armies suffered very heavy casualties.

Air Fly-in of Troop Reinforcements

On 6 October, General Mark Clark applied for reinforcements. General Devers declined to act; General Alexander thereupon appealed to General Eisenhower. Help for the Fifth Army would help the Western Front armies by holding down the Germans in Italy. Three thousand infantry were needed. They could be sent by air. Given suitable weather, General Cannon of Tactical Air Force foresaw no unusual difficulty. General Eisenhower gave what was asked.(5)

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- (1) On 27 November, the announcement was made of the promotion of General Alexander to the rank of Field Marshal and on 12 December he assumed the position of Supreme Allied Commander, General Mark Clark moving up from Fifth Army to the command of Allied Armies in Italy. The Fifth (U.S.) Army was commanded by Lieut. Gen. Truscott and the Eighth (British) Army by Lieut. Gen. R. McCreery.
 - (2) This proved correct, in the event: C/G (Op) Adv. H.Q., A.A.I., 31 October.
 - (3) On 16 December 1944.
 - (4) On 4 December 1944.
 - (5) Signal 8839 6 Oct. 1944. Clark to Devers. Signals M.A. 1724 S.62508 and M.A.1732 of 17 Oct. 1944. M.A.T.A.F./Ops./S.A.S.O. O.R.B.s., Oct. 1944.

The final plan⁽¹⁾ was for a shuttle service of 80 Dakotas⁽²⁾ to operate from two airfields in the Cherbourg Peninsula and Pontedera in Italy, with the overflow to Pisa. The transfer of the 3,000 replacements was to begin at first light on 25 October and take three days to complete. Forty aircraft were to night-stop in Normandy and forty in Italy, daily. On 24 October, virtually all air evacuation of wounded was cancelled: every available Dakota was sent to France. Because of the bad weather, there was a delay of some days in completing the full schedule. It took 203 round trips to convey the 3,000 troops from Maupertuis and Querqueville⁽³⁾ to Italy.

Five aircraft were lost. One was a total loss because of an accident on the airfield; there were four fatalities among crew and passengers of another (cause unstated); three other aircraft were lost, but most of the crew were saved. One of these aircraft received two direct hits from an isolated German pocket somewhere in France. It crashed into the Bay of Biscay, a short distance from La Rochelle. The wounded pilot, the rest of the crew and 15 infantrymen, escaping from the sinking aircraft, were, all but one, picked up by a German patrol boat and taken to hospital. In spite of a sincere attempt with limited means by the Germans to save the pilot, he died. The crew and passengers remaining were exchanged against one German officer and one non-commissioned officer by the French Forces of the Interior.

With the exception of Operation 'Hasty'⁽⁴⁾ and those dealt with in the R.A.F. Narrative of the Campaign in Southern France this transfer of urgently needed reinforcements was the first diversion in Italy from the normal task of evacuation⁽⁵⁾ for some time past.

- (1) Cherbourg - Maupertuis Operation (Troop Carrier Ops. 1944) H.Q.XII A.F. (A.H.B./IIR/31).
 (2) Of 51st Transport Wing.
 (3) East and west of Cherbourg respectively.
 (4) Operation 'Hasty' was carried out by eleven aircraft of 8th Troop Carrier Squadron. 61 paratroopers and 2 containers were dropped about 5 miles south of Trasacco east of the Avezzano - Arce road on 1 June 1944. 199 dummy parachutists were dropped, half of them a mile before the drop zone and the other half a mile beyond it. The flight of Dakotas rendezvoused with 12 Spitfires from No. 601 Squadron R.A.F. 6 Spitfires attacked Trasacco immediately prior to the drop and the towns of Collesona and Villa Vallerlonga immediately prior to the return flight. The operation, which passed relatively unnoticed, was a useful ingredient in the German flight from Sora, one of the turning points in Operation 'Diadem' prior to the breakthrough to Rome.

(5) Patients evacuated by air - 1944

January	5,579	July	22,589
February	4,042	August	10,715
March	3,936	September	21,198
April	1,688	October	18,326
May	4,095	November	5,931
June	17,414	December	6,376

Total for 1944: 121,889

Breakdown by nationality:

American	67,714
British	37,590
French	8,884
Polish	2,504
Italian	464
Ps/W.	4,496
Other	237
	<u>121,889</u>

Ncn-Tactical Transportation - 1944

Total figures are not to hand, but an idea of the volume of this work may be gathered from the following figures of the effort of one of the principal agencies engaged - 51st Troop Carrier Wing.

Passengers carried	163,535
Airborne troops carried	30,800
Pounds of freight hauled	54,306,190

GENERAL DEVELOPMENT OF AIR BOMBING POLICY FROM
OCTOBER 1944 TO EARLY JANUARY 1945

Broad Lines of Policy Changes

The primary bombing effort for October was concentrated on enemy oil supplies in the form of synthetic fuel plants, crude oil refineries and stores of refined oil products, most of them outside Italy. There was abundant evidence of the success of that policy, carried out by the Fifteenth Strategic Air Force. German aircraft production, widely dispersed, ceased to be an economical target. Enemy repair work was growing desperate. It was essential to keep down their production; oil, therefore, remained priority No. 1. Bad weather hampered the execution of the policy. From 14 November, aircraft factories, motor transport factories, ordnance and armoured fighting vehicle factories ceased to be No. 2 priority. Enemy communications took their place.⁽¹⁾ At the same time as the bombing policy beyond Italy evolved on these lines, Operational Directive No. 21⁽²⁾ was issued to the Tactical Air Force on 3 November, giving as its principal task the destruction and disruption of enemy lines of communication.

Through December, the primary Strategic Air Force bombing effort was concentrated on enemy oil, with communications and marshalling yards as secondary targets. The Tactical Air Force effort continued on the lines of the directive of 3 November unchanged until, on 9 January 1945, a new directive - Operational Directive No. 25⁽³⁾ - enlarged its scope. Not only was it to interdict the main routes between Italy and the Reich, but to destroy all enemy means of transport, including fuel, whenever possible. The ground position already recognised in October, when the air plans for the blockade of Italy were first drafted, was by this time officially admitted. The ground forces would be thereafter (until the projected Spring offensive) engaged primarily in holding operations. There would be no requirement for air effort on the fronts of the armies, except in isolated cases when limited air assistance might be required to gain local objectives or to counter successful enemy thrusts. A part of the Desert Air Force had been made available for Balkan operations, but the rest of the Tactical Air Force was to concentrate on overtaking enemy repairs effected during the bad weather and cutting his communications in such weight and frequency as to surpass his capacity to recover and so to reduce his fighting potential by the time ground operations were resumed.

Interdictory Prelude

Late in August, when the military situation favoured an optimistic outlook in some temperamentally sanguine quarters, it had been suggested that in addition to the interdiction of the Po River, the destruction of all bridges over the Brenta and operations against the Brenner line should be undertaken. Allied Armies in Italy ruled out the Brenta. They hoped to take and use Venice before long and they would need the Brenta themselves. But they did approve of cutting the enemy escape routes through the Brenner and across the Venetian plain by way of the Piave River bridges, areas at the time regarded as Strategic Air Force terrain. On 1 September, Tactical Air Force, having begun the suggested programme, put up five

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- (1) M.A.A.F./Air Staff O.R.Bs.
 - (2) Given in extenso at Appendix 16.
 - (3) Given in extenso at Appendix 17.

railway lines suitable as heavy bomber targets, to tie in with the interdiction of the Piave already under way and to block effectively the withdrawal of the German armies. They were, it will be recalled, the Brenner, Tarvisio, Piedicolle, Postumia lines over specific segments, and the Dobbiaco-Ponte Nell'Alpi line.

The September air effort, unaccompanied by any decisive defeat of the enemy, was too widely dispersed to attain perfection, too closely tied in with a ground effort grinding to a stalemate. The mirage of a wholesale enemy evacuation faded. Too much effort had been put into the paralysis of the Po Valley. The Germans and Fascist Italians had been only partially blocked and were still getting enough food, stores and equipment to force a draw.

Adoption of Intelligence Recommendations

Recommendations
for closing
German supply
lines and hamper-
ing the withdrawal
of troops.
M.A.T.A.F.
Intelligence
Section.
20 Sept. 1944.
H.Q., M.A.T.A.F.,
O.R.B.

M.A.A.F. Intelligence grew increasingly favourable to the idea of a stricter blockade of the routes leading North from the Po Valley out of Italy. They would have liked to see more continuous interdiction of the frontier routes by Strategic Air Force instead of attacks on oil: and it was suggested that medium bombers might operate against at least a section of the Brenner line. Instead of bombing everything in the Po Valley, we might remember the lessons of concentration of force and direct our attacks in greater weight on selected river barriers.

Intelligence drew up a new list of targets, with lines of interdiction running in the following priority: Po River (east of Pavia), Brenner Pass, Piave River and Ticino River (Pavia to Sesto Calende). The Po remained at the head of the list, for the Army still hoped to fight a decisive battle somewhere on its line. Interdiction there, should isolate the largest concentrations of Germans to whatever extent it could isolate. The Germans were still winning the logistical battle of the Po. Could we not reduce the volume of their night crossings by putting out their ferries and pontoons?

As regards the Brenner, now No. 2 Priority, Fifteenth Air Force heavy and medium bombers were to make the primary cuts, the medium bombers were to crater sections north of Verona and fighter-bombers in limited numbers were to keep them cratered. No plan would, however, be effective, which omitted the maintenance of cuts north of Trento. If these were effectively maintained, operations against the Piave River would have more point. There, the river, with bridges cut and the waters in full flood during the rainy season, would be a formidable water barrier to any projected enemy withdrawal of forces.

Tactical Air Force felt itself fully qualified to take over the Northeastern railway routes. In September, Fifteenth Air Force maintained interdiction of the Brenner, Tarvisio and Postumia routes. On 1 October, it was told that the Brenner route would henceforward be its only Italian interdictory commitment, although it might help Tactical elsewhere, if circumstances allowed.

Strategic attacks continued for 18 days against the line north of Trento and on the rivers of the Venetian Plain. On 19 October, the Fifteenth Air Force was instructed to sustain its attacks on a special priority basis. Only weather

should be allowed to interfere. The enemy was capable of restoring breaks in a matter of a few days. The effort must accordingly be continuous, (1) even if at the time of attack the route was reported inoperative. A few days later at Tactical Air Force's request, Strategic Air Force also undertook to block the Trento-Bassano loop line.

The Problem of German military Activities

The enemy defence hardened steadily. He passed his supplies across the Po by the use of night ferries and pontoon bridges, and down the Brenner by accelerating repairs and profiting by the diminishing tempo of our air attacks. Rolling stock was piling up in consequence, offering better targets for our fighter bombers; but they were prevented by worsening weather from profiting thereby. There was a single belt of interdiction on the Piave, which the enemy had overcome with by-pass diversions and trans-shipment to trains on the far side of the breaks.

The Germans were still moving their forces in relative immunity as and when desired. In this way they reduced the forces in Army Liguria, on the French frontier and in the Gulf of Genoa area, from nine to five divisions, transferring the other four with comparative ease, by routes south of our Po interdiction belt, to the main front, so removing most of the point in our Ticino cuts and the high priority of the Po. (2)

Kesselring was not withdrawing troops. He was sending back trainload after trainload of loot, food, industrial equipment, metals and so forth by all routes, except the Swiss, to the Reich. On some days in September, 33 trains were reported to be travelling in a northerly direction towards the Brenner Pass: during October a daily average of 28.5 trains left Italy on the Brenner and Tarvisio routes combined. (3)

Tactical Air Force Intelligence presented all these factors of the problem on 28 October. The interdiction of the Po should be reduced to a secondary or weather alternative priority. The Ticino should be deleted as a continuous interdiction belt. The Northern and Northeastern lines ought to be promoted to first priority; medium bomber attacks on the Brenner south of Trento, fighter bomber attacks in lieu, if weather compelled, continuation of Strategic Air Force attacks north of Trento on highest priority and an extension of the interdiction zone in the Northeast by the breaking of all the bridges across the Brenta, Tagliamento and Piave Rivers were the main features in their list of proposals. In conclusion they stated:-

'It is submitted that our bombing program during the bad weather period of this winter (the next two or three months) should, now that the enemy is not being forced to withdraw from the Po Valley, be directed to denying all movement by rail to and from Italy

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- (1) M.A.A.F. Bombing Directive, Operations Instruction No. 87, 19 Oct. 1944. H.Q., M.A.A.F. App-x., Air Staff, C/Air/88, Oct. 1944.
 - (2) 'Blockade': The Isolation of Italy from the Reich, H.Q., M.A.T.A.F., D/C.A.S. (A.H.B./IIJ11/13).
 - (3) A.H.B./IIJ11/13 and A.F.H.Q., Combined Weekly Intelligence Summary No. 5, 6 Jan. 1945. (Cabinet Hist. Archives).

The effect of such a program will, it is submitted, be a gradual wearing down of the enemy's potential power to resist in Northern Italy. By isolating Italy from the Reich, however, it may prove possible to turn the scales, and, with the Russian advance North-West towards Vienna, force Kesselring to withdraw to the Alps, through which, by reason of our bombing, he will have no easy escape route. (1)

The air objective was, therefore, from this point defined as the isolation of Italy from the Reich. The suggested revisions were accepted. On 3 November they became bombing policy.(2)

Assumption by Tactical Air Force of full Interdictory Responsibility

In two moves within nine days, Tactical Air Force took over the whole responsibility for the interdiction of Italy, with the sole exception of the crucial area of the Brenner line north of Trento, which remained in the hands of Strategic Air Force. The first move was the directive of 3 November. Resuming rapidly its main points, 42nd and 57th Bombardment Wings of medium bombers were to maintain lines of interdiction in the priority of the Brenner Pass, North-east Italian lines (Piave, Brenta, Tagliamento Rivers), Po and Adda Rivers. Although fighter bombers remained in principle committed to the Po Valley, they were to switch to the Brenner and north-eastern routes whenever there was danger of enemy repairs on any serious scale. (3) The second move came on 11 November 1944, when the Commanding General of Tactical Air Force relieved Strategic Air Force of their responsibility for attacking communications in Italy, including the Italian side of the Brenner Pass route.

New Strategic Air Force Priorities

The change just recorded was only the paper reaction to a re-orientation of strategic air policy by the Combined Strategic Targets Committee. From 11 November onwards, a series of signals to Headquarters, Fifteenth Air Force stressed oil as first priority. Current communications targets were outside Italy, unless weather made it more expedient to attack them in Italy. The first priority for communications targets was the line system between South-east Germany and the Danubian plains. (4)

Tactical Air Force's assumption of full responsibility was no vicarious gesture. Events themselves moulded policy. One must remember the powerful thrust of exterior movements. To the East and North-east our Russian allies were extending their front into Hungary. As General Wilson and Air Marshal Sir John Slessor, among others, had predicted months before,

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- (1) For simplicity, the American spelling was adopted at Headquarters, hence 'program' for 'programme', 'rail' for 'railway', etc. in this and other quoted texts throughout Vols. I and II of this narrative.
 - (2) No. 21 Operational Directive, set out in full at Appendix 16.
 - (3) H.Q., M.A.T.A.F., O.R.B., App-x SASO/81, Operational Directive No. 21, 3 Nov. 1944.
 - (4) Signals AX.200 11 Nov. 1944, AX.663, 16 Nov. 1944 and AX.303 23 Nov. 1944. (A.H.B./IIJ1/90/4(B) Encls. 46a, 47a and 49a).

their operations played with ascending force on our own in Italy. The Anglo-American military mission was sitting in Moscow in conference with Russian military leaders. Requests from the Russians for air support were made and acted upon. The operations were, of course, at the expense of the available bomber force in Italy. (1) The Deputy Air Commander-in-Chief was sometimes deeply involved in protracted negotiations with the Russians over such subjects as the fixing of arbitrary bomblines for heavy bombers on army frontiers and air corridors for our heavy bombers over Russian-held territory, negotiations which exercised to the full his native diplomacy and patience; in spite of these and numerous other commitments, he still found time to deal with the manifold internal problems of the Royal Air Force within the whole wide sphere of his command.

THE AXIS AIR FORCE SITUATION IN AUTUMN 1944

The German Air Balance Sheet

Estimate of the situation for the period 1-15 Sept. 1944. Captured enemy document (A.H.B.6 Translation No. VII/82) Signed Loewisch.

The enemy continued to bemoan the weakness of his air force and to report Allied successes attained by virtue of their overwhelming air superiority. His coastal defences, continuously attacked by Allied ships, and his convoy routes, harassed by aircraft as well as surface craft, were a source of constant anxiety. The air attack of 4 September on Genoa had been a severe blow. They admitted the loss of two torpedo boats, three anti-submarine craft, three motor boats and six patrol vessels and other small craft in the harbour. A transport submarine had been damaged. By that time German submarine operations in the Mediterranean had practically ceased. Pola remained the only base for the three craft operating in the Aegean Sea. The bases at Spezia and Genoa had been closed down following the sinking of seven submarines nearing completion, and four submarines for special operations.

Allied aircraft had kept up constant surveillance of the German sea lanes, but air attacks had not seriously hurt their convoy fleets: with the exception of one loophole, the coastal mine defences prevented any ingress by the Allied Navy, or heavy bombardments from the sea. But it was clear that as the nights lengthened there was closer co-operation between Allied aircraft and ships against the German convoys.

The Germans were very much in the dark as to Allied intentions. They could not locate much of our shipping. With the few aircraft available and little reinforcement to be hoped for, it would be suicidal to attempt reconnaissance on any scale. Nevertheless, they had agents who gave them a rough idea of what was passing through Leghorn, Ancona and the Straits of Gibraltar and they made a shrewd guess that our shipping remained at more or less the same level, that several aircraft carriers had left and that we would not carry out an Adriatic seaborne hook.

They credited Allied strategists with more foresight than they actually possessed when they considered the Adriatic and the Balkans. Allied landings on the southern

(1) Signal JCS.879 M.A.A.F., S.S.O. to Air Ministry
25 Nov. 1944. (A.H.B./IIJ1/90/44(H), Encl. 25a).

Dalmatian islands and Pag island were, to them, signs that we intended establishing strong points in the area before the Russians broke through to the Adriatic. They foresaw, too, and correctly, that the Allies would occupy the Aegean islands in order to control access to the Mediterranean from the north, even should the Russians succeed in reaching the Aegean coast in their thrust towards Salonika. They rightly decided there was little sign or likelihood of the Allied landing in Istria (although it was being warmly discussed). Our intention was, they thought, to occupy the northern Adriatic by land operations through the Po valley. In the event, that was what happened. Bulgaria's 'breach of faith', not Allied military tactics, had forced the High Command to withdraw from Greece and the Aegean. The Allies would thus win without a fight the Greek, Albanian and South Dalmatian coasts, they said.

Unhappy Italo-German Relations

Ibid

The Italo-German ménage had never been an ideal one and the marriage of ideological aims never overcame basic temperamental differences. The Germans still spoke in their reports of the unco-operative, delaying tactics of Italian naval units, the inactivity of air formations which led to the disbandment of a large part of the Fascist Republican Air Force, too great a preoccupation with prestige and a lack of confidence in the German cause in the Italian Admiralty, and a serious increase in Partisan activity, especially in the Alpine foothills. The latter had called for material moves, such as the transfer of strong German units to the Turin-Cuneo area and operations by the X Division under the command of Commander Prince Borghese of the Italian Navy.

The Italian Fascist Republican Air Force

Ibid

At the end of 1944, there was still a nucleus of the Fascist Italian Air Force operating under its own standard. The crews of two groups with about sixty Me.109s and F.W.190s based at Udine, Aviano, Lonate and Osoppo carried out half-heartedly the fighter defence of North Italy. They had been trained in Me.109s in the Munich area.

The Italians believed that their aircrews, if captured, were not treated according to international law, at any rate by their Italian opponents on the Allied side. This was not true; but the prick of conscience on account of the inhuman Axis treatment of the Italian Partisans, to which reference has already been made, may have filled many with apprehensions. These were so grave that Italian flying formations were not used over Allied territory: they left the Ju.87 night harassing bombers to the German unit N.S.G.9. On the other hand, the text of one of Von Pohl's reports suggests that, in his quarter at any rate, it was believed that treatment of Italian air prisoners-of-war captured by the Allies was not all it might have been, for he called for clarification of the interpretation of the Geneva Convention and asked if, under its terms, he could not threaten reprisals against what he called 'Badoglio Italians' if taken prisoner.

Von Pohl's Bid for extended Powers

He wanted control of flak and supplies in the North brought entirely within his orbit. The whole Brenner line from Innsbruck to Verona should be his charge. As regards

supplies, he was too much dependent on the caprice of Air Fleet Reich. Supply and reinforcement services should be transferred from Air Fleet Reich to control of Luftgauen VII and XVII as far as Innsbruck. Here there was little ground organisation with any decisive bearing on the defence of Germany, hence there was likely to be less meddling in his affairs and competition for his supplies by Germany. Airmen were still being withdrawn for conversion into soldiers. A drop in efficiency of those remaining always followed. The danger point had been reached.

The Luftwaffe Situation at the Close of 1944

General Von Pohl made it clear at the end of December that the German defences against the vastly superior Allied air forces were quite inadequate. He had neither the necessary equipment or aircraft either to fight or reconnoitre. But there was a way out. He had read reports on the performance of the new jet propelled fighters and made a desperate but unsuccessful bid for a live establishment of these aircraft. The solution was, firstly, to bring in a German Me.262 Fighter Group, he said. If integrated with the Italian Fighter Wing then in course of formation, the combined force would compel the Allies to use an increased number of fighters on escort duty, although he admitted that it could not hope for any sensational success against the powerful and heavily escorted bomber formations. The appearance of German fighter forces equipped with up-to-date aircraft would be a certain fillip to the morale of the heavily engaged ground troops. Thus, the German Air Force was pointing out to its Higher Command what the Army on the Allied side was always pointing out to the Air Force.

He wanted the Italian Me.163 unit then being formed brought down into Italy. The few German jet aircraft at Udine had done well against isolated Allied four-engined bombers returning from long-distance flights. The Allied Tactical Air Force began to notice them from February onwards. There were only three aircraft; and the unit at Udine was strictly a reconnaissance unit; but we admitted the occasional loss of stragglers to their attacks. Fortunately for the Allies, the strength of the Me.163 unit remained at three aircraft and there was no reply to the plea for the Me.262 Fighter Group.

He was increasing the Brenner flak batteries, but it was idle to hope for any guarantee to feed the armies in Italy unless the defences on the other side of the frontier were also reinforced by Luftflotte Reich - Air Fleet Germany. Kesselring wanted more reconnaissance of enemy harbours, more armed and tactical reconnaissance, photographs: but Kesselring was not going to get them. The aircraft at hand were obsolescent and there were not enough of them. The whole effort would probably peter out as it had done in the West. The only hope of meeting reconnaissance requirements was that he should be allowed to re-equip a close reconnaissance staffel with Me.262 jet propelled aircraft and be allocated without delay a jet propelled Arado 234 reconnaissance unit. He had already put forward the suggestion regarding the Arados, but Oberkommando Luftwaffe had held the question in abeyance. They had no alternative in fact, for these, like the other jet propelled types, were too few to meet the urgent requirements on the 'Overlord' front - not only too few, but too late.

Appendix to a report by the German A.O.C. in-C, Italy, 29 Dec, 1944. (A.H.B. Translation No. VII/82)

The total number of Axis aircraft in various states of serviceability based in Northern Italy during the Winter of 1944-45 fluctuated round a total of about 130 aircraft. There were 60 Italian fighters⁽¹⁾ at Udine, Aviano, Lonate and Osoppo, 20 German tactical reconnaissance⁽²⁾ aircraft at Udine, 20 German long range reconnaissance⁽³⁾ aircraft at Bergamo and Ghedi, the three German jet reconnaissance Arados at Udine and 25 German night attack⁽⁴⁾ aircraft at Villafranca and Ghedi. Drastic complete obstruction, partial demolition and preparation for demolition of airfields was pursued throughout this period. All the major airfields radiated from centres in the Milan and Udine areas.

GERMAN SUPPLIES THROUGH SWITZERLAND

The problematic Loophole in Air Interdiction

It had become apparent to Allied air command in Italy that so long as the three Swiss railway routes were carrying goods both ways for the Germans, the air programme of isolating Italy from the Reich could never be said to be complete: research was initiated into the exact nature of the traffic, plans made to interdict it by air and a call made for political overtures.

Air Intelligence set to work in mid-October to clear up the mystery of the exact nature of the traffic. The Combined Economic Warfare Agencies⁽⁵⁾ at Allied Force H.Q. gave them the information at their disposal, which, (admittedly incomplete, they said), underrated both the actual and potential menace of traffic in both directions. The liberation of Southern France had closed the Nice and Modane routes. Intermittent bombing had slowed down traffic on the Brenner, Tarvisic, Piedicolle, Postumia and Susak/Fiume routes. All this certainly enhanced the value to the Germans of the three Swiss routes - Simplon, Chiasso and Luino. But the Swiss had laid down conditions, one of which forbade the passage of military stores, and were enforcing those conditions. They dismissed as unfounded reports that they were being deceived by papers forged by the Germans, or that loot from Italy was being funnelled through the Swiss routes; traffic was declining, with the exception of south-bound coal.⁽⁶⁾ North-bound traffic seemed to be mainly items such as rice and potatoes. The Swiss were not, they believed, lending themselves to German subterfuges.

(1) Me. 109s and F.W. 190s.

(2) Me. 109s and F.W. 190s.

(3) Ju. 88s, Ju. 188s and Me. 410s.

(4) Ju. 87s and F.W. 190s.

(5) Representing the Enemy Branch (Foreign Office) and Ministry of Economic Warfare (U.K.) and the Foreign Economic Administration (U.S.)

(6) Letter from Combined Economic Warfare Agencies to Target Analysis Sec./Intel./H.Q., M.A.A.F., 17 Oct. 1944. (A.H.B./IIJ1/269/26(B), Encl. 6b.)

Air H.Q. continued their investigations and by 16 November 1944, had before them a fuller and more serious picture of the situation. Admittedly, the Swiss were not literally transporting munitions of war as such, and what goods were passing were in relatively small quantities; but it all depended on what one meant by 'munitions of war'. It was a sophistry to pretend that the 4,773 metric tons of scrap iron and the 988 metric tons of chrome ore south-bound during September were innocuous, when it was well known that the scrap iron would be used by the Italian steel industry for the production of arms and ammunition and the chrome ore for production of special steels. (1)

The Threat of Air Destruction of Italian Railway Approaches to Swiss Routes

The Swiss routes were of major importance to the Germans. There were several reports that pointed to their intentions to exploit them, including moves to pacify and neutralise the Italian patriots in the Val D'Ossola area leading to the Simplon route. The coal - 133,504 tons of which passed south during September - was being used to supply the Italian industrial plants making munitions for the Germans and was needed for railway sections working under steam traction.

Every effort should be made to have all transport through Switzerland stopped, said Allied Headquarters. Immediate diplomatic representations should be made. Now that France was liberated, Switzerland was no longer dependent on Italy and Germany for her essential economy. If by 1 January 1945 these transit routes were not closed, said General Eaker, air and partisan action should be designed to close them. The post-war period would lay a great burden on Switzerland and she would need these routes to re-establish her international lines of communication.

Tactical Air Force reported that the same day that A.F.H.Q. gave the above partially-complete information to M.A.A.F. Intelligence, the Supreme Commander suggested that Tactical Air Force should interdict the railway routes from Italy to Switzerland on equal priority with the Ticino and Po bridges, (2) but that Tactical Air Force felt this unnecessary as long as there was adequate tactical reconnaissance and diplomatic pressure. These statements are difficult to interpret as the expression of a really well-informed exchange, for on 22 November, when General Eaker's proposal to present an air ultimatum to the Swiss Government was acted on, the Chief of Staff (3) to the Supreme Allied Commander opposed the idea, on the grounds that stoppage of coal for the Germans would prejudice the Allied position when the Germans withdrew. It was the Air Force that presented the case at the conference of 22 November. The Supreme Commander gave the order to send the signal recommending Eaker's suggestions to the Chiefs of Staff, omitting tactfully the ultimatum date of 1 January 1945.

SAC(44) 120 paper
and SAC(44) 114th
Mtg., 22 Nov.
(A.H.B./IIJ1/90/
190E).
MECOS 211
(Cabinet Hist.
Archives).

-
- (1) Memo from Gen. Eaker to SACMED., D-HPC., 16 Nov. 1944. (A.H.B./IIJ1/269/26(B), Encl. 14a).
 - (2) Impossible; for the Po was No.1 priority and the Ticino No.4 priority at this date.
 - (3) Lt. Gen. Gammell

Partial Blockage on the Simplon Route

COSMED 199,
7 Dec. 1944.
(Cabinet Hist.
Archives)

MEDCOS 219
(Cabinet Hist.
Archives)

The Swiss Government temporised. It was agreed by 7 December to confine the use of the Simplon route to local traffic, denying it to transit traffic. Diplomatic action, said the Chiefs of Staff, was being considered to limit traffic over the other transit routes, including the St. Gothard, to its volume at that period, at the same time restricting it to civilian consumption goods. The Supreme Commander Mediterranean urged diplomatic action towards the same restrictions to all routes as to the Simplon. On orders from M.A.A.F., Tactical Air Force developed plans for the interdiction of the Simplon and St. Gothard routes in the event of Swiss non-compliance: but these were never implemented. Meanwhile, diplomacy followed its tortuous course.

In February 1945, discussions between Switzerland, Gt. Britain and the United States were opened with the object of severing economic relations between Switzerland and Germany, stopping through traffic to and from Italy and terminating the Swiss-German agreement under which locomotives, motor cars and certain machinery were sold to the Reich.

The Agreement to block Coal, Iron and Steel

By 8 March 1945, the Swiss having realised the probable outcome of the fighting, signed an agreement with the Allies which added coal, iron, steel and scrap-iron to the list of goods unacceptable for transit from Germany to Italy. Other traffic was limited to 14,000 tons monthly as compared with previous monthly totals as high as 460,000 tons (203,810 tons in September). All northbound traffic was to be regarded as loot or as goods sold under pressure and prohibited until the contrary was proved. 5,900 tons was the maximum for northbound traffic in any month. The threat of a blockage by air had played a part in the imposition of a blockade by treaty.

The dwindling supplies of coal led eventually to a shortage second only to that of fuel.⁽¹⁾ By mid-March it was reported that only one-fifth of the daily coal requirements were reaching Italy. None passed thereafter through Switzerland. The Italians always relied, and still rely, on imports of foreign coal. One of the by-products of the embargo was undoubtedly to increase the already high degree of hardship among the Italian population.

AIR TARGETS ON THE NORTH ITALIAN RAILWAY SYSTEM

The Four Frontier Routes⁽²⁾

In the Summer of 1944, there were four routes leading out of Italy, namely the French, the Swiss, the Yugoslav and German routes. By November, the French route was cut, the

(1) Weights of coal delivered through Switzerland:
Sept. 133,584 tons, Oct. (via Chiasso) 54,678,
Nov. (via Chiasso) 60,161, Dec. 54,561, Jan. 40,000.
Other routes, included the Brenner, roughly 20,000 tons monthly. (Source Combined Economic Warfare Agencies, Rome, based on official Italian sources).

(2) Refer 1 S.R.D/C/240 1 Sept. 1943 for a thorough survey of railways in Northern Italy, by the Inter-Service Topographical Dept.

Swiss route progressively unimportant. The map therefore presented to the Allied air planners in October, three German lines in the Tarvisio, the San Candido and the Brenner and four Yugoslav lines - the Fiume, Postumia, the Fusine Laghi branch line from Tarvisio, and the Piedicolle. What was to count most in the selection of targets was not the lines as such so much as their interrelation, the complexes into which their systems grouped themselves and how the weight of attack on one would react on the others. The realisation of this fact led to an arbitrary grouping of targets under the following main headings:- the Brenner, the Venetian Plain and the Northeastern Frontier. If these three systems are first considered in detail as targets and some idea of the terrain is grasped, it will then be possible to view in perspective the situation confronting the air forces as they turned to six months of interdiction in a last endeavour to isolate the battlefield.

All experts were agreed that the Brenner was the most important line to both sides. It was the only one providing a double track (with the exception of the Bologna - Verona section) from all parts of Italy as far south as Rome to all districts in Germany. The subject of its terrain and targets will be dealt with separately in the section on the Battle of the Brenner. This section deals with the terrain and targets of the other international lines.

Venetian Plain Railway Terrain(1)

The Venetian plains extend northwestward from the rocky hills between the Adige and Brenta Rivers and the edge of the Po Valley to the foothills of the Julian Alps. They are crossed by a series of shallow, torrential rivers. Preventive measures being necessary against their flooding, the river banks were protected and the roads and railways built on embankments. The beds of the Rivers Piave and Tagliamento were very wide. The flood would be at its height in November, gradually subside to minimum flow in February and March, then fill again.

Three interlacing railway lines crossed the Venetian plains, linking the Po Valley with the Reich frontiers. The most important - the northernmost - began at Vicenza, ran through Cittadella, Castelfranco and Conegliano to connect at Udine, the air base, with the Tarvisio route. At Gorizia it joined the Piedicolle line. The second line ran via Piazzola, Treviso and Motta Di Livenza to Casarsa. On the edge of the marshy coastal area, a line ran through Mestre, Portogruaro and Cervignano, joined the North-South line across the Po to Ferrara at Padua, reaching at its eastern extremity to Trieste and fuzing with the Postumia route.

Venetian Plain Railway Targets

Elaborately connected transversely, they offered no simple solution on a route-by-route bombing basis. But, fortunately for our Target Sections, four rivers crossed all the lines - the Brenta, Piave, Livenza and Tagliamento. Each river, therefore, was a potential barrier to traffic northeastward to

(1) Isolation of Italy from the Reich.
H.Q., M.A.T.A.F. Intell.

the frontier. Longer bridges being assumed as better targets than smaller ones, the most attractive targets on the northern line were the long bridges over the Piave River at Neversa and over the Tagliamento at Casarsa; but to effect a complete stoppage, all the crossings of all the rivers had to be destroyed. The most important marshalling yards, which would become more interesting when line closure forced rolling stock into their shelter, were at the terminal points Padua and Vicenza at one end and Gorizia and Udine at the other and at points of intersection, i.e. Mestre, Treviso and Castelfranco. Udine had the further attraction as a target of being a big stores dump and a natural unloading point for stores entering through the Tarvisio and Piedicolle routes.

The main argument in favour of the Venetian Plain as a zone of interdiction was its depth and the number of adjacent barriers possible. Strong ones against it were the great play the enemy could enjoy owing to the devious and intricate system of by-passes and lateral lines, and the shallow rivers which could be rapidly and simply spanned by prefabricated parts. In the event, the Germans laid tracks on the riverbeds themselves during the dry months. The bridges themselves were, although frequently long, of low silhouette and in short spans, hence easily repairable.

Northeastern Frontier Routes and Austrian Feedlines

Ibid

Above the Venetian Plain, the railway system dispersed into a few widely separated exits across the mountainous frontier. Difficulties confronting the more southerly interdiction plan were happily absent, for each line was a bottleneck without those lateral connections which aided the inter-route shuttling of trains. One cut was sufficient to bring about either abandonment or transshipment. Targets were good in this area. Repairs were, on account of the height and long span of bridges and the steep banks, slow and arduous. There were four routes in the area, viz. the Tarvisio, Piedicolle, Postumia and Dolomite routes.

On the other side of the frontier, closely affecting the interdiction programme, were lines in Southern Austria feeding the routes into Italy. They fell into two categories, viz. the three routes running northwards from Innsbruck towards Munich and those radiating from Villach. The former presented the chance of erecting an interditory line 200 miles north of the frontier; the latter was at one point of the triangle Villach-Klagenfurt-St. Veit whereupon four lines converged; the whole problem there was complex.

Tarvisio Route Terrain and Targets

The Tarvisio route was the main corridor from Germany to the Venetian Plain and second in importance to the Brenner. It left the plains at Gemona and ran north across the Tagliamento Valley through chaotic rocky country, cascades and promontories to the Tarvisio Pass on the boundary lines between Austria, Jugoslavia and Italy. Here, between the Julian and Carnic Alps, it met the Sulizza river, linking the Tagliamento and Gail river basins. Many tunnels and viaducts and the absence of open track made the long bridges at Dogna and Chiusaforte very worthwhile. Those at Pordenone, Sacile and Neversa proved more difficult than imagined.

Piedicolle Route Terrain and Targets

From Gorizia, a steam traction railway ascended the gorge of the Isonzo River through the mountain battlefields of the Austro-Italian struggle of 1915-1917, then turned right between the Julian Alps and a limestone mass to southward. At Piedicolle, the line entered a four mile tunnel through the main chain of those Alps along the frontier. The primary bombing targets were to be the high bridges across the Isonzo River, such as at Salcano and near the Canale D'Isonzo. There were no marshalling yards.

Postumia Route Terrain and Targets

Being under continuous strain from the Balkan front, the Postumia line was not of primary importance as a source of supply to Army Group C in Italy, but because interdiction had to be as complete as possible, because the line could serve as a stand-by for other lines and was linked up with a Yugoslav line connecting with Tarvisio and Central Germany, it had to be taken into account. The coastal line from Padua, and Mestre(1) ran past Trieste over an arid limestone plateau and the River Carso to the mountains along the Yugoslav frontier. The massive 1500 foot viaduct at Borovnica was the most favoured target.

Dolomite Route Terrain and Targets

This began as a minor route of very low capacity, used before the War principally to carry tourists to the mountain resorts. From the Piave River country it wound northward through the former holiday centres to join the lateral Fortezza-Spittal-Villach line at Dobbiaco, providing an alternative route between the Venetian Plain and Germany via the upper stretch of the Brenner line on the San Candido Pass. Two re-loadings were forced on all through traffic by the existence of a narrow gauge electric section between Calalzo and Dobbiaco. This delay and the rather remote and tortuous character of the whole system resulted in its reduction at this time to a hospital train line. It hardly counted in the early stages, but one could not foretell yet how blockage on the other lines would affect it. In the meantime, the high viaduct at Longarone was scheduled for priority attack.

Comparison of the Blockade with Operations 'Strangle' and 'Diadem'

Operation 'Strangle' had, in the Spring of 1944, first established the pattern of attacking target systems with the object of setting up complete belts of interdiction. It flowed on into Operation 'Diadem', kept the routes south of the Pisa - Rimini line disorganised, then, in sympathy with the Army, advancing and indeed enhancing it, extending its hold to the Northern Apennines and the River Po. These two operations had absorbed the entire interdictory effort of the Allied Air Forces.

The Po attacks failed to the extent that German supplies still flowed south. Multiple barriers were clearly the final solution. The blockade of Italy faced a somewhat similar

(1) Near Venice.

picture of four major routes. Both it and 'Strangle' carried operations up to 250 miles from the battlefield and both established zones in depth. Both operations were effective in fatally reducing the enemy's capacity to conduct sustained major warfare. Both resulted in a chronic shortage of enemy motor transport and fuel, and forced him from the railways to the roads. On the roads, the motor transport could not cope with both forward and rear commitments and the distribution system broke down.

The difference between the isolating of Italy and the two earlier operations lay largely in the depth and distribution of effort. 'Strangle' and 'Diadem' absorbed all the air effort available, but the isolation of Italy was maintained at the same time as an extensive interdiction of secondary line systems behind the front and all across Italy, and Jugoslavia. The terrain of the blockade presented more problems, and medium bombers faced greater trials, than ever before in the campaign. They achieved greater accuracy. With slightly less strength, the Tactical Air Forces flew more sorties, dropped more tons of bombs on lines of communication, destroyed or damaged more motor transport, armoured vehicles, and a great many more locomotives and rolling stock, destroyed more bridges and cut many more tracks. (1)

THE BATTLE OF THE BRENNER

For the purposes of this narrative, the Brenner Pass railway line was the 168-mile stretch of standard gauge, electrified track running from Verona to Innsbruck. It was divided into three sections, namely the Lower Brenner from Verona to Trento, (2) the Middle Brenner from Trento to Bolzano (3) and the Upper Brenner from Bolzano to Innsbruck. (4)

The hardest problem was the lack of suitable targets. Damage to bridges, in particular long bridges, was more difficult to make good than damage to marshalling yards, tunnels, open tracks, fills and cuts; but there were only eight bridges of 200 feet or more in length, and none of these were simple targets.

(1) Comparison of Tactical Air performance during the climactic months of Operation 'Strangle', and the Blockade of Italy.

	April 1944	March 1945	Per cent Increase
Effective strength	1,093	1,086	-
Sorties flown	23,234	27,471	18%
Tons of bombs dropped	10,888	15,674	44%
Tonnage on L.s of C.	8,739	10,286	23%
M/T & A/V dest. & dam.	1,058	1,737	64%
Locos. dest. & dam.	85	375	340%
Rolling stock dest. & dam.	582	4,534	680%
Bridges destroyed	25	79	216%
Track cuts	447	2,674	498%

(2) Zone 1 - Verona to Ala. Zone 2 - Ala to Trento. Refer to the statement of air effort at Appendix 19.

(3) Zone 3 Trento to Bolzano.

(4) Zone 4 Bolzano to Innsbruck.

The Six Major Bridges

The bridges at Bolzano, Ora, San Michele and Lavis were by-passed with track diversions. The fifth, at Verona, was so heavily defended by flak that it was an unprofitable target. The sixth, Campodazzo, was never attacked by the medium bombers on account of the terrain. (1) The seventh and eighth, Bressanone and Vipiteno, were very heavily defended by flak, so much so that the former was not attacked by medium bombers after 27 February and Vipiteno not after 21 March. The shortage of long vulnerable bridges forced our attention to the smaller bridges, sometimes no longer than 40 feet. These called for greater precision and more frequent attack because they were more quickly repaired and more easily by-passed. (2)

Non-application of the Zuckerman Theory

It will be noted that the Zuckerman theory of heavy scale attacks on repair centres never came up in the air battles of the Northeast. It is not therefore, as some suggest, of universal application. By the turn of the year, the German railway repair system in that region had lost its character of a number of large static nuclei, usually in the vicinity of marshalling yards; the marshalling yards available were now both fewer or no longer used for the regular accumulation of locomotives and rolling stock. Months ago, the Allied target sections had realised this and made allowance for it. The Germans and Italians pointed it out on sundry occasions. Furthermore, the repair organisation was no longer static, but highly mobile, (3) often stationed on moving trains. True, there were dumps of military materials, but those needed for repair were by this time where they were wanted, namely skilfully dispersed and camouflaged near vital points susceptible to air attack, not stock-piled in obvious places for the benefit of air bombardment. Then the very aims of the air offensive ran in new priorities. The primary objects were now to destroy bridges and cut tracks, not to destroy rolling stock. Normally, the Germans took great care to avoid concentrations of locomotives and wagons, for they could ill afford to lose them. (4) Nevertheless, as time passed, the cutting of tracks caused automatically temporary piling-up of railway transport and it was expedient to funnel it through marshalling yards. Advantage was at times taken of such situations, but the conception of a Zuckerman long-term 'transportation' plan of attack synchronised with a normal bridge-breaking effort did not exist; nothing indicates so clearly the passage of time and the change in the face of the air campaign as this fact. (5)

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- (1) Study of the map will show the difficulty of approach from any direction. The heavily defended area round Bolzano closed a wide arc of manoeuvre to the southwest.
 - (2) The Battle of the Brenner 57th Bomb. Wing XII Air Force. (A.H.B./IIF2/22/6). I.S.T.D. Reports. M.A.T.A.F., O.R.B. 'Blockade' Report, H.Q., M.A.T.A.F. (A.H.B./IIJ11/13).
 - (3) It was still static in the Turin - Genoa - Milan area.
 - (4) Although the overall position was as yet by no means desperate.
 - (5) Its non-applicability at the point under review does not, naturally, exclude the future recurrence of a concurrence of conditions favourable to it.

Types of Targets and Operational Difficulties

Ibid

The chart given in the footnote(1) indicates the relative choice of targets attacked by the medium bombers in six months of operations. Other factors rendering the interdiction of Italy especially difficult were the rugged mountains, the V-shaped valleys and the awkward location of many targets. These were often visible for only three or four miles from the bomb release point; the aircraft came in on the bomb run exactly on course or missed the target. In the few seconds available, the bombardier had to pick up the small, shadow-screened objectives, make corrections and release. Terrain sometimes allowed only one axis of attack.(2) The weather was usually bad and the build-up of flak became an increasing danger. About one-third of the heavy flak guns in Italy came to be concentrated along the Brenner.

Targets and Terrain on the Lower Brenner

Ibid

From Verona north to Trento, the line ran along the steep Adige river on the east bank, through fills, or a half a mile from the river in the shadow of the hills. At Trento an alternative single track line branched south-east to join the lateral Udine-Vicenza-Verona line at Cittadella.(3)

There were 33 targets on the Lower Brenner attacked by the 57th Wing. One half of their entire attacks on the line were directed against them.(4) The only bridge over 135 feet long was the heavily defended one at Verona. The ten other bridges spanned small streams feeding into the Adda River; they were, with the exception of Rovereto and Ala, sturdy masonry structures. Rovereto bridge developed into the most heavily attacked target along the Brenner, suffering 27 bombings in all. First the steel structure was destroyed in December. Thereafter, four replacement bridges went the same way, after progressive damage. In 24 attacks on Ala bridge, it was destroyed seven times. These bridges took longer to repair than fills and embankments; fourteen of these types were attacked. The best fill targets were those closest to the river, such as those at Marco, Doloe and Ossenigo. Allied aircrews liked them because the inrush of water often hindered enemy repair operations.(5)

(1) Type Target	No. of targets attacked	Total No. attacks on this type target	Sorties	Tons dropped
Bridge	30	250	4,843	7,110
Fill	20	75	1,254	2,084
Marshalling yards	10	21	384	560
Transformer stations	3	5	102	183
Possible Landslide	3	8	159	176
Tunnel mouth	3	10	88	137
Cut	1	1	9	17
	70	370	6,839	10,267

(1) E.g. at Rovereto, Ala and Calliano bridges.

(2) In the event, only a comparatively light effort sufficed to keep it blocked.

(4) 10 railway bridges, 14 fills, 3 transformer stations, 3 possible landslides, 2 tunnel mouths and 1 cut.

(5) These fills were always secondary targets.

Ten miles northwest of Verona and north of San Ambrogio, the line passed under a series of high limestone cliffs, bolstered underneath to prevent collapse. Geologists believed that the slow trickle of water along their strata created such a precarious state of balance that a sufficient weight of bombs would bring about a landslide. Eight attacks by Mitchells on three different aiming points along the formation and others on the tunnel just north of the point, all with 1,000 lb. bombs, failed to dislodge more than a little loose rubble.

Targets and Terrain on the Middle and Upper Brenner

On the Middle Brenner north of Trento, the valley floor widened slightly on the way to Bolzano. Mountains rising from the valley floor, or up to ten miles back, rose to over 10,000 feet. Unlike the Lower Brenner, there were few small bridges or fills, but there were excellently constructed diversions which the enemy fought hard to maintain. Sixteen targets in all were attacked, including nine bridges, five fills and two marshalling yards. The diversions were the main problem, for they afforded alternate routes for one-half the distance of the main line from Trento to Bolzano. Between the diversions there was nothing worth attacking. Therefore, one had to block both main and diversion lines.

One of the points most vital to the enemy was the 3,000 foot viaduct at Lavis⁽¹⁾ and its 2 mile diversion.⁽²⁾ The viaduct was attacked seven times, on four of which spans⁽³⁾ were destroyed. The two⁽⁴⁾ bridges on the diversion were attacked 21 times,⁽⁵⁾ blocked on several occasions and thrice destroyed.

Eight miles north of Trento, at San Michele All'Adige the track crossed to the west bank of the Adige, proceeded 15 miles northward, then recrossed at Ora to the east bank. Two of the best targets were the steel bridges⁽⁶⁾ over the Adige at Ora and San Michele. The issue here was befogged by a 15-mile diversion on the east bank. Some 5,000 men worked to complete the diversion Ora-San Michele by 5 December 1944. It became necessary forthwith to block both it and the main line. No less than 48 attacks were made against the diversion, 24 against the 120-foot San Michele diversion bridge and 12 against a short fill at Salorno. There was another diversion just south of Bolzano, which it was decided not to attack because of the difficulties of making and maintaining two cuts and the heavy flak opposition.

Bolzano lay about halfway between Verona and Innsbruck. Here a single track electrified branch line ran northwest to Merano and thence west to its terminus at Malles Venosta. It was used to disperse trains and harboured several dumps. The main line ran northeastwards up the narrow Isarco River valley,

Begin in

- (1) 5 miles N. of Trento: 35 spans, masonry.
- (2) ~~Begun~~ May 1944.
- (3) Refer to Appendix 22 for a glossary of terms used in reference to enemy railway repairs.
- (4) 90 and 170 foot.
- (5) I.S.T.D. C/237 and C/240, held by Documents Officer, J.I.B., Ministry of Defence.
- (6) 350 foot.

closely confined and crossing the river at several points, passing through many tunnels and under avalanche hoods. At Aica, near Fortezza, a single-track line branched east, crossing into Austria. The main line continued into Austria across the Alpine watershed 4,600 feet above sea level, descending the narrow confined Sill River valley to Innsbruck, 22 miles north.

The whole of the terrain of the Upper Brenner presented the acutest problems to aircrews. A way had to be picked through areas where peaks reached up to 12,000 and 13,000 feet above sea level. The best targets were in the Upper Brenner, but they were harder to find and attack, because of shadows, outcroppings, haze and smoke. There were four bridges 200 feet long and none were by-passed. The only ones not hidden in steep valleys were those at Vipiteno and Bressanone; both were strongly defended by flak, a fact which tended to throw back the tactical planners on to the smaller, more difficult targets.

Contribution of co-operating Air Formations

Ibid

The battle was opened on 4 November 1944 by 42nd Wing, which continued to employ a large effort until 21 November 1944. 57th Wing executed the attack on the power stations on 6 November 1944 and from 21 November 1944 to 25 April 1945 carried the main weight of the Brenner campaign. During the Winter, but particularly in April 1945, Fifteenth Air Force heavy bombers returned to carry out several successful missions over the Brenner. Fighter bombers of XXII Tactical Air Command joined the battle in late November and made an increasing and important contribution. They put out a spectacular increase of effort in January, when weather handicapped the heavier aircraft, and maintained it at a high level until diverted to the final battles of the Spring offensive. (1) Night intruding Bostons began their participation in late January with attacks on withdrawing troop concentrations and continued operations on a small scale until the climacteric days in April.

Operation 'Bingo'

Power Stations on the Innsbruck - Verona Railway Line (2)

The electrified Brenner Pass route had a capacity estimated at 24,000 tons daily, carried by 28 to 30 trains. (3)

(1) Figure 16 shows the relative weight of effort contributed from November to April by the medium, fighter bomber and light bomber categories.

(2) Location of Brenner line power stations - (See Figure 13).

(a)	Transformer station	3 miles S.W. of Verona
(b)	"	" at Domegliara
(c)	"	" at Ala
(d)	"	" at Trento
(e)	Converter	" at Salorno
(f)	"	" 1 mile N. of Ora
(g)	Power	" 2 miles S.W. of Bolzano
(h)	Converter	" at Campodazzo
(i)	"	" at Chiusa
(j)	"	" at Varna
(k)	"	" at Le Cave
(l)	"	" S. of Vipiteno
(m)	"	" at Colle Isarco
(n)	"	" at Terme Del Brennero

(3) Average load 800 tons.

There were two principal types of power stations on the Verona-Innsbruck (known as the Brenner Pass) line, namely the large transformer stations on the Direct Current section of the line between Verona and Trento, and the smaller, completely housed converter stations on the Alternating Current section from Trento north. They were located between 10 to 20 miles apart, the distance depending on the gradient. To cut off the power from any section, it was necessary to destroy at least three consecutive stations. The system was so designed that even if two consecutive stations were removed, limited traffic would still be possible, but if three consecutive stations were eliminated, it would be impossible to use electric traction on the section between the outer destroyed stations. (1)

The transformers were usually located in the open, adjacent to buildings housing the control panels. All the vulnerable parts of a converter were located in the buildings. Their destruction could be best accomplished by shell fragments penetrating the heavy casings. Bombs had to be fuzed to penetrate through the upper two or three stories housing the personnel right down to the level of the ground floor, where the station equipment was located. It had been known since August 1944 that there were 12 mobile transformers available for emergency use on the Verona-Trento section and 10 to 15 on the Trento-North section. (2)

Effects of a Conversion from Electricity to Steam(3)

In a country of steep, long gradients, the electric power system was much more efficient than steam. It was pointed out by the Chief Mechanical Engineer and the Chief of Technical Services of the Italian State Railways that by forcing the Germans to change from electricity to steam, we could reduce the capacity of the Brenner line to eight or ten trains daily, or, in other words, from about 24,000 tons to some 6,750 tons daily. Furthermore, the volume of supplies rushed through when bad weather interrupted our air attacks would be commensurately curtailed.

The daily minimum requirement of supplies for Army Group C was estimated to be in the region of 5,500 to 6,500 tons, of which normally some 3,600 to 4,000 tons passed from the Reich into Italy over the Brenner and Tarvisio routes. As winter operations slowed down, so did the basic requirements fall to the figure of about 1,900 tons in four trains daily. Evidently, even complete stoppage of the Brenner route alone would not starve the German armies, but if we could divert them from electric to steam traction along a part of the Brenner, we should inflict grievous harm on their economy at the outset.

Operation 'Bingo': Plans(4)

On 27 October 1944, Mediterranean Allied Air Forces Headquarters authorised an operation designed to 'destroy' the electrical system on the Brenner line, and thus reduce the operating efficiency by 60-70 per cent.

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- (1) M.A.T.A.F. Target Intelligence Appreciation No. 7. (A.H.B./IIJ1/122/83/8).
 - (2) 3 mobile units combined equalled 1 static transformer.
 - (3) M.A.A.F./Air Staff/Comms. Section O.R.B., October 1944.
 - (4) H.Q., M.A.T.A.F. O.R.B., Operation Instruction No. 14, 27 October 1944.

The four consecutive transformer stations at Verona, near Domegliara, at Ala and at Trento were the targets for Tactical Air Force. The converter stations at Salerno and one mile north of Ora and the power station two miles south-west of Bolzano were the targets for Strategic Air Force. In addition to the diversions to keep down enemy fighters, the system as a whole between Verona and Trento was to be attacked with the object of creating all possible blocks between Domegliara and Trento.

The four transformers, from Verona to Trento in order, were to be destroyed by Desert Air Force fighter-bombers, by 57th Wing Mitchells and Desert Air Force fighter-bombers, by 57th Wing Mitchells and fighter-bombers of XXII Tactical Air Command, and by 57th Wing Mitchells and XXII Tactical Air Command fighter-bombers respectively. The creation of blocks between Verona and Trento was the task of the 42nd Wing Marauders. The heavy bombers of Strategic Air Force were, in addition to attacking the three stations North of Trento, to bomb the section of the line between Trento and Innsbruck and create blocks. XXII Tactical Command was to furnish general fighter cover for all bomber attacks. The signal to proceed was to come from Tactical Air Force through 57th Wing for medium bomber preparations. They were to report the ready back to Tactical Air Force, who was then to co-ordinate the efforts of Desert Air Force, XXII Tactical Air Command and Strategic Air Force.

Operation 'Bingo' - Execution

Report on Operation
Bingo H.Q.,
M.A.T.A.F., 20 Jan.
1945 Appx. D/SASO/3
to H.Q.,
M.A.T.A.F., O.R.B.,
Jan. 1945

After the publication of the Bingo directive of 27 October, a week of non-operational weather followed. It was 4 November before the two medium bomber wings were able to resume flying on joint missions. At the time they were both up to full strength. (1) The Verona transformer

(1) Order of Battle on 1 November 1944 of 57th and 42nd Bomb Wings

<u>57th BOMBARDMENT WING</u>		H.Q. Prunelli
<u>340th Group</u>		H.Q. Alesan
486th Squadron	B - 25	"
487th "	"	"
488th "	"	"
489th "	"	"
<u>321st Group</u>		H.Q. Solenzara
445th Squadron	B - 25	"
446th "	"	"
447th "	"	"
448th "	"	"
<u>310th Group</u>		H.Q. Ghisonaccia
379th Squadron	B - 25	"
380th "	"	"
381st "	"	"
428th "	"	"
<u>42nd BOMBARDMENT WING</u>		H.Q. Borgo
<u>17th Group</u>		H.Q. Poretta
34th Squadron	B - 26	"
37th "	"	"
95th "	"	"
432nd "	"	"
<u>319th Group (Rearmed with B-25s. and transferred to 57 Bomb Group 15 Nov. 1944)</u>		H.Q. Serraglia
437th Squadron	B - 26	"
438th "	"	"
439th "	"	"
440th "	"	"
<u>320th Group</u>		H.Q. Alto
441st Squadron	B - 26	"
442nd "	"	"
443rd "	"	"
444th "	"	"

Note. Shortly thereafter, 42nd Wing was redistributed, one squadron going to 57th Wing. In December, 42nd Wing left the theatre.

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station was attacked by two squadrons of Thunderbolts(1) with rockets and by two squadrons of Kittyhawks(2). The Thunderbolts reported 21 hits on the transformer and four hits on the buildings; the Kittyhawks claimed two direct hits on the transformer and 14 on the main building. Blast was responsible for most of the damage. It was estimated later that overall damage was 80 per cent. The Domegliara transformer station, attacked by two medium bomber missions(3), was covered by a good concentration of the 500 lb. bombs; fighter-bombers(4) scored direct hits on the transformer station, destroying two transformers. Overall damage was later put at 100 per cent, as it was for the Ala attack, carried out in two missions by medium bombers(5) and Thunderbolts, using both bombs and rockets.

The Trento attack was less successful than the others. The attacking formations were troubled by heavy flak, intense and accurate against the fighter-bombers.(6) The known presence of 30 heavy guns, with five light guns in the immediate vicinity called for the most elaborate precautions. To foil the radar system, six of the medium bombers dispensed chaff, while, 24 others dropped 168 bombs and 72 phosphorus bombs. The chaff element encountered six enemy aircraft - mostly F.W.190s - who made passes, almost all unaggressive, and met heavy, moderate and accurate flak. The concentration on the chaff element resulted in less accurate fire on the main bombing formation; they reported favourably on the combined effect of phosphorus bombs and chaff and claimed to have well covered the control station and transformer. An anti-flak mission(7) bombed the guns without silencing them. At 1245 hours, 16 Thunderbolts(8) flew in low and dropped 32 bombs, scoring two direct hits on the transformer area, one out in the railway tracks and a hit on the corner of the control house. Four others scored two direct hits on the transformer area. A large factory blew up. With no chaff element to distract the defences, they flew through intense and accurate flak. Damage was later estimated at 50 per cent.

The 42nd Bombardment Wing's Marauder attacks fell on the section between Verona and Trento.(9) Six missions, totalling 103 sorties were flown. They created seven blocks(10) between Rovereto and Verona, without opposition or loss.

Twenty-three Liberators of Strategic Air Force, escorted by 46 Lightnings, reported cover of Salerno power station in a close pattern and three near misses on the transformer house, two direct hits and several near misses on Ora power station. They cut the double track line to Bolzano in three places. There was plenty of well-directed flak at the targets but no aircraft were encountered or lost.

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- (1) Of 79th Fighter Group.
 - (2) Of No. 239 Wing.
 - (3) Of 310th Bomb. Group.
 - (4) Of 57th Fighter Group.
 - (5) Of 321st Bomb. Group.
 - (6) Of 57th Fighter Group.
 - (7) By 86th Fighter Group.
 - (8) Of No. 66 Fighter Squadron, 57th Fighter Group.
 - (9) Figure 13 shows all the principal points on the Brenner line.
 - (10) The cuts were at Ossenigo, San Ambrogio, Dolce and Marco. They hit the north end of Ala railway bridge.

Early Assessments of Results

Photographic reconnaissance sorties flown on 8 and 9 November reported excellent overall results, not attaining perfection, but pointing to the infliction of what might well prove fatal damage to the Verona-Trento electric system. Reports from usually reliable ground agents began to accumulate. On 12 November, it was reported that only steam traction could be used; on 17 November, that the Germans were using motor transport to move critical supplies from Ora to Verona; on 23 November, that they had ordered suspension of repair work on sub-stations between Verona and Trento and that thereafter only steam locomotives were to be used; again, on 25 November, that owing to the damage to the four stations, only steam locomotives could operate between Verona and Trento. Photographic reconnaissance aircraft, unless weather forbade it, flew an average of three sorties daily over the Brenner. Their photographs confirmed the agents' reports. Only steam traction was observed and, on occasions, long motor convoys were observed on routes parallel to apparently unserviceable sections of the railway route. No further attacks were made on the power stations.

Cumulative Effect of Air Attacks on the Electrical System

Some idea of the immediate results was thus obtained. The complete view of the operation was only obtainable at the close of the campaign. When hostilities came to an end, many problems of great importance were left unsolved, perhaps for ever, in the general dissolution of forces. It is fortunate that the Twelfth Air Force had sufficient presence of mind to collect and collate the documents of many stations along the Brenner, interrogate personnel from the power stations and integrate the facts. A paper produced by Engineer Righi of the Italian State Railways gives the full context of pre-'Bingo', 'Bingo' and post-'Bingo' operations and shows how by 15 January the Germans had abandoned hope of restoring the current south of Trento, but continued light traffic north of it.(1)

Speaking of the Brenner line as a whole, he said that between 1 October 1944 and 1 May 1945, electric train operation was irregular and limited to ever-decreasing sections of the line. After an attack on the line, fallen towers and overhead contact lines were cleared away from the damaged section, the track repaired and re-electrification carried out forthwith, so long as it was possible to keep power stations, high tension lines and sub-stations operating efficiently.

During the first week in October 1944, the report continues, electric operation was still efficient, in spite of the fact that the sub-station at Trento, the mobile sub-station at Ora, its high tension industrial primary lines(2) and the railroad primary lines(3) had already been badly

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- (1) Survey of Transformer Sub-stations on the Lower Brenner Line - XII A.F. Ordnance Section (Report by Engineer Righi of the Elect. & Signals Office, Italian State Railways). (A.H.B./IIJ11/18, May 1945, Pt.V).
 - (2) 130,000 volts, 50 cycles.
 - (3) 60,000 volts. 16.7 cycles.

damaged by the bombing of 4 September along the section between Bronzolo and Trento. On 4 October, heavy air attacks along the line from Fortezza to Trento badly damaged the sub-station at Campodazzo and the high tension lines. After a short interruption, the high tension line between Trento and Verona were rehabilitated by loaned power;(1) and the northernmost sector between Brennero and Bressanone, with loaned power from the Prati station, was quickly restored to serviceability. By 8 October, one track from Brennero to Ora was operating electrically and the interruption between Ora and Trento, due primarily to the damage caused by our aircraft to the bridges over the Adige and Avisio Rivers, repaired.

During October, the Germans dealt to a large degree successfully with the frequent interruptions caused by Allied bombing. Damage to high tension and overhead contact lines could be repaired the same day. On 4 November, the 130,000 volt supply from the power station at Bressanone was interrupted by six formations of Marauders.(2) The report did not mention the 24 cuts on a 30-mile stretch south of Trento claimed by these units, or the claimed tearing-up of tracks on 5 November.

Engineer Righi affirmed that after 'Bingo' there was no electric operation on the Trento-Verona section and, furthermore, operation on the section between Verona and Ostiglia (on the Po), supplied by the Bussolengho power station, became very irregular. The continuous bombing thereafter of the section between Trento and Domegliara forced the German Transport Headquarters to have all overhead contact equipment removed on 15 January 1945 on nearly all sections. The mobile sub-stations proved no menace in the event. The Germans found the difficulty in establishing them and their vulnerability to air attack sufficient reasons for not attempting to use them.

As regards the overall situation on the northern Trento-Brennero section, it was impossible for the transport control to provide complete coverage, for Operation 'Bingo' had cut all telephonic communication north of Verona. After 15 January, electric operation south of Mezzocorona, and very often from Ora and Bronzolo, was no longer possible. In the branch north of Bronzolo and south of Bolzano, efficient electric service was maintained. After the end of February 1945, traffic was reduced to light proportions, owing to the frequent interruptions by air attack of the bridges near Bressanone and Campo di Trens. At the end of March, the Campodazzo sub-station was completely destroyed, but traffic, limited and irregular, continued.

Evidence by the General of the German Transport Arm and Prisoners-of-War

In a paper which will be used more extensively in an assessment of the five-months air campaign against the Brenner route, the General of the Transport Arm in Italy attempted to

(1) From the Edison firm in Mori.
(2) Of 42nd Bomb. Wing.

play down the effects of 'Bingo'.(1) These attacks, he said after the campaign, were not regarded by his colleagues as of decisive importance, since systematic destruction was confined to the relatively level stretch between Verona and Trento. It was comparatively easy to change over to steam locomotion, as relevant plans already existed. The same concentration of effort on the steep slope between Bolzano and the Brenner Pass would have produced disastrous effects much more quickly; steam locomotion thereover would have been of little effect.

Nevertheless, he admitted, the results were 'extremely disagreeable', inasmuch as they enforced the supply of coal to the Lower Brenner and its transport over an already overburdened system. After 6 November, the eventual destruction of the northerly power stations was awaited with apprehension. To minimise the expected loss of these, caverns were prepared in the hills, in which the mobile sub-stations could be emplaced. After the Swiss embargo on coal of 1 January 1945, the loss of the Verona-Trento power was more acutely felt.

Although the Transport Chief affected to make light of the partial loss of the power system, continuous statements by prisoners-of-war and reports by the American Office of Strategic Services(2) confirmed a notable increase in the Germans' transport difficulties, which, aggravated by the constant bombing of the line, found expression in aggravating delays, in particular in the movement of troops; these were continually changing over to motor transport or held up by the increasing shortage of rolling stock working overtime on account of Operation 'Bingo'.

Twelfth Air Force's qualified Satisfaction with Results of 'Bingo'

Twelfth Air Force concluded after the survey of Spring 1945 that Operation 'Bingo' had been even more effective than believed soon after its execution(3), but would have been even more so had Strategic Air Force destroyed the stations north of Ora 'as was originally planned'. It cannot be confirmed that there ever was a complete detailed plan, but it is certain that the oil priorities in European bombing policy excluded greater participation in the air war against communications. The Fifteenth Air Force was closely tied to that policy.

Analysis of station records showed clearly the difference in activity on the two sections below and above Trento. At Bolzano on the central sector, where the stretch remained electrified, records show that all through the period October to May many trains, other than military and repair trains, continued to run during the days the track was not blocked. In vivid contrast, the Domegliara records showed that immediately after the stroke of 6 November, and throughout the succeeding months, practically the only movements

- (1) Article by Oberst i.G. Schnez, formerly General des Transportwesens, Italien, quoted in 'The German System of Supply in the Field - Italy G.2/AFHQ - Feb. 1946.' (A.H.B./IIJ11/58/39).
- (2) 5th Army P/W 25 Feb. 1945; 1 Jan. 1945; 11th Feb. 1945; 16th Feb. 1945; 13th Feb. 1945; 25th Jan. 1945; 23rd Feb. 1945; 18th Apl. 1945; O.S.S. 1640/13 9 Feb. 1945; Rye 27 Feb. 1945.
- (3) Report by XII A.F. Ordnance Section. (A.H.B./IIJ11/18, May, 1945, Pt.V).

attempted were by military and repair trains. Even during the month of December, when frequent bad weather broke the continuity of bombing operations, the traffic volume over this section of the line was not more than 50 per cent of its pre-'Bingo' level. Operation 'Bingo' did not, and was not expected to, terminate all traffic through the Brenner Pass, but it did considerably reduce the volume of traffic to a point where, by periodic interruptions by bombing, it could more easily be kept below the essential minimum.

Brenner Operations in November and December 1944

Battle joined

The blockade of Italy opened on the fine morning of breaking clouds of 4 November 1944. Six formations of Marauders bombed a 30 mile stretch of line south of Trento, cutting the track in 24 places: a similar attack the next day enlarged the area of damage, cutting both approaches to Rovereto bridge. Unusually aggressive air reaction by some enemy fighters resulted in the loss of three Marauders there for the price of five enemy fighters. Then, on 6 November, followed Operation 'Bingo'. On the same day as the attack on the transformer stations, aircraft of 57th Wing⁽¹⁾ damaged and blocked the same bridge at Rovereto, and the bridge at Calliano, as was clearly revealed by bomb fall plots. On 7 November, 17 Mitchells destroyed Ala bridge and 18 Mitchells cratered Ossenigo fill: a similar formation attacked San Michele, severing two spans. Three more attacks were made on San Michele and Calliano by 16 November.

On 17 November, the long viaduct at Lavis was added to the list of targets. Another attack on Ossenigo fill completed the 57th Wing's Brenner effort for November. Weather closed in; but the blocking had been effective as far as the area between Trento and Bolzano. The target policy tendency had been to advance from open stretches in the south to bridges (more numerous) on the more northerly stretches, with fills and corniches remaining constant in interest. The Germans were building a diversion offering few good medium targets between Bolzano and Trento.⁽²⁾ They were allowed to finish an alternate 15 mile line, by-passing both the Ora and San Michele bridges, by 6 December without Allied interference. Anxious though Tactical Air Force was to grasp the problem of the Upper Brenner by the horns, the terrain itself still deterred them.

Apart from terrain, there was drastic reduction in strength to be allowed for. On 19 November, 42nd Bombardment Wing (then out of Sardinia and based in Corsica) flew its last mission in the Mediterranean Command. It was transferred to Dijon for service in the European Theatre of Operations.

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- (1) 319 Group - 36 Mitchells dropped 72 tons of 1,000 pound bombs without loss.
- (2) M.A.T.A.F., O.R.Bs. The isolation of Italy from the Reich H.Q., M.A.T.A.F. Battle of the Brenner 57th Bomb. Wing. (A.H.B./IIF2/22/6).

Twelfth Air Force was then left with only four groups of medium bombers to carry the major part of the burden of blockading Italy.(1) It was not alone, however, and the forces marshalled extended to night bombers, fighter and light bombers and Desert Air Force provided substantial aid.

Looking back later on general results, Tactical Air Force felt that it had been right in plunging right into the heart of the problem and inflicting very serious damage. When repair and flak were much more highly developed, the Germans managed to make up a good deal of leeway, but the heavy November attacks had given us a good start. A lighter air effort would have been speedily neutralised.

December Operations

Ibid

All through December, the Northern Brenner remained a relatively untapped problem, with most of the effort concentrated on the smaller bridges south of Trento and the fills at the base of the line. Following two attempts in November, efforts were redoubled to bring about the landslide over the tracks at Ambrogio recommended by the Italian engineers and geologists. The rubble created by one good landslide would, it was calculated, take longer to clear than it would to repair several broken bridges. But the aiming points were rendered invisible by shadows until the aircraft was practically on top of it. Five missions in December devoted their entire efforts to dislodging a limestone cliff at this point, but failed.

The advance towards Faenza absorbed the medium bombers between 21 and 24 November; the month finished with grisly weather. The enemy profited enormously by this respite. On 1 December, the whole line was open for through traffic: throughout the month we seemed to make a little headway only to see it neutralised by the feverish and surprising tactics of the German repair organisation, now rapidly reaching the point of perfection. Weather broke the continuity again and again and made operations more hazardous and aiming much more difficult. After 18 December, the weather was non-operational. In the first 25 days of the month, only 12 missions flew on the Brenner programme; through Christmas, only five missions succeeded in reaching any of the northeastern routes.

On 2 December, the bridges at Ala, Rovereto and Calliano on the Lower, and at San Michele on the Middle Brenner were attacked in the face of ground haze, smoke from generators and intense flak. The line was closed, no bridges were destroyed: on 5 December, the line was open again. Rolling stock was seen to be piling up in groups and singly between Verona and Bolzano. After a spell of eight days of thick weather, Mitchells attacked again on 10 December, this time against four bridges, two fills and two potential landslides on the Lower Brenner and San Michele bridge on

(1) The redeployment of 319th Group on 1 January left 12 squadrons of Mitchells and 4 of Marauders.

the Middle Brenner. Again, enemy fighters - about two and a half Staffeln, i.e. 12 to 15 aircraft - attacked, destroying a Mitchell for the loss of four Me.109s. Two more Mitchells were lost to heavy flak. Again, no structural damage was done to bridges: the reports referred to cratered approaches and track cuts. These were certainly cleared up by the time the next photographs were processed on 22 December. Four more days of cloudy weather gave the Germans further respite. On 26, 27, 29, 30 and 31 December, 57th Wing covered the Lower Brenner at Calliano, Rovereto, Santa Margherita and Ala bridges, a tunnel entrance and potential landslide at San Ambrogio and a fill at Dolce; they gave some attention to the Middle Brenner by attacking the great Lavis viaduct on 29 December without decisive results. Many cuts were made: the non-stop effort will be noted. It was essential to overtake the German repair potential. (1)

Heavy Bomber Co-operation in December

Three new features in December were the return of strategic aircraft, the increase in the number of fighter bombers employed and the introduction of night bombers. The heavy bombers first attacked the Austrian terminals. On 15 December, 47 Liberators inflicted very heavy damage to the main marshalling yard at Innsbruck, an attack valuable, among other ways, in destroying full freight cars and oil tank waggons. From 26 December through 4 January, heavy bombers carried out 25 attacks on bridges and other rail targets along both the Brenner and the northeastern lines, ending on 4 January with a twin assault by 197 Fortresses and Liberators on the Verona marshalling yards, which was known to be very effective, (2) and a moderately successful attack on Trento North marshalling yards. (3) Forty-four Liberators scored several hits on Bolzano yards, the tracks and rolling stock. Thereafter, Strategic Air Force participation in the isolation of Italy ceased until late February.

Fighter Bomber Operations along the Brenner

From late in October onwards, fighter-bomber armed reconnaissances had penetrated into the lower part of the Venetian plain in search of rolling stock and locomotives in Verona and Padua marshalling yards and on the lines therefrom to Treviso and Castelfranco. On 6 November, they co-operated in the big attack on the transformer stations. It was not until late in November that it was decided to turn the fighter-bombers to the limit of their range on to actual railway line targets beyond the Po. When 42nd Wing left the theatre and the weather held down the medium bombers remaining, the fighter-bombers were the obvious stopgap in the race for time.

- (1) The medium effort in December was only one-half that in November. 1,026 tons of bombs were dropped by them on the Brenner line. Late in the month, they undertook operations against the Tarvisio, Piedicolle and Postumia target systems. They passed responsibility for the Trento-Cittadella loop line to the fighter bombers.
- (2) 90 Fortresses and 41 Liberators dropped 289 tons on Verona/Porto Nuovo and 26 Fortresses and 40 Liberators dropped 171 tons on Verona/Porto Vescovo for the loss of only 1 Liberator.
- (3) 75 Liberators dropped 143 tons on Trento North and the station sidings for the loss of 2 aircraft. In addition to these three attacks, bombers and 56 Lightnings attacked points on the northeastern Innsbruck areas.

Ibid

They were so successful that what had been intended as a patchwork emergency move ended by becoming a standard and valued role in the pattern of interdiction.

They began on a small scale on 19 November by potholing the tracks low down the line between Verona and Ala. From 26 November through 2 December, they moved northward, still on a small scale, with an effort of 148 sorties. Though small efforts, their results were sometimes striking. For example, one of the early attacks near San Ambrogio blew up a truck which, exploding, blasted out 280 yards of tracks from the road bed. Trucks were hurled over 100 yards away and buildings as far as 330 yards away damaged. Again, on 28 November, 46 Thunderbolts worked over a 40-mile stretch, tearing ten gaps in it, so creating small 'islands', which were to become a lively topic of tactical debate on both sides. All through December, an average of 20 Thunderbolts flew up and down the Brenner route as far north on occasions as San Michele, cutting tracks and attacking yards at Trento and elsewhere, claiming 149 cuts in all. As Desert Air Force was intimately committed to close support of the Eighth Army and the support of Tito's forces, XXII Tactical Air Command threw in more of its Thunderbolt fighter-bombers over the northeastern and Venetian plain routes. The day-to-day effect and the cumulative results of all the attacks by heavy, medium, light and fighter bombers are best considered, not by the periodic status reports so valuable to the air forces at the time, but in the light of the chart at Figure 18, which is based on actual captured enemy station reports and charts. It is sufficient to appreciate here that it was not until well into February that a turning point favourable in prospect to the Allies was reached.

Night Bomber Armed Reconnaissance in December

H.Q.,
T.A.F./S.A.S.O.
O.R.B.,
1 Dec., 1944

There were two problematic time gaps in the Allied pattern of air attack, namely movement and repairs at night and in the interim periods of twilight between daylight and darkness.(1) The first was approached on 1 December with an order from Tactical Air Force for the employment of a proportion of night bombers on armed reconnaissance of the Brenner line and northeast Italy. XXII Tactical Air Command complied by assigning several Bostons, on a nightly basis as from 2 December, to the cover of the Brenner line as far north as Trento and the roads along the shores of Lake Garda, crowded with motor transport. Desert Air Force spared a few aircraft nightly to cover the northeastern lines, striking the first blow on the night 9/10 December at Udine. It was a nicely-timed operation. Fourteen Bostons flew over the city for 45 minutes, while Partisans, under the sound shield of the air raid sirens, sabotaged the marshalling yards: then the Bostons bombed the railway station.

The Position at Christmas 1944

Ibid all above
references

After the resounding opening of the Brenner battles in November, the results seemed disappointing, when reviewed at Christmas time. The weather was hostile, the enemy repair gangs apparently possessed of demonic energy and no structural damage had been inflicted on any major bridge

(1) The problem of twilight attacks will be dealt with later.

since the end of November. Nor was the picture much more favourable along the other frontier routes. There had only been a very short period in December when any one of the four belts of interdiction could be considered closed. Plenty of traffic was passing through, although reduced in volume, more over the northeastern routes and the Venetian plain than over the Brenner.

Concern heightened to tension when on 16 December Field Marshal Von Rundstedt opened the counter-offensive in the Ardennes with two panzer armies, and when a few days later there were signs of the impending counter-offensive down the Serchio Valley on the Fifth Army front. Some saw the two attacks as the manifestation of one policy and looked anxiously over their shoulders to Leghorn, our major supply port. Kesselring had ample experienced troops to spare for the West as things stood, and could, with general conditions in his favour, still hold us down on or about the actual front line.

Allied Armies in West and East demand Air Blockade of Reinforcements

An urgent appeal went out from General Spaatz to Generals Cannon and Twining, Commanding Generals of the Tactical and Strategic Air Forces respectively. Spaatz's headquarters considered it of great importance that the Brenner and Tarvisio routes should be maintained as fully as possible in a state of immobilisation. That was the most important contribution the Mediterranean Air Forces could make to the battle in the West. Intensive air reconnaissance should be especially maintained along the Gothard - Simplon routes, and immediate notification given him of any intensification of traffic there which might indicate the movement of German divisions in Italy to the West. Eaker asked both air forces to undertake maximum compliance to meet this commitment by the following day, a figure of speech which echoed the sense of urgency felt.

The Russians were launching their Winter offensive, which led to the collapse of General Guderian's front in Poland in mid-January. They were just as anxious as Eisenhower that German reinforcements should not be switched from Italy to their fronts, wrote the Russian High Command.

Forced Revision of Air Tactics

On 26 December 1944, an imminently planned Allied ground assault was indefinitely postponed and on 2 January 1945 cancelled. The armies reverted to a defensive role. Most of the responsibility for containing German formations in Italy now lay with the Air Forces. With the appeals from the West and the Russians before them, with the need to starve and isolate the forces under Kesselring paramount, no decisive results yet to point to and many other commitments in Northern Italy, the Balkans and Greece to be met, air tactics had to be revised and intensified.

The enemy was not only busy building diversions, but was studying and exploiting the time factor. Not only was he active in those periods between daylight and night referred to but was waiting until a line was repaired to rush through the maximum volume of supplies at top pressure. He was also transshipping men more easily than materials round

breaks in the line and working out the minimum possible span of 'islands' between breaks which his transshipment plan could cope with. Everything pointed to deeper and heavier air interdiction.

The Air Directive of 9 January 1945

Operational
Directive No. 23
9 Jan. 1945,
H.Q. M.A.A.F.
(A.H.B./11J1/188/6,
Encl. 3a).

The following steps were thereupon taken at the turn of the year. Firstly, the zone of interdiction in the North-east was deepened so as to embrace the frontier routes through the Alps above the Venetian Plains; secondly, those Baltimore and Marauder squadrons of Desert Air Force then operating almost exclusively south of the Po River were committed to the blockade; thirdly, an all-out fighter bomber effort was arranged for as soon as their commitments to the Armies dropped to a low point. The international routes took the place of the Po Valley network as their first priority communications commitment. They were asked to destroy bridges, not to pothole tracks.

These steps were formalised in the operational directive of 9 January, which has been already touched on in the section on air strategy.⁽¹⁾ Briefly, this directive eliminated ground support as a major responsibility and re-defined the primary task of Tactical Air Force as the maintenance of the isolation of Northern Italy: the 57th Mitchell Wing's priorities were, firstly, the Brenner, then, in succession, the Venetian railway bridges over the Brenta, Piave, Livenza and Tagliamento Rivers, and the group of three northeastern lines, the Tarvisio, Piedicolle and Postumia. The bulk of the effort of XXII Tactical Air Command and Desert Air Force was directed to crucial stretches joining Italy to the Reich. First requirements were a series of broken bridges and long gaping gaps in the line: second requirements were the concentration of attacks on individual sections of the line until they were completely unserviceable. XXII Tactical Air Command gave first priority to the Brenner line, Desert Air Force to the lower stretches of the Tarvisio and Piedicolle routes; the two commands shared the three lines along the Venetian Plain on succeeding priority bases.

Rise in Air Effort after Christmas Day

Air Intelligence
Weekly Summaries
H.Q., M.A.A.F./
Intell. Section
(A.H.B./11J1/43).

From Boxing Day through to the end of the year, with the exception of the 30th, bright weather brought a fillip to operations. The participation of the heavy bombers has been referred to above. The mediums achieved good results at San Ambrogio and Dolce, on the 26th. They destroyed the bridge at Galliano on the 27th, but within 48 hours a single line across it was again serviceable. At Rovereto, they had badly damaged the bridge and cratered its approaches: 24 hours later it was reopened to traffic. They therefore returned and bombed it five times in the last six days of the month. They scored hits on Lavis viaduct without crippling it seriously.

Enemy Position on 31 December 1944

Captured enemy
charts and station
reports. Resumes of
interrogation reports.
H.Q., M.A.A.F. &
M.A.A.F.

There was very little through traffic possible on the Brenner route, or indeed any other route to the Reich, at the close of 1944 and on only very few days thereafter, but some

(1) Refer to Appendix 17 for full text.

traffic was always moving. The Germans made the maximum use of the system by off-loading priority troops and supplies at breaks and shuttling them round the cuts on to the open sections of the line known as islands. The Allied Air Forces were countering this to some extent by spacing the cuts 15 to 20 miles apart, thereby forcing a long motor transport haul or march. It is known that the Germans made use of islands only 12 miles long: it was only over rare periods of unbroken good weather that we were able, throughout the battle, to affect that policy.

A reasonably accurate statement⁽¹⁾ of the average daily traffic passing along the various sections of the Brenner became possible when station records and officials fell into our hands. The daily average on the southern sector increased, on the northern sector it remained at the November figure, and on the central sector probably fell. Surveying the whole field of Northern Italy, of which the Brenner was a sensitive area, the German interdiction⁽²⁾ charts show 1,020 cuts in all. Of these, 753 were made by aircraft attacks, the surprisingly high figure, (still to be surpassed) of 154 by partisans, and 112 by accidents. Analysing these into degrees of permanence, we see now that 831 cuts were on open stretches and stations and only 189 at bridges in December.

The German Report to the High Command

The German Command in Italy reviewed the whole problem of maintaining railway communications in Italy on 29 December 1944 in a report to the Director of Transport in the Armed Forces High Command. The document, captured later, is still one of the most important and revealing surviving and should be studied at Appendix 21, where it is given in extenso. Implicit in its terms was an appeal, hardly likely to be met, for more men and materials.

The pattern of Allied air attacks was clearly perceived and it was admitted that Partisan sabotage was a menace. It explained the various developments to that date, including practical camouflage and deception measures, the overcoming of river barriers, the success of railway ferries and measures against the simultaneous cutting of all railway bridges, such as diversion bridges. Nineteen diversions had been completed, nine were under construction and five more planned. Results of their experiments were given, pointing to the high value

(1) Number of trains, excluding single locomotives, but including work trains arriving, leaving or passing the three stations Domegliara, Trento and Bolzano.

	DOMEGLIARA		TRENTO		BOLZANO		Entire Line Daily Average
	Total	Daily Average	Total	Daily Average	Total	Daily Average	
Oct.	970	31	Records not available		1,372	44	38
Nov.	355	12	"	"	1,135	38	25
Dec.	475	15	"	"	1,092	35	25
Jan.	290	9	65	2	1,111	36	16
Feb.	167	6	18	1	756	27	11
Mar.	95	3	68	2	592	19	8
Apr.	22	1	68	2	358	12	5

These figures do not mean e.g., that an average of 5 trains moved daily during April between Verona and Bolzano. They show that an equivalent of 5 trains, including repair trains, were working either North or South over that stretch of line. It is of interest to note that traffic in the Trento area, the approximate centre of interdiction, show that, after the turn of the year, traffic there was very low, but that at Domegliara and Bolzano it was considerable, though diminishing.

(2) Streckenstörung.

Report 4488/44,
29 Dec. 1944 on
the maintenance of
railway communica-
tions. Captured
enemy document
(quoted in
A.H.B./11J11/18,
May 1945).

of pre-fabricated sections, light bridge support equipment and short bomb crater bridges. Ingenuity of an unusual degree found expression in a series of measures, from conversion of water points to steam in case current was cut off, to dispersal, camouflage, and decoys. The problem of specialised manpower was pointed out as critical.

After the beaver-like activities of the enemy repair organisation, the growth and disposition of his flak forces presented the next constant menace. In 1944, the Mediterranean Allied Tactical Air Force alone lost no less than 713 aircraft totally destroyed to flak. It is obviously well to examine this formidable enemy defence arm more closely.

Flak and Anti-Flak

German Anti-Aircraft Organisation in Northern Italy(1)

O.K.L. Füst,
Ia/Flak No. 10387/
44g. Kdos. Chfs.,
24 Nov. 1944.
(Flak Map:
A.H.B.6)

In November 1944, the German Luftwaffe Flak organisation was the responsibility of the Commanding General of the Luftwaffe in Italy. He controlled three main sectors, namely the Central, Western and Eastern. 25th Flakdivision covered the Central sector, roughly the Brenner and the North Central area up to the northern frontier; 3rd Flakbrigade covered the Western sector, that is, the French-Italian frontier and the area from Genoa north to Casale; and, lastly, 22nd Flakbrigade covered the Eastern sector, i.e. the Venetian plain. In addition, the coasts in the Gulf of Genoa were defended by detachments of the Marinekommando Italy - (the naval H.Q.). A group under the Admiral Adria defended the Istrian coastline and a small number of railway transport flak units were located in the Vicenza - Padua area.(2) The units defending the Brenner Line were the 5th and 137th Flak Regiments.(3)

(1) Refer to Figure 11.

(2) These areas are clearly defined on Figure 11, which was constructed from a captured original top secret German map of the period. Maps dated 24 October, 9 and 24 November and 9 and 22 December 1944 only are at present held in Air Ministry, but there are copies of maps captured at General von Pohl's H.Q., giving the situation as at 29 March 1945, printed in Vol. I No. 7 of the M.A.T.A.F. Monthly Air Intelligence and Operations Bulletin. (A.H.B./IIJ11/18).

(3) Order of Battle, Flak, N. Italy. Oct. 1944 - Mar. 1945.

I. Eastern Sector

22nd Flak Brigade

57th Flak Regt.	with 6 battalions
78th " "	" 3 "
135th " "	" 6 "
149th " "	" 6 "

II. Central Sector

25th Flak Division

5th Flak Regt.	with 7 Battalions
105th " "	" 7 "
137th " "	" 8 "

(also Replacement Pool with 2 battalions and 1 smoke battalion).

III. Western Sector

3rd Flak Brigade

39th Flak Regt.	with 2 battalions
131st " "	" 3 "

One Italian Flak Brigade with 6 battalions Army and Marine Flak units under tactical Command of the Luftwaffe.

Most flak installations along the Brenner line were formed into Grosse Batterien, complexes of two or more heavy batteries at one locality. They were installed around centrally located fire control instruments, comprising two complete sets of equipment rendering possible the simultaneous track of two separate formations of attacking aircraft, one with each set. The Rhonrad switching device permitted rapid transfer of gun fire from one formation to another. German radar coverage of North Italy was virtually complete and was used to a large extent, but not universally. In favour of the large sites were the concentration of fire power, and simplified repair, maintenance, supply and administration. Their greatest weakness was that they provided larger targets than single batteries and sometimes, as at Rovereto, were forced by our persistent anti-flak air attacks to split into two. (1)

Defended areas were divided into sectors, one for each battery, whose commander fired on any hostile aircraft approaching the target in his sector. The Flakfuhrer alone could order fire out of any given sector into another. Consolidated radar battery information was plotted. The usual ratio of personnel manning Luftwaffe flak batteries was 60-70 per cent German to 30-40 per cent Italian. The one exception was Verona, all-Italian manned. The morale of German personnel, who had only suffered one major turnover, was high; that of the Italian, continually being sifted and turned over, was usually low.

Flak Technique

Much of the talent and research previously devoted to air operations was at this time concentrated on the development of flak; and an individual air war was fought out by the photographic interpreters, tactical experts, map makers, navigators and blind bombing experts on the Allied side against the enemy radar operators, control room plotters, deception experts and

(1) Flak Strength Italy at 29 Mar. 1945.

Type	Heavy A.A. Guns	
	Batteries	Guns
105-mm	7	28
90-mm (Italian)	49	275
88-mm/41 (new)	6	22
88-mm/36 & 37.	128	687
	Total	1,012
	Medium/Light A.A. Guns	
37-mm	16	181
37-mm (twin)	1	10
20-mm	108	1,291
20-mm (4 barrelled)	14	171
20-mm (single)	rail	67
20-mm (4 barrelled)	rail	102
20-mm (special alarm)	rail	372
	Total	2,194
Directors	231	(90% Kommandogerat 40)
Gun-laying radars	110	
No balloons		

smoke engineers. A study of Footnote 1 will suggest the efficient basis of the actual German fire control system.(1)

Flak Tactics along the Brenner

Ibid

The peculiar terrain of the Brenner country, with its often steeply soaring mountain slopes rising from the Rivers Adige and Isarco, presented difficulties to the flak units as well as to our aircraft. Almost everywhere, heights restricted their fields of fire and interrupted radar reception. None had yet found a way of overcoming the latter handicap, which had, as will be remembered, been allowed for at the time of the Salerno landings over a year before. At San Michele, on this account, no guns could be emplaced and at other points no flexibility in siting could be attempted. Other factors complicating the question of battery mobility were the serious shortage of motor fuel and the long and arduous material preparations needed to mount heavy batteries.

Normally, when a battery picked up an aerial target, radar tracking was used for range, and optical tracking for direction. If Allied aircraft dropped chaff or there was any other kind of interference, the radar might become unreliable.(2) The altitude was set so as to remain constant until data could be sent in by the height finder: this process took about five seconds. If the aircraft was obscured by clouds or white phosphorous smoke, fire accuracy was sure to be reduced. The response was to either use the radar as a source of all data or use barrage fire.

Detailed interrogation of captured German officers suggests that their listening posts along the River Po frequently picked up Allied radio messages indicating that our aircraft were taking off on missions and gave batteries ample warning of our impending attacks by way of the fighter control room at Verona. Verona had what appears to be a rational filter and plotting room organisation.(3) When Allied formations reached a point 200 kilometres from a defended area, their position was passed by radio and telephone to the area Flakfuehrer. He pre-alerted his heavy batteries and gun crews stood by. At 80 kilometres, the alert was given and

-
- (1) Both heavy guns and fire control apparatus were excellent and included the latest German models. In most cases they used the 88-mm Flak 36, but at Rovereto one battalion used 88-mm Flak 41 and at Verona and Vipiteno respectively 90-mm and 105-mm Italian pieces were used. The only serious shortage of heavy ammunition developed during the last months of the campaign. Then, only two thousand rounds of 88-mm shells were allotted to Luftwaffe defences in Italy, a very serious drop when one considers their estimate that it took an average of 1,600 rounds of heavy ammunition to destroy a single allied aircraft. The Kommandogerat 40 director was used with all 88-mm batteries. With all batteries north of the battle area, the delicate FMG 41 D was used for recording range and altitude. Only as a last resort was fire completely controlled by radar used. Italian batteries used German radar but Italian directors. The KG 40 was capable of predicting a rectilinear or curvilinear course. The FMG (Flakmessgerat) 41-D gun laying radar, the latest model available, furnished present azimuth, angular height and range to the director. More accurate visual tracking was used to furnish azimuth and angular height when possible. Radar range was more accurate than stereoscopic range. 'Battle of the Brenner' Report by 57th Bombardment Wing XII Air Force (A.H.B. IIF2/22/6).
 - (2) Statistical proof of the effect of chaff, fragmentation and phosphorous bombs of firing accuracy will be given a few paragraphs later.
 - (3) Since the war, exercises carried out with German personnel manning flak defences were said to lead to a conclusion that German defences were to some extent only pseudo-scientific and that a good deal of prediction was arrived at by 'guess-and-by-God' methods. There is no conclusive evidence that this was so in N. Italy, as the results plotted on Figure 12 indicate.

the usual procedure of relaying of course and altitude, manning of weapons, checking of orientation and synchronisation and readiness to fire ensued.

Tree Camouflage

Ibid As the battle rose in intensity, the Germans resorted progressively to tree camouflage, a method which, although it rarely deceived the photographic interpreters, did lead to uncertainty in the mind of approaching aircrews preparing to bomb and on occasions shook their confidence in their briefing. One striking example was photographed at Lavis. Here, in the course of the period between 26 February and 7 March, the increase of six to ten heavy guns and the whole collective siting was skilfully shrouded from observation by a seemingly natural continuation of the adjacent forest. Campo, Vipiteno and Bressanone speedily followed suit and it remained a problem which was never entirely solved, for the Germans were quick to exploit any oversight on the aircrews' part by developing this profitable form of silviculture.

Enemy Smoke and Searchlight Defences(1)

Searchlight defences, tied-in with radar, had been scrapped by Autumn 1944 over most of Northern Italy. On a return of 24 November, the total for the whole of Italy is given as four. By 9 December, these had disappeared from the order of battle. Smoke, however, was used more and more as a passive defence weapon. January and February 1945 saw its maximum use. It was employed at Verona and Rovereto in conjunction with gunfire. At Lavis and San Michele the Germans relied upon it entirely.

Special local conditions increased its value in defence. Most of the Brenner targets were small; the mountainous terrain, the prevailing moderate winds, the narrowness of the Brenner valley, all conspired to render smoke blankets effective in concealing distinctive landmarks and making pin-pointing erratic. Examination of many aerial photographs emphasises the ever present haze and light fog produced by the stability of the shallow layers of air confined in the valley, and stratified cloud coverage, conditions whose dissipation was difficult to forecast accurately. From their cockpits, aircrews looked down on a scene that changed hourly and with the seasons. Ancient upheavals had left huge outcroppings and over-hanging ledges that cast deep, dark shadows for long hours of the day, concealing, partially or entirely, much-sought-after targets or guns.

Under normal conditions, smoke screens⁽²⁾ protected the heavy batteries. This reduced the accuracy of fire, for the gunners were forced on to unseen, or radar fire control, which was estimated as only 25 per cent as accurate as visual fire.

-
- (1) German Flak Order of Battle Maps (A.H.B.6).
 - (2) The metal drum generators held 40 gallons of chlorosulphonic acid and were connected to a compressed air cylinder. Operated manually, they could achieve effective densities in about 20 minutes. Radar coverage furnished ample warning of Allied aircraft approach: it was hence usually possible to render cover effective about 10 to 20 minutes before an actual attack.

These smoke defences were not universal, only eighteen missions in the whole five-month Brenner battle reporting their presence; on only five missions were they 100 per cent effective.

Flak Strength in Northern Italy

Allied computations of the strength and movements of the German flak defences were the responsibility of the Intelligence and Operations Section. From all sources, especially from the work of the photographic reconnaissance units, they plotted movements and reactions, forecasted, and produced tactical flak maps for use of aircrews. These maps were highly appreciated, for they indicated routes which avoided battery concentrations and gave crews the best available safeguard. One difficulty under which Flak Intelligence laboured was that there was no constant numerical ratio between gun and battery. There might be anything between four and twelve guns in a flak battery. The Germans computed batteries in fifths at the period, but the composition was erratic. (1) Where photographic cover was incomplete (and it could never attain perfection under the given weather and seasonal conditions) a degree of guesswork was inevitable. (2) But when one studies the few Luftwaffe flak records, (3) there is a rough parallel between German records and Allied estimates over extended periods, but no check from day to day.

Brenner Flak Defences before and after the Joining of the Battle

Flak reactions to Brenner Pass line attacks W.A.I., M.A.T.A.F., Nov. 1944 to Apr. 1945 (A.H.B./IIJ11/18)

When the battle of the Brenner opened on 4 November, there were some 366 guns from Verona to Innsbruck clustered round the four key points of Verona, Trento, Bolzano and Innsbruck. The Germans decided the same night to re-dispose their flak. The first units were on the road the next day, arriving by the evening of the 6th in their new positions. All night they worked, setting, orientating and synchronising. On 7 November, our aircraft reported fire from the new positions between Verona and Trento. The next day, photographs confirmed it. From 7 to 30 December, a total of 88 heavy guns were believed to have been moved into the Brenner Pass line area. The Brenner area build-up as well as that in

-
- (1) Refer to the footnote in the early part of this section which gives the strength in batteries and guns.
 - (2) The German General Von Thoma had been impressed back in the Desert war by the way our aircraft avoided thick flak areas. The technique employed in N. Italy in late 1944 will therefore be seen as the natural outcome of years of applied research.
 - (3) Air Intelligence Operations Bulletin No.44 Mar. 1945. H.Q., M.A.T.A.F. (A.H.B./IIJ11/18).
Flak Order of Battle Maps.(captured enemy documents) and Von Pohl series of interrogation reports.
(A.H.B.6).

N.E. Italy may be gauged by the table given in the footnote(1), which shows clearly the growth of what came to be referred to as the most heavily defended complex at the period in the Axis world.

All through November, guns were shifted around North Italy. By the last week of the month, 25th Flakbrigade had moved its H.Q. to San Ambrogio, close to Verona. The heavy battery pattern began at Sterzing up on the frontier. Between 6 and 24 November, the 25th's establishment of heavy batteries had jumped from 72 heavy German and 8 heavy Italian batteries with 38 medium and light batteries, to 86 heavy German, 8 heavy Italian, and 47 medium and light batteries. During December, the only notable change was an increase of four heavy Italian and six medium and light batteries, but thereafter a notable thickening-up along the route was observed.(2)

Medium Bomber Anti-Flak Measures

Anti-Flak
measures employed
by 57th Bomb. Wing
M.A.I. & O.B.
M.A.T.A.F.,
Feb. 1945.
(A.H.B./IIJM/18)

As close a check as possible was kept on the flak system by Allied photographic reconnaissance units. Most of this work was carried out by the Third Photographic Group Reconnaissance under the direction of Mediterranean Allied Tactical Air Force. Augmented by interpretation of home produced bomb strike photographs and army reports, this organisation published flak maps of the scale of 1 : 100,000 periodically and air crew flak maps of the scale of 1 : 1,000,000 as the situation called for changes.

The operational measures developed by 57th Bombardment Wing must now be recorded. This wing first employed them on 16 June 1944.(3) The first measure, the dispensing of chaff by the aircraft of the leading element, led to the employment of a separate chaff-dispensing element flying ahead of the main formation on 22 June 1944. Each aircraft in this element dropped twelve 120-lb. fragmentation bomb clusters on gun positions surrounding the target, as well as dispensing chaff. This method continued until 15 September 1944, when the 340th Group of the Wing inaugurated the use of white phosphorus bombs.(4) The success of these bombs led to their adoption as a standard measure by that group. The

(1) Brenner

Date	Heavy	Light	Total
31 October	274	130	404
30 November	378	201	579
31 December	368	278	646
31 January	408	415	829
28 February	424	453	877
31 March	454	498	952
<u>N.E. Italy - Padua to Vicenza*</u>			
31 October	132	154	286
30 November	161	192	353
31 December	162	228	390
31 January	234	303	537
28 February	252	389	641
31 March	254	340	594

* These figures include defences at Borovnica in Jugoslavia but exclude coastal batteries (such as at Venice) where they could not be brought to bear on aircraft attacking roads and railway lines.

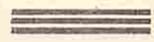
(2) Refer to Figure 13 for the expansion of defences.

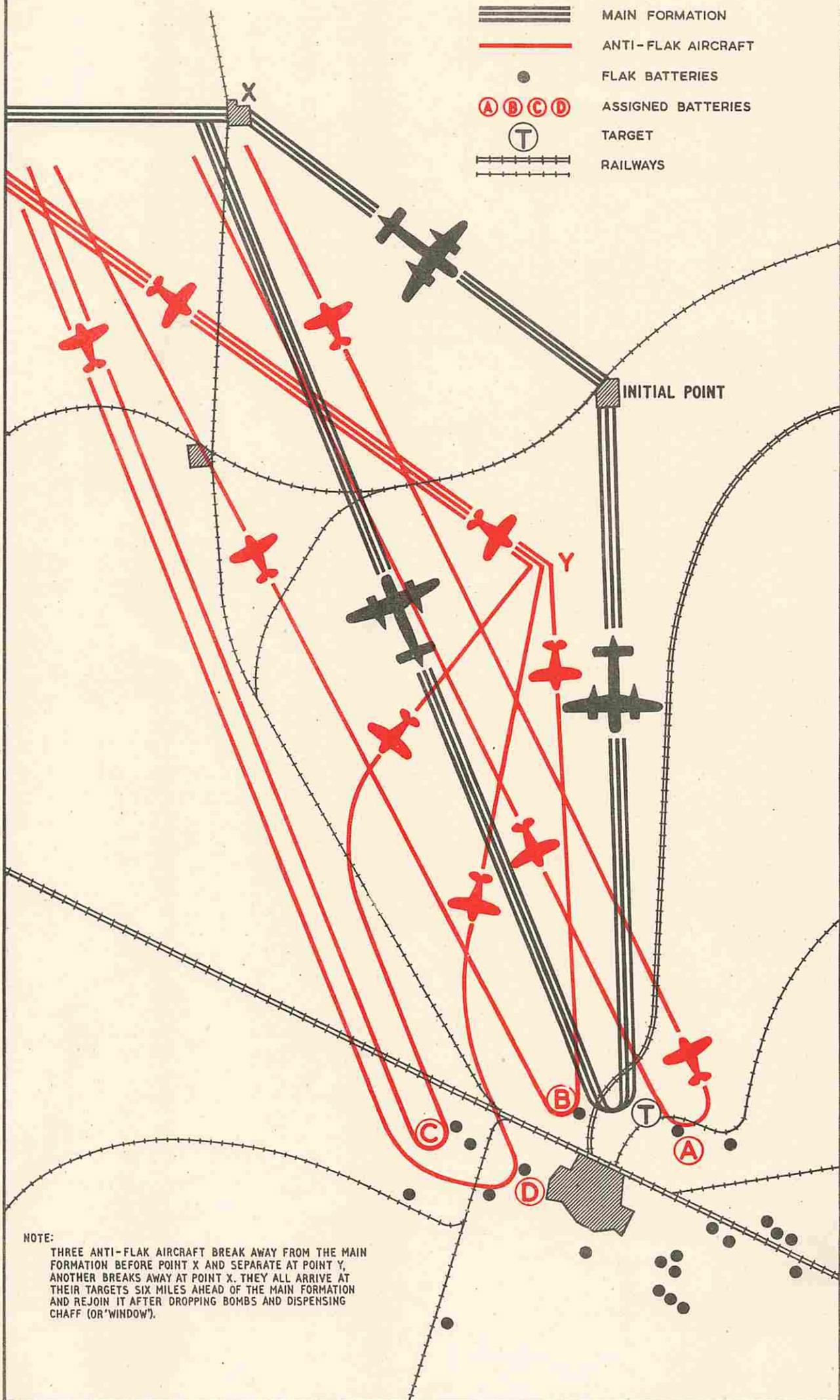
(3) In an attack on a railway viaduct on the Florence-Bologna line.

(4) 100 lb. M-47 type.

ALLIED ANTI-FLAK TACTICS ITALY - AUTUMN 1944

LEGEND

-  MAIN FORMATION
-  ANTI-FLAK AIRCRAFT
-  FLAK BATTERIES
-  ASSIGNED BATTERIES
-  TARGET
-  RAILWAYS



NOTE:
THREE ANTI-FLAK AIRCRAFT BREAK AWAY FROM THE MAIN FORMATION BEFORE POINT X AND SEPARATE AT POINT Y, ANOTHER BREAKS AWAY AT POINT X. THEY ALL ARRIVE AT THEIR TARGETS SIX MILES AHEAD OF THE MAIN FORMATION AND REJOIN IT AFTER DROPPING BOMBS AND DISPENSING CHAFF (OR 'WINDOW').

321st Group, after experiments with other weapons, (1) adopted the same white phosphorus bombs as the other two groups and it will be seen that the combined use of chaff (2) and white phosphorus bombs (3) affected adversely the accuracy and effect of gun fire. (4)

The root idea, which was to plan properly the correct bombing of the gun positions and dispense chaff to the best advantage, sprang from thorough analysis of the enemy defences. On the number, location and area of the enemy batteries depended the ratio between the number of bombers and number of anti-flak aircraft or between enemy guns and anti-flak aircraft: in general it was three anti-flak aircraft to each battery. There were many interesting factors and variations in the exact composition of the formations, too detailed to record here, but it is thought relevant to include at Figure 10 some typical tactics by a combined mission. Several refinements continued to grow as practice increased and the medium bomber aircrews managed to mislead the gunners into either mistaking the anti-flak aircraft element for the main formation, or wasting their ammunition on both.

Fighter Bomber Anti-Flak Technique

In a previous chapter, note was made of anti-flak tactics by XXII Tactical Air Command fighters in support of 57th Bombardment Wing missions in the autumn of 1944. Having now studied the operations of the medium bomber anti-flak elements, it is now only necessary to refer to the third phase - the use of fighter bombers in support of fighter bomber attacks.

- (1) The M-17 500 lb. incendiary cluster.
- (2) Chaff, or "Window" was made of aluminium foil. The type C.H.A. 3-3 was the type used. Each strip was 10 and 3/16 inches long and .045 inch wide. They were enclosed in packages of 2,000, opened on release by the force of air. The purpose was to produce a reflecting surface similar to that of an aircraft, so deceiving enemy radar operators.
- (3) The M-47 100 lb. W.P. bomb was primarily a screening agent, with a very high Total Obscuring Power. In addition, its smoke caused painful and lasting body burns and its psychological effect, confirmed by many interrogations, was often sufficient to make gunners abandon positions. One-third were set for air burst and two-thirds for ground burst. Not only did this arrangement rain burning particles on the gunners, but the smoke, if the bomb were aimed accurately, quickly developed into a screen shielding the bombing formation.
- (4) Effects of the use of chaff and white phosphorus bombs on intensity and accuracy of enemy flak on the Brenner Line

Target	Date	No. H.A.A.	A/C	Anti-Flak	A/C Lost & Damaged		% Lost and damaged
Lavis	29 Dec.	12	326	Chaff only	3 lost	80 dam.	25.5%
"	18 Feb.	12	48	Chaff & W.P.	0 lost	6 "	12.5%
Ala	4 Jan.	16	40	Chaff only	0 lost	17 "	42.5%
"	12 Feb.	16	71	Chaff & W.P.	0 "	3 "	42 %
Ora	9 Mar.	12	48	Chaff & W.P.	0 "	15 ")	
"	10 "	12	48	" " "		" ")	
"	30 "	12	39	(gun area missed) Chaff & W.P.	4 "	18 ")	
					1 "	12 ")	
					5 lost	45 dam.	37.0%
Ora	6 Mar.	12	30	Chaff & W.P.		5 dam.	
"	19 "	12	45	" " "		3 "	
"	4 Apl.	12	42	" " "		6 "	
"	19 "	12	39	" " "		4 "	
			156			18 dam.	12.0%

The preliminaries of these tactics⁽¹⁾ involved special consideration of direction of approach and break and the weight essential to neutralise a given battery. There were eight or more aircraft in the anti-flak flight for every twelve in the striking force. The former flew above,⁽²⁾ and ahead⁽³⁾ of, the main force. It rolled into a bomb dive, fired rockets followed immediately by bombs. It then broke away⁽⁴⁾ to avoid light flak, continuing as high cover while the main attack went in. The results of these tactics were considered to justify the methods. There was no doubt of the need. A study made by Tactical Air Force of its losses in aircraft during 1944 revealed that flak shot down 91 per cent of the total bombers lost and 90 per cent of the fighters and fighter bombers lost, in actual figures 510 fighters and fighter-bombers and 203 light and medium bombers in the Tactical Air Force alone.

Efficacy of Flak along the Brenner Route⁽⁵⁾

Illuminating charts compiled by the Air Statistical Control elements showed not only that more flak implied more casualties, but that total loss figures bore no relation to the much larger numbers of aircraft damaged, either repairably or so seriously that they were inoperative for lengthy periods. They also revealed, by the diminution of damaged aircraft from January 1945 onwards, the increasing immunity from more serious damage our anti-flak measures were offering our aircrews in 57th Bombardment Wing.⁽⁶⁾

Brenner Operations from January to April 1945

Air Operations in January

After two days of bad weather, the Mitchells struck the Lavis viaduct bridges on 3 and 4 January,⁽⁷⁾ as well as Rovereto⁽⁸⁾ and Calliano⁽⁹⁾ bridges and the south bridge at Santa Margherita.⁽¹⁰⁾ Then the weather closed in and there were no operations until the 15th. On 4 January, heavy bombers had attacked Trento marshalling yard and blocked it. The medium bombers reduced the flow of traffic to a spasmodic series of runs between cuts. Twelve successful attacks on 17 and 18 January from San Ambrogio to Ora overcame the defences and tore holes in vital sections. On the 20th, 21st and 22nd and, after a bad weather spell, from 28 to 31 January, a large number of attacks were directed against

- (1) Developed by 79th Fighter Group.
 (2) At about 4,000 feet above.
 (3) 8 miles ahead.
 (4) In excess of 7,000 feet.
 (5) Flak Statistics 1944 M. A. T. A. F. (A. H. B. /IIJ11/18, Feb. 1945).
 (6)

Month	Percentage of aircraft holed	Percentage of aircraft lost
November	6.67	0.33
December	26.09	0.51
January	17.92	0.40
February	17.22	0.79
March	14.72	0.74
April	5.63	0.42

- (7) 38 aircraft on 3 January and 47 on 4 January.
 (8) 20 aircraft.
 (9) 36 aircraft.
 (10) 24 aircraft. These footnotes are given to indicate normal size of such missions.

GERMAN FLAK ORDER OF BATTLE AND AREAS OF CONTROL

18 DECEMBER 1944

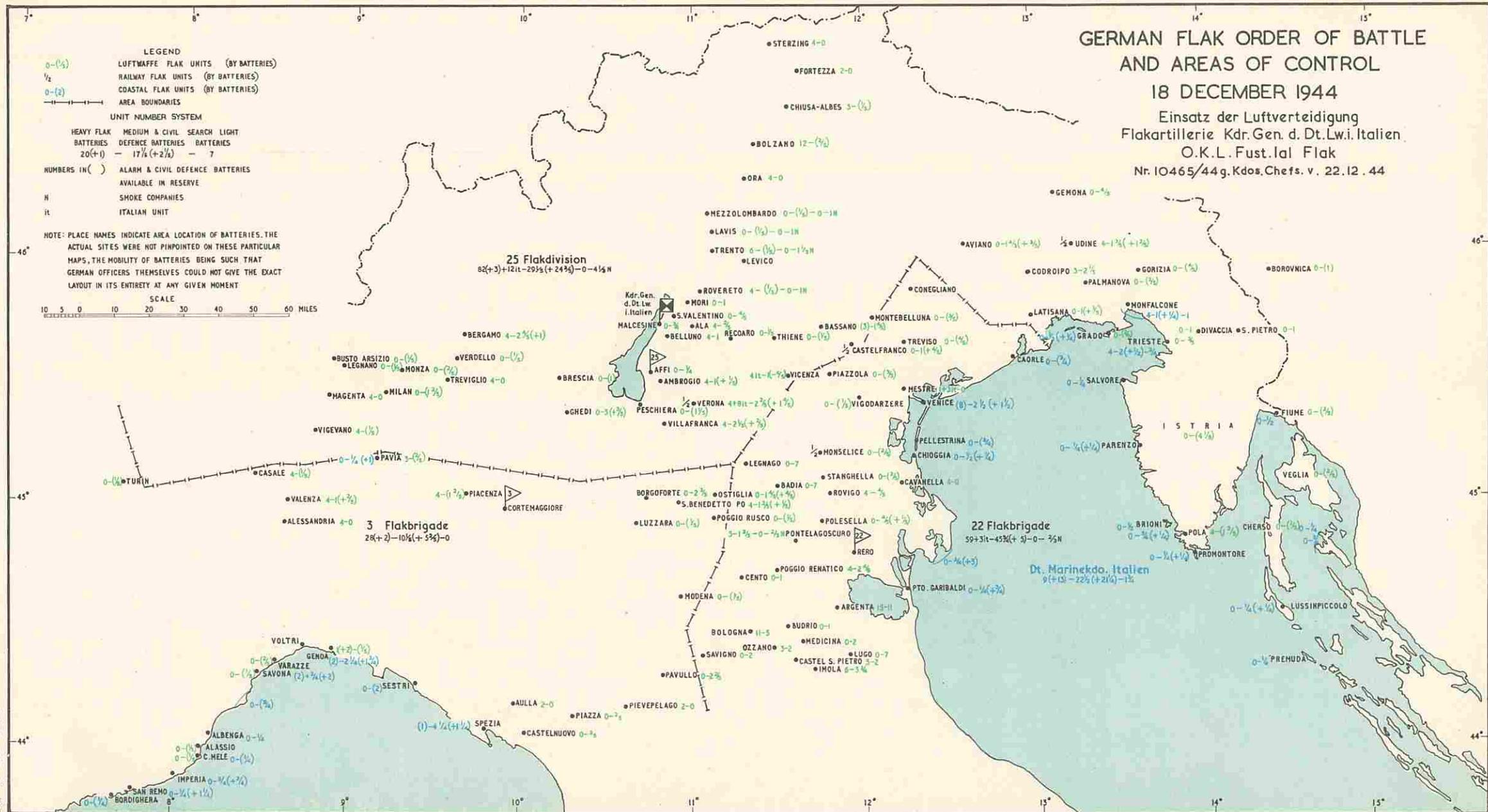
Einsatz der Luftverteidigung
Flakartillerie Kdr. Gen. d. Dt. Lw. i. Italien
O.K.L. Fust. Ial. Flak

Nr. 10465/44 g. Kdos. Chfs. v. 22.12.44

- LEGEND**
- 0-(1/2) LUFTWAFFE FLAK UNITS (BY BATTERIES)
 - 1/2 RAILWAY FLAK UNITS (BY BATTERIES)
 - 0-(2) COASTAL FLAK UNITS (BY BATTERIES)
 - AREA BOUNDARIES
- UNIT NUMBER SYSTEM**
- | | | |
|----------------------|----------------------------------|------------------------|
| HEAVY FLAK BATTERIES | MEDIUM & CIVIL DEFENCE BATTERIES | SEARCH LIGHT BATTERIES |
| 20(+1) | 17 1/2(+2 1/2) | 7 |
- NUMBERS IN ()** ALARM & CIVIL DEFENCE BATTERIES AVAILABLE IN RESERVE
- H** SMOKE COMPANIES
- It** ITALIAN UNIT

NOTE: PLACE NAMES INDICATE AREA LOCATION OF BATTERIES. THE ACTUAL SITES WERE NOT PIMPOINTED ON THESE PARTICULAR MAPS, THE MOBILITY OF BATTERIES BEING SUCH THAT GERMAN OFFICERS THEMSELVES COULD NOT GIVE THE EXACT LAYOUT IN ITS ENTIRETY AT ANY GIVEN MOMENT

SCALE
10 5 0 10 20 30 40 50 60 MILES



A.H.B.I. DIAG. No. 797

FIGURE 11

the Middle and Upper Brenner. On the last day, extreme turbulence forced many aircraft back to base. (1)

Results of January Air Attacks.

When assessing the results of the January battle, it is well to bear in mind that there were sixteen days of unfavourable flying conditions. (2) The line was open to through traffic from the 6th to the 15th and from the 25th to the 27th. The Lower Brenner was blocked for the first five days, serviceable from the 6th to the 15th, closed from the 15th to the 24th, open until cut at Rovereto on the 28th, (3) and blocked for the remainder of the month. The Middle Brenner was blocked temporarily at Trento marshalling yards on the 4th, open from the 5th to the 20th, cut at Lavis (4) from the 20th to the 25th and was then serviceable to the end of the month. The blocks, although successfully repaired, threw an increasing volume of traffic on to the roads. One agent's report, for example, testified that during the first week, road traffic along the east bank of Lake Garda increased to 750 motor vehicles southward and 940 northward. Photographs and aircrews confirmed this state of affairs in the area as well as all along the Adige valley on the night of the 17/18th. In view of the enemy's shortage of petrol, the relative inefficiency of substitute motor fuels and his inadequate transport material, this was a healthy sign. Yet in spite of these successes the battle went to the Germans. Their repair organization and the bad weather still enabled great, if diminishing, quantities of vital war materials to pass in both directions.

Movements of Enemy Troops delayed by Air Interdiction

Events on the Eastern Front caused a change in German dispositions in January and February. Air interdiction made this a long and difficult process and so indirectly helped our Allies' advance, although Kesselring restored the position in Italy by juggling with his reserves. The Russian offensive opened on 12 January. Its great success called for German reinforcements from Italy. Within a week the 356th Division was relieved from the line. First moves began on about the 15th in a northeasterly direction from Moncelice through Verona. Three weeks later, the last elements had not yet cleared Italy. The air forces' attacks had rendered conditions for troop movement chaotic. Units had to sit in railway sidings for days on end awaiting clearance of blocks, repair or construction of bridges and diversions, proceeding by spasmodic stages on foot, by rail or by motor transport. Evidently our interdiction was beginning to tell. In normal time the Brenner Pass lines alone could carry three to five divisions simultaneously.

Ibid and
'German
Strategy'
British Hist.
Section, C.M.F.
(A.H.B./IIJ11/
58/21)

-
- (1) M. A. T. A. F. and M. A. A. F. O.R. Bs. 'Blockade' report (A. H. B. /IIJ11/13) M. A. T. A. F. /Intell. Battle of the Brenner 57th Bomb. Wing XII A. F. (A. H. B. /IIF2/22/6), Report by General Schnez-Captured enemy document (Appx. 20).
- (2) Refer to Appendix 18.
- (3) By 27 Mitchells.
- (4) After 3 attacks by a total of 52 Mitchells.

Ibid

The 16th S.S. Panzer Grenadier Division Reichsfuehrer had similar trouble in leaving the country. They began to move at the beginning of February and spent three weeks on the passage. Ground agents saw them moving on foot through the rear areas and held up in the Adige valley when their motor transport ran out of fuel. One unit was alleged to have been reduced to buying fuel on the black market. This is credible, for in the improving weather air operations were carried out on all but eight days and damage was spreading and getting somewhat out of hand in some areas. Troops leaving their home bases in the Reich for Italy shared the same delays. Under normal conditions, the journey from the Austrian border to the Bologna battle area, a distance of 330 miles, lasted only 12 hours. Now it was a question of three to four weeks of changing, marching, hitch-hiking, waiting for long hours on roadsides or in tunnels, often living off the land. There is a long list of evidence from the interrogations of prisoners and from our agents to confirm the growing confusion. (1)

February Attacks on the Brenner

Ibid

February saw an increase in the weight and range of our attacks. By 8 February, four serious blocks had been created: by the end of the month there were ten: a turning point in the battle could be discerned. (2) By increasing the pressure at that point, the bearing potential of the line, barred to through traffic, could be steadily reduced. But this, as had been proved, would be no easy matter and there could be no relaxation of effort.

In the achievement of this state of affairs in February, several moves on both sides are noteworthy. On the Allied side, increases in the number of missions flown by fighter and light bombers and night-fighters; the deepening and the northward thrust of the interdiction zone; and lastly, patchy but powerful intervention by Allied strategic bombers. On the enemy side, rather more fighter reaction, the loss of the best southward lines from Verona, and a decline in the repair rate.

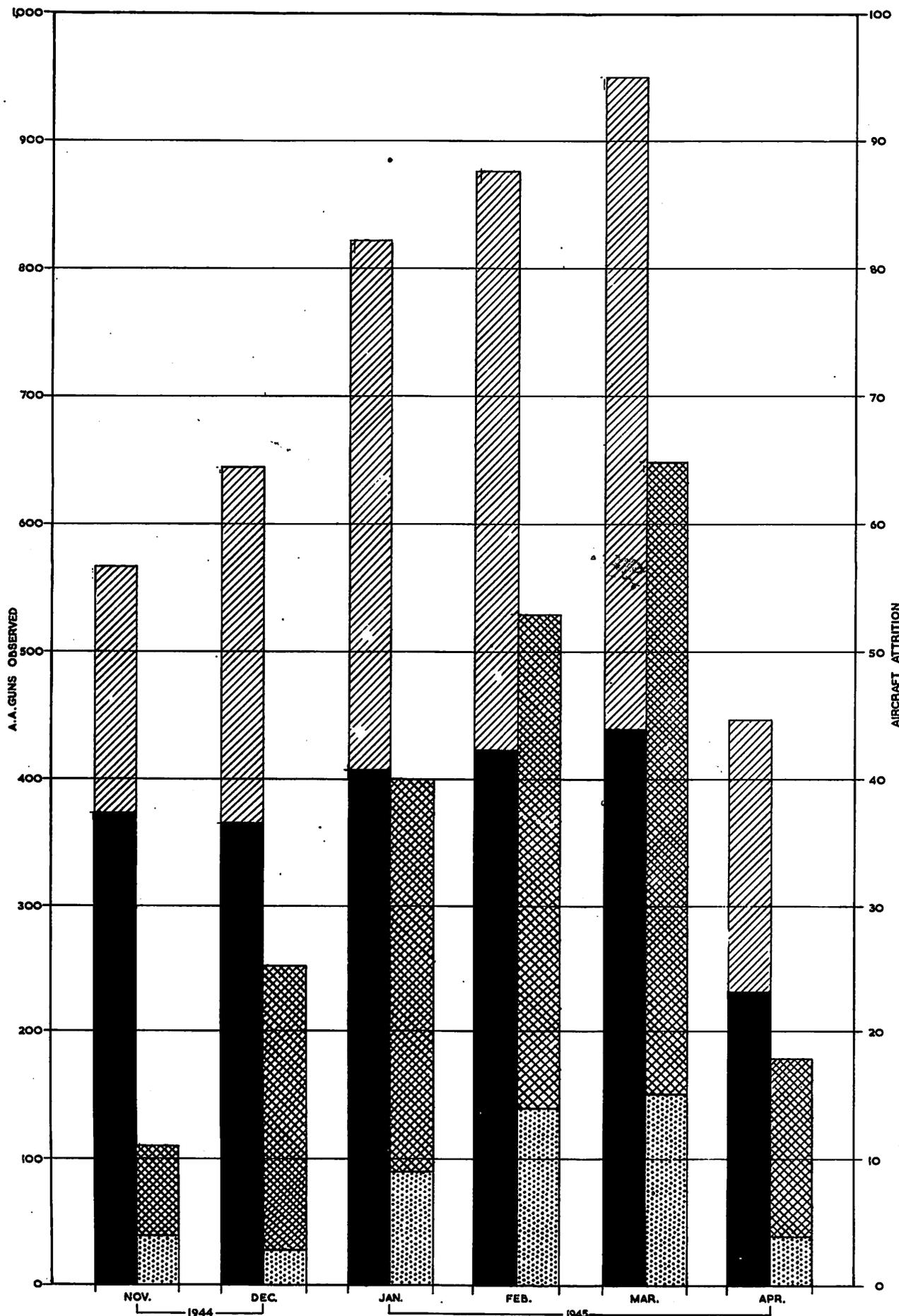
Medium bombers attacked on 20 out of the 28 days all the familiar targets on the Lower and Middle Brenner line (3) and lost 15 aircraft to flak. The scale of effort was about the same as in January: on the 14th they extended their operational sphere north of Bolzano, eventually reaching a point only six miles south of the Austrian frontier at Bressanone. Over 1,000 aircraft of this category attacked in 73 attacks on 21 days.

South of Bolzano, the whole length of the line was under attack, with Lavis as the most heavily attacked point: both

-
- (1) For a valuable collection of these reports refer to the 'Blockade' Report issued by M.A.T.A.F. Intelligence Section. (A.H.B./IIJ11/13).
 - (2) Refer to the fall in train traffic measured against the number of blocks and the rise in blocks in Figure 14.
 - (3) Rovereto, Calliano, Ala, Lavis, San Michele, Ponte Colle Isarco, Bressanone, Campo, Santa Margherita, Vipiteno bridges and where applicable, diversion bridges; Ala, San Ambrogio, Lavis stations yards; fills at San Michele, Mori and San Felice; the still-resistant potential landslide at San Ambrogio.

FIGURE 12

CORRELATION OF ENEMY FLAK BUILDUP WITH ALLIED AIRCRAFT LOSSES ON THE BRENNER ROUTE BY MEDITERRANEAN ALLIED TACTICAL AIR FORCE



LEGEND

- HEAVY A.A. GUNS
- LIGHT A.A. GUNS
- CAT. II DAMAGE* - FLAK
- AIRCRAFT LOST - FLAK

* DAMAGE REPAIRABLE OUTSIDE OF THE UNIT

MONTH		1944		1945			
		NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL
A.A.GUNS OBSERVED	HEAVY	374	368	408	424	454	232
	LIGHT	195	278	415	453	498	216
	TOTAL	569	646	823	877	952	448
AIRCRAFT ATTRITION	LOST	4	3	9	14	15	4
	CAT. II DAMAGE*	7	22	31	39	50	14
	TOTAL	11	25	40	53	65	18

its viaduct and diversion, were damaged for the expenditure of over 500 tons of bombs. Both were simultaneously blocked on all but five days: at the close of the month 450 feet of the viaduct was missing in a series of four gaps. The landslide at San Ambrogio still failed to develop, in spite of the coaxing it received from our aircraft. Below Trento, substantial blocks were created at Rovereto and Ala.

The attack of 14 February on Bressanone⁽¹⁾ not only neutralised the bridge for nine days, but was in itself a triumph of range and flying skill, proving that the Mitchell aircraft could sustain so long an offensive operation and that their crews could carry out successful operations over one of the most difficult of all possible air journeys. The point once made, the sphere of attacks was extended. Bressanone itself was attacked on 18, 21, 22 and 27 February,⁽²⁾ the result being that from 14 to 23 February it was impassable. Ponte Colle Isarco, bombed on 14 February,⁽³⁾ was left intact. The angle of the adjacent mountain slopes made it impossible to pick up the target in sufficient time before the bomb release point. Temporary blocks were created at Campo Di Trens, closing the line there on three days. Vipiteno bridge, still nearer the Reich, suffered severe damage to two spans on 25 February and remained blocked until the end of the month. Although all these and other attacks created temporary blocks lasting from 12 hours to 5 days, there was no long term block involving really heavy structural damage until the attacks of 27⁽⁴⁾ and 28 February⁽⁵⁾ on the main and diversion bridges at San Michele.

Result of Extension of Brenner Interdiction northward

Ibid

Until the end of February, the enemy had been able to maintain his forward railheads in the Ora and Trento area; now he was forced north of Bolzano. Increased handling of supplies and more transshipment were called for. As the depth of interdiction increased, so did the commitment on his motor transport, adding to the difficulties of repair crews, now forced to travel further to their tasks. The enemy was being progressively forced to hold his supplies along the upper Adige and Isarco valleys until transport could be released to move them south.

Heavy Bomber Attacks in February⁽⁶⁾

Strategic Air Force intervened in February on four days and four nights. Their operations bore the stamp of the old.

-
- (1) By 24 aircraft.
 - (2) By 27, 24, 24 and 30 aircraft respectively.
 - (3) By 24 aircraft.
 - (4) By 18 aircraft.
 - (5) By 21 aircraft.
 - (6) The days 16, 23, 24 and 28 and nights 8/9, 12/13, 23/24 and 27/28 February.

As British aircraft were engaged in some of the attacks it is possible to give a closer picture of operations than is usually the case when strategic bombers were involved. The Fifteenth Air Force records were not microfilmed after the war and the originals in U.S. and its history are not yet available for study.

predilection for marshalling yards, long abandoned by Tactical Air H.Q. There was much to be said for the selection of targets, for the pressure on the lines was creating bottlenecks which tended to be centred in marshalling yards because of their facilities. The greatest concentrations centred on Verona, which will be studied first.

Verona was attacked on seven occasions. It was a great, fiercely defended nodal base and the effects of its bombing were keenly felt on all the points southward fed by it. Moreover, it had an immediate interest as the assembly point for troops leaving Italy. The first attack was on the night 8/9 February. The aircraft of the R.A.F. Group at Foggia had planned to be airborne at dawn for a night attack on Pola; but Verona, chosen as of greater importance, was attacked in thick ground haze by 76 aircraft. (1) The main cluster of illuminators fell in open ground about one-quarter of a mile north of the yards. The bombing, concentrated on these, missed the target and hit the industrial and residential quarter. The maximum use of Window led to erroneous height estimates by the heavy flak defences. A second attack on the night 12/13 February, (2) in even thicker haze, was no more successful, except that it happened to cut the line to Mantua.

The day bombers came into play on 23 February (3) and were closely followed the same night by 57 aircraft of No. 205 R.A.F. Group, who attacked the West marshalling yards. On the day of the 24th the chaos caused was increased by a further attack by 96 Liberators on the Porto Nuovo yards. Although haze prevented the R.A.F. from obtaining a clear view of results, photographs taken after the series of three attacks revealed the main station destroyed, all through lines cut and heavy damage to rolling stock, tracks and local factories.

An even greater weight of attack was launched on the night of 27/28 and the day 28 February. The night bombers opened the effort. The enemy evidently attached great importance to Verona, for by 1400 hours on the 26th all through lines had been repaired and were fully operational. Seventy-nine Liberators, Wellingtons and Halifaxes attacked on indicators well placed over the West yards. Fires, smoke and dust soon obliterated the target. Flak missed everything, but 14 enemy fighters were active. Photographs showed, for the expenditure of 283 tons of bombs, 80 hits in the East portion of the yard, cut lines, burnt rolling stock and buildings.

The day bombers sealed the proceedings by sending a force of 177 Fortresses on the 28th against the Parona bridge, (4) five miles southwest of Verona. Two spans were destroyed and the north abutment severely damaged. The general results of the cumulative attacks was gratifying. From this point, the only available railway route to the Brenner line from the south

-
- (1) 41 Liberators of Nos. 231, 240 and 2 S.A.A.F. Wings:
23 Wellingtons of No. 236 Wing: 6 Liberators and
4 Halifaxes of No. 614 Squadron.
 - (2) By 21 Wellingtons and 39 Liberators. Refer No. 205 Group
O.R.Bs. for all night attacks.
 - (3) 43 Liberators on Porto Nuovo marshalling yards and 51
Liberators on the locomotive depot.
 - (4) 507 tons of bombs were dropped.

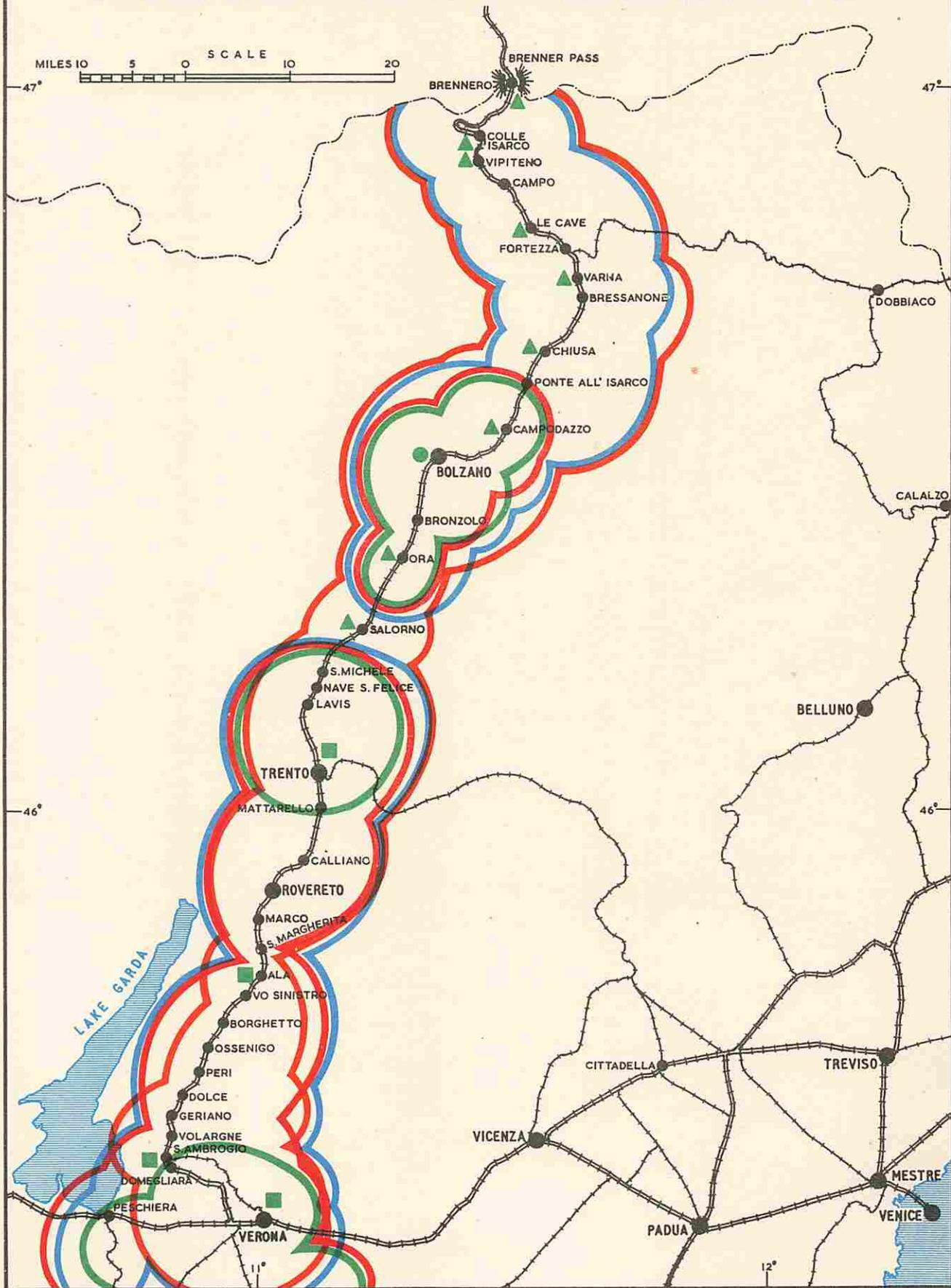
THE BRENNER PASS LINE

TRANSFORMER AND CONVERTER STATIONS, PRINCIPAL AIR TARGETS AND FLAK BUILD-UP FROM 20 OCTOBER 1944 TO 27 MARCH 1945

LEGEND

- TRANSFORMER STATIONS DESTROYED 6 NOVEMBER 1944
- ▲ CONVERTER STATIONS
- POWER STATION
- FLAK RANGE 20 OCTOBER 1944
- FLAK RANGE 24 NOVEMBER 1944
- FLAK RANGE 7 FEBRUARY 1945
- FLAK RANGE 27 MARCH 1945

NOTE: FLAK RANGE PERIMETERS ARE APPROXIMATE, THE INTENTION OF THE FIGURE BEING TO SHOW THE PROGRESSIVE COVERAGE OF THE WHOLE LINE, AS WELL AS THE EXPANSION AND CONTRACTION OF SPECIFIC AREAS IN THE INTERESTS OF THE LINE AS A WHOLE. THE BASIS OF THE PERIMETER CIRCLES WHICH MERGE INTO THE FOUR OUTLINES IS THE EFFECTIVE HEAVY GUN RANGE AT AN ALTITUDE OF 10,000 FEET, BASED ON THE PERFORMANCE OF A GUN OF AN ASSUMED CALIBRE MIDWAY BETWEEN 88 AND 105MM.



was the old single track by-pass line out of Verona. The southern terminal of this by-pass was in the north-west sector of the city, but was unconnected with the two main marshalling yards in the southern city area. A steep grade connecting line was being built to the Brenner route at San Ambrogio station, where marshalling facilities were limited and bottlenecks probable. Later, they built a second connection to the main line by-passing the Parona bridge further south, but neither by-pass appears to have ever carried much traffic.

The remainder of the strategic air attacks in February were all in the Upper Brenner area. Bolzano marshalling yards were hit on 16⁽¹⁾ and 28 February, ⁽²⁾ Vipiteno yards on 16⁽³⁾ and 28 February, ⁽⁴⁾ the Isarco/Albes railway bridge on 28 February, ⁽⁵⁾ Bressanone yards on 28 February ⁽⁶⁾ and Ora yards on 28 February. ⁽⁷⁾ The most successful effort was at Bressanone, where both approaches were cut, the south span of the west track destroyed, the north span and both spans of the east track damaged.

The loop lines of Fortezza-Dobbiaco-Conegliano and Trento-Cittadella, which it was expected would serve in emergency, never developed into a threat. The latter was out at Cisona, irreparably, but alternatives were devised. Nothing more than slight activity was ever revealed by photographs. By the end of the month nine serious cuts on the line existed, of which seven had been made by Tactical aircraft and two by Strategic aircraft. The German anti-aircraft defences had meanwhile been re-disposed and hardened.

German Activity during Twilight Hours

The Germans, on the defensive, resorted to every conceivable stratagem to overcome the handicap of air inferiority. One forced on them was a close chronometric observation of our attacks. Captured records of air raid alerts in Verona help in explaining why, after the series of heavy attacks in late February, the railway network continued to function.

The interim periods between day and night were critical to both sides. To the enemy, in particular, any decrease in the weight of attack during twilight hours afforded a precious respite, which he filled with feverish repair activity. Although this was not unknown to the Allies, they failed during January, February and March to solve the problem: the decided slackening in Allied air activity in the twilight periods of early morning and late afternoon is to be noted and remembered as a situation to avoid.

During January, the Verona defences were alerted during 20 per cent of the time. Warnings of our aircraft activities

-
- (1) By 73 Fortresses.
 - (2) By 36 Fortresses.
 - (3) By 17 Fortresses.
 - (4) By 15 Fortresses.
 - (5) By 216 Liberators.
 - (6) By 32 Liberators.
 - (7) By 67 Liberators.

fell off very sharply between 0500 and 0600 hours. Throughout the month, the period of 0600 to 0800 hours was clear of any alerts. A similarly sharp decrease occurred between 1500 and 1600 hours, reaching a very low point between 1700 and 1800 hours. ⁽¹⁾ Both low points occurred during the twilight periods.

Although few periods of any day throughout the month were quite clear of air alerts somewhere, the general Allied failure to function round the clock in February was still apparent. The Verona defences were alerted 50 per cent of the time during the month. The low points in alert status fell between 0600 and 0700 hours and between 1700 and 1800 hours. One hour before the twilight periods, our activity touched bottom. In March, the defences were alerted 60 per cent of the time: more air activity, certainly, but still the twilight hours presented as a gift to the enemy; there was a sharp decrease between 0500 and 0700 hours and a low point between 1800 and 1900 hours.

The monotonous pattern of these graphs was a reliable guide to the enemy as to Allied intentions. Members of the German Air Force Quartermaster's Directorate told, on interrogation later, how useful they were for regulating movement of convoys and activities of repair gangs. Convoys were organised to move, and most of the vital railway repair work was done, in the twilight hours, just when, as one German spokesman put it, 'Allied airmen were changing shifts.'

The problem could hardly be a simple one to solve. Firstly, it called for special training for day-flying aircrews for the night-flying conditions of the return journey in the case of an evening twilight attack, or the outward journey in the case of an early morning attack. Secondly, flak evasion would become more complicated for day aircrews flying at night and night aircrews flying by day; for flak was a formidable problem almost everywhere. ⁽²⁾

The German Railway Diversion Programme

Among the most effective of the Germans' reactions to Allied air interdiction all over Northern Italy was the rapid construction and the maintenance of easily repairable railway diversions by-passing vital bridges. They strove to maintain both main and diversion bridge, thus forcing the difficult task of a double cut. Up to the beginning of 1945, this programme largely offset the expensive Allied air effort, but by the end of February the number of cases of successful double bridge maintenance was falling. With the exception of three cases, the diversion was by then only a replacement.

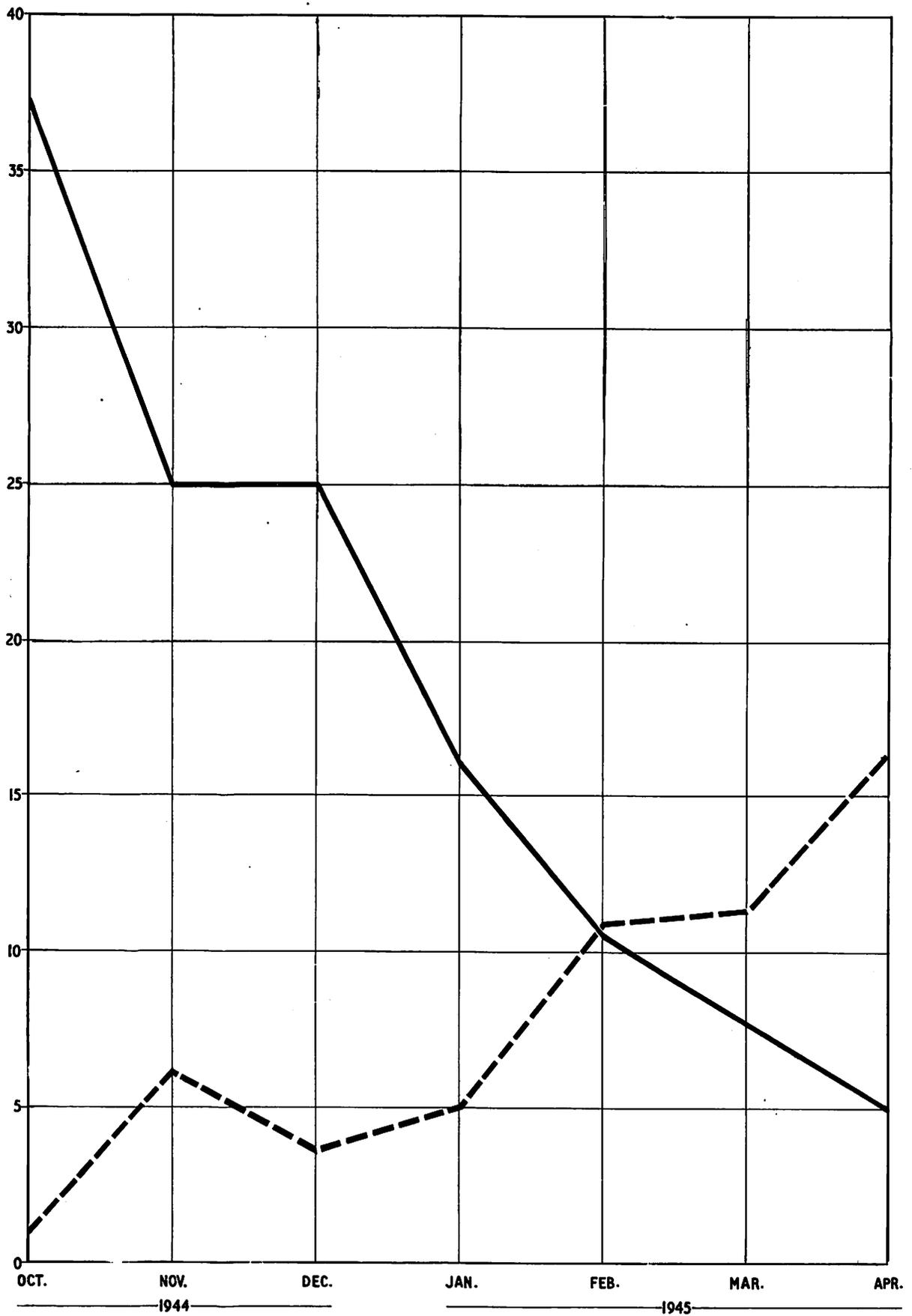
The most conspicuous examples were on the Brenner Pass and the Tarvisio and Piedicolle routes. On the Brenner line there were no diversion south of Trento. Between Trento and Bolzano there were diversions at Lavis (Avisio), at San Michele to Ora and at Bolzano. North of Bolzano, then, at the extreme range of medium bombers, there were as yet no diversions. On the Venetian Plain route, at Ponte di Piave and Motta di Livenza, diversions replaced bridges already destroyed by air attack.

(1) Charts compiled from air raid alert warnings in Verona Jan/Mar. 1945 given in M.A.T.A.F. report 'Blockade'. (A.H.B./IIJ11/13).

(2) They could, of course, have used forward night fighter fields as emergency landing grounds: it had been done before.

AVERAGE DAILY TRAIN TRAFFIC AND AVERAGE DAILY RAILWAY BLOCKS ON BRENNER ROUTE

DOMEGLIARA TO BOLZANO STATIONS INCLUSIVE



LEGEND

- AVERAGE NUMBER OF TRAINS PER DAY
- AVERAGE NUMBER OF RAIL BLOCKS PER DAY

STATIONS USED FOR TRAIN DATA :—DOMEGLIARA TRENTO BOLZANO

Further east, at Latisana, one was being built, On the Tarvisio route, the most favoured targets - Cittadella, Nervesa, Pordenone and Casarsa were already bypassed by diversions, while at Sacile, receiving our increasing attention, a diversion was being built.

Very full detail as to enemy methods was periodically supplied by the interpreters of the Bomb Damage Section of the 3rd Photo Technical Squadron, who also kept the Tactical Air Force up-to-date on their vulnerability to attack, the time needed for repair and so forth.(1) Half of the diversions were constructed over relatively wide shallow river crossings and were usually bridged by light structural members. It was often hard to distinguish bridge structure from fill embankment: frequent hits on the latter were wasteful, for they were quickly repairable. Even a hit by a 500lb. G.P. bomb on one of these bridges took only three or four days to repair. With the on-coming of Spring and increased flow of water, the enemy were likely to lose much of the use of their shallow water diversions, some of which might well be inundated or washed out; this had happened the previous Autumn at Nervesa, Casarsa and Tortona.

Allied tactical Air Use of Water Conditions

Ibid
M.A.T.A.F./Ops
O.R.B.
Blockade Report
M.A.T.A.F./
Intell.
(A.H.B./IIJ11/
13)

As hoped, March brought high water levels that washed out the three diversion bridges just named. The run-off of rain water and melted snow from the slopes along the Brenner caused a sharp rise in the Adige River. Air photographs revealed, in places where the valley floor was flat and natural drainage lacking, a high water table, which showed up clearly in big, water-filled bomb craters. Repair crews, timed by photographic reconnaissance aircrews, were observed to take much longer than usual repairing cratered fills and approaches and to be having trouble in stabilising railway beds.

Attacks were directed on areas thus rendered vulnerable: the result was that fills and approaches on which blocks had only lasted a day or two were now blocked for a week or more. Among the most effective were the attacks on the San Michele diversion bridge and fill of 19 March,(2) 21 March(3) and 31 March(4) and on San Michele North in April. Both were unserviceable for well over one month. Photographs showed the sodden ground and water-filled craters in great numbers, streamlets from the river breaking up the clear contours in the area of the line. According to a German authority captured later, they dumped over 6,000 tons of ballast into this fill alone and, against almost insurmountable difficulties, stabilised it during the wet season. So, by exploiting the high water, Tactical Air Force converted temporary cuts into long-term blocks.

-
- (1) M.A.T.A.F. Monthly Air Intelligence Bulletin Vol. 1, No. 4/p.63 (A.H.B./IIJ11/18).
(2) By 18 Mitchells - 34 tons.
(3) By 18 Mitchells - 36 tons.
(4) By 12 Mitchells - 16 tons.

German Repair Organisation (1)

To maintain the essential communications, the Germans built up a vast and highly efficient repair organisation. Enough is given elsewhere(2) to indicate their methods. The organisation employed over 55,000 men, reinforced by an unknown, fluctuating quantity (certainly large) of impressed Italian labour, and of troops on leave commandeered for three days' service when trains were held up by bomb damage.(3) This force was never immobilised, but was gradually outfought and exhausted.

In supreme control of all military and civilian traffic in Italy was R.V.D.(4) with headquarters at Verona, the centre of supply distribution. Its head was Colonel Schnez - the author of the report given in Appendix 20, known as the Chef Des Transportswesen Italien. Central Offices exercised jurisdiction over defined areas. Three operating divisions were also subordinate, two of them operating repair shops and maintaining rolling stock and power facilities, the third, the F.B.A., (5) or Field Railway Operating Division, repairing line damage. Companies within a division numbered two hundred men or more, and were headed by a captain. The Armed Forces Director of Transport, to whom Schnez was answerable, had taken over completely in September 1943 the railways and inland waterways from the Italians. Inside Italy, Kesselring naturally exercised advisory powers, jealously, as has been seen. The actual running of railways was handled by the W.V.D., (6) the Armed Forces Traffic Directorate Italy, under Schnez, which controlled a force of about eleven thousand specialists. They could have run the system even had all the Italian workers, voluntary and impressed, dropped out.

The rebuilding of bridges was the task of the Railway Engineer Regiment(7) and the maintenance of railway signals communication the task of a Railway Signals Battalion.(8) German, Italian, Slovak and Czech construction troops and units of the Todt Organisation were used in considerable numbers.(9) On the Brenner were employed the greater part of the Railway Pioneer Regiment and the Bohemian and Moravian Czech troops. A special Transport Security Regiment of the Supreme Commander Southwest,(10) and a Rail Transport Flak Battalion (11) protected

(1) The German System of Supply in the Field - Railway Transport. A.F.H.Q. G-2., Feb. 1946 (A.H.B./IIJ11/58/39).

(2) Refer to Appendices 20 and 21.

(3) For zone boundaries, line commitments and analysis of personnel refer to Figure 11.

(4) Reich-Verkehrs-Direktion-Italia.

(5) Feld Eisenbahn Betriebs Abteilung.

(6) Wehrmachtverkehrsdirektion

(7) Eisenbahn Pionier Regiment z.b.V.7.

(8) Eisenbahn Nachrichten Abteilung

(9) An estimate issued by M.A.T.A.F. in April 1945 (unfortunately without supporting document references or precise dates) gave the total forces permanently employed on repair in Northern Italy as:-

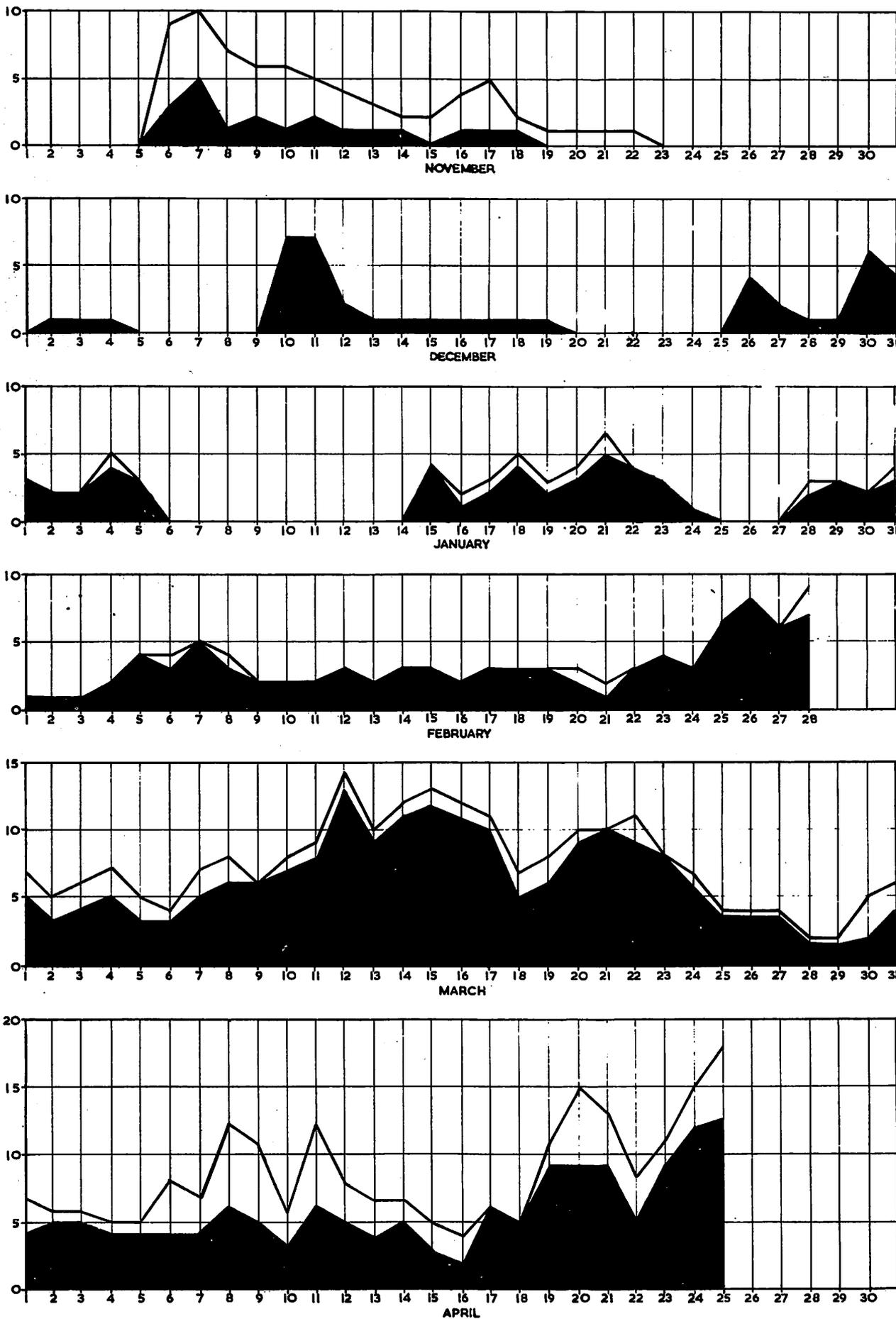
Todt Organization	16,390	
Armed Forces Traffic Control Directorate	20,410	
State Railway Repair Organization	5,680	
Railway Pioneer Regiment	8,790	mainly on
Bohemian/Moravian Troops	4,000	Brenner route
Total	55,270	

(10) Transportsicherungs Regt.

(11) No. 1002

DAILY STATUS OF THE BRENNER RAILWAY LINE

6 NOVEMBER 1944 — 25 APRIL 1945



L E G E N D

- TOTAL NUMBER OF DAILY CUTS
- TOTAL NUMBER OF CUTS IMPOSED BY 57 MEDIUM BOMBER WING

NOTE: STATUS OF THE BRENNER RAILWAY LINE AS SHOWN ON THIS CHART IS BASED ON PHOTOGRAPHIC RECONNAISSANCE REPORTS. IN SOME CASES THESE REPORTS ARE INCOMPLETE AND ON SEVERAL OCCASIONS PHOTOGRAPHIC COVER WAS NOT FLOWN UNTIL SEVERAL DAYS AFTER THE ATTACK, OR AFTER REPAIRS HAD BEEN COMPLETED. THUS IT IS QUITE POSSIBLE THAT THE NUMBER OF CUTS SHOWN ON ANY GIVEN DAY IS LOWER THAN THE ACTUAL NUMBER OF CUTS THAT EXISTED IN THE LINE AT THAT TIME. DEFINITE RESULTS WERE NEVER OBTAINED ON ONE HUNDRED 57 MEDIUM BOMBER WING ATTACKS; IN ALMOST ALL CASES THESE MISSIONS ARE NOT CREDITED WITH CUTS.

trains and installations against partisans, (a heavy commitment), theft and air attacks. In 1945, the Germans took over traffic on the more important lines from the Italian Transport Ministry which worked alongside W.V.D. in Verona. With this view of the 55,000 men of the repair forces and the very active flak forces, it will be appreciated how formidable was the organization against which Mediterranean Allied Air Forces was directed. It was a new, special and very local type of warfare to which they were committed, but it was none the less a battle of the fiercest and most sustained intensity. It had been proceeding now for four months of hostile weather conditions, but from 1 March onwards it was to acquire an even more dramatic tone and momentum.

Allied Air Penetration into Austria (1)

The critical and decisive month of March was marked by an intensification of efforts on both sides and a deepening of the interdiction zones. Maximum extension of all the factors in the attack and defence brought about, at last, a visible weakening: all the evidence pointed to a mortal fissure in the enemy system, one he was unable to repair in time to meet the Spring offensive.

Remarkable among many outstanding Allied accomplishments was the penetration in weight of Austria by the tactical air formations from Italian bases, although the venture itself was nothing new. The first penetration by Mediterranean Tactical Air Force dated back to November 1944. On 11, 16 and 18 November, Mustangs had flown up to cut railway bridges in the Klagenfurt - Villach area. After a break of two and one-half months, on 31 January 1945, rocket-firing Thunderbolts had worked over the same area, wrecking locomotives and wagons. This pattern was continued thereafter with modest, but satisfactory results. One squadron of Thunderbolts flew as far as Berchtesgaden on the Bavarian side of the northern Austrian border on the same type of task and another flight flew as far as a point half-way to Vienna. Desert Air Force, responsible for all these attacks, stepped up this effort to 87 sorties on 30 and 31 January. By March, the crossroads of Southern Austria were crowded with traffic as a result of the interdiction both sides of the border. It was now the practice to despatch long range fighters on armed reconnaissance in the Drauberg - Graz area. On 6 March, 16 Thunderbolts shot up 207 railway wagons, 19 locomotives and 50 M/T. Fighter-bombers took advantage of traffic jams, concentrations and convoys on the roads. Another valuable air attack on 2 April carried out immediately following reconnaissance reports, on some trains and a jammed convoy, about 1,000 vehicles in all, on the main road south of Graz, between Liebnitz and Maribor, resulted in total claims (most probably fairly accurate) of 31 locomotives, 76 rolling stock, 341 M/T and 98 horse-driven vehicles destroyed and damaged.

Medium bomber intervention in Austria from Italian bases had been planned for as far back as October 1944. It had

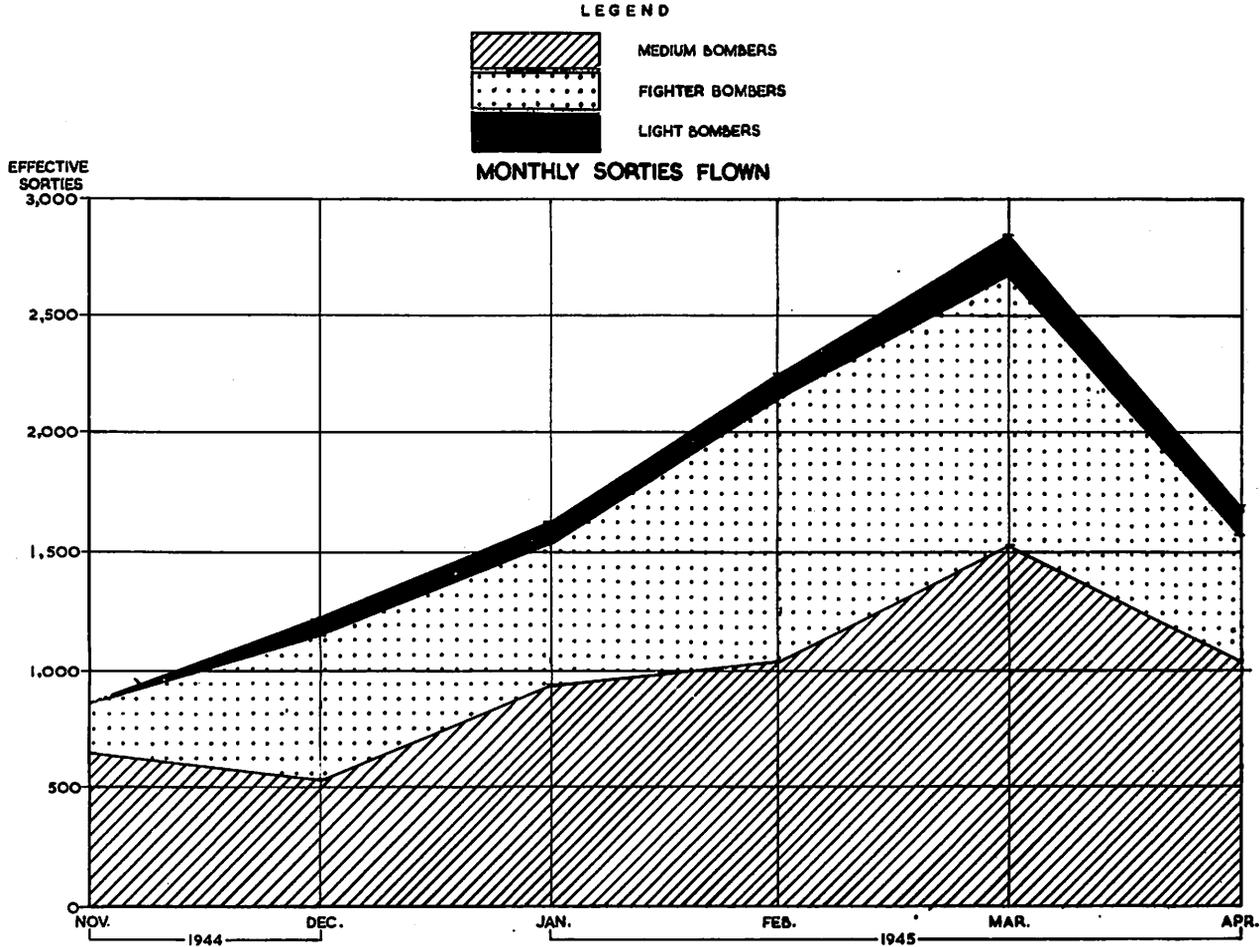
(1) M.A.T.A.F./SASO., O.R.Bs., Oct. 1944. Blockade Report (A.H.B./IIJ11/13). M.A.T.A.F. Monthly Intelligence Bulletins (A.H.B./IIJ11/18). Battle of the Brenner Report, 57th Bomb. Wing (A.H.B./IIF2/22/6).

been intended to implement a combined operation involving maximum effort by all the air forces in Europe against widespread first priority targets within the boundaries of the Reich, in order to demonstrate to the enemy the overwhelming ability of the Allies to destroy vital target systems at will. This project was never carried out. But by the beginning of March, the air war against communications in the Po Valley, along the Brenner, in the Venetian Plain and on the Northeastern Frontier was leading to a shift northward of rail-heads and increasing bottlenecks. The time was adjudged ripe for a switch of effort, the cutting of the railway lines feeding into the international routes and the creation by this method of yet another interdictory barrier between Italy and the Reich. The first successful(1) medium bomber strike from Italy on the soil of Greater Germany was carried out on 11 March 1945. It put a bridge east of Lienz, on the lateral line connecting the Brenner and Tarvisio routes, out of action for ten days. On 19 March, at Muhldorf on the same line, 300 feet of the bridge were knocked out and were still out at the end of the month. On 16 March, the deepest penetration until then was made when a Mitchell mission severely damaged the bridge at Brixlegg, some 30 miles N.E. of Innsbruck. They returned on 22 March, when 24 Mitchells dropped all of their seventy-two 1,000lb. bombs in the target area. Photographs showed four spans completely destroyed, two piers damaged and the west approach cut. The other of the two lines connecting the Brenner route with Munich was cut at Muhlberg on 22 March, the day after two squadrons of South African Marauders had bombed St. Veit marshalling yards. Points on the Austrian section of the Brenner line itself were also attacked in the same period. Steinach bridge was blocked on 22 March, (2) missed on 24 March and almost destroyed on 31 March. (3) Matrei bridge was missed on the first attack, but blocked on the second on 23 March. At intervals during April, these two targets were repeatedly attacked with varying success, usually being blocked severely enough to call for several days' work to repair them.

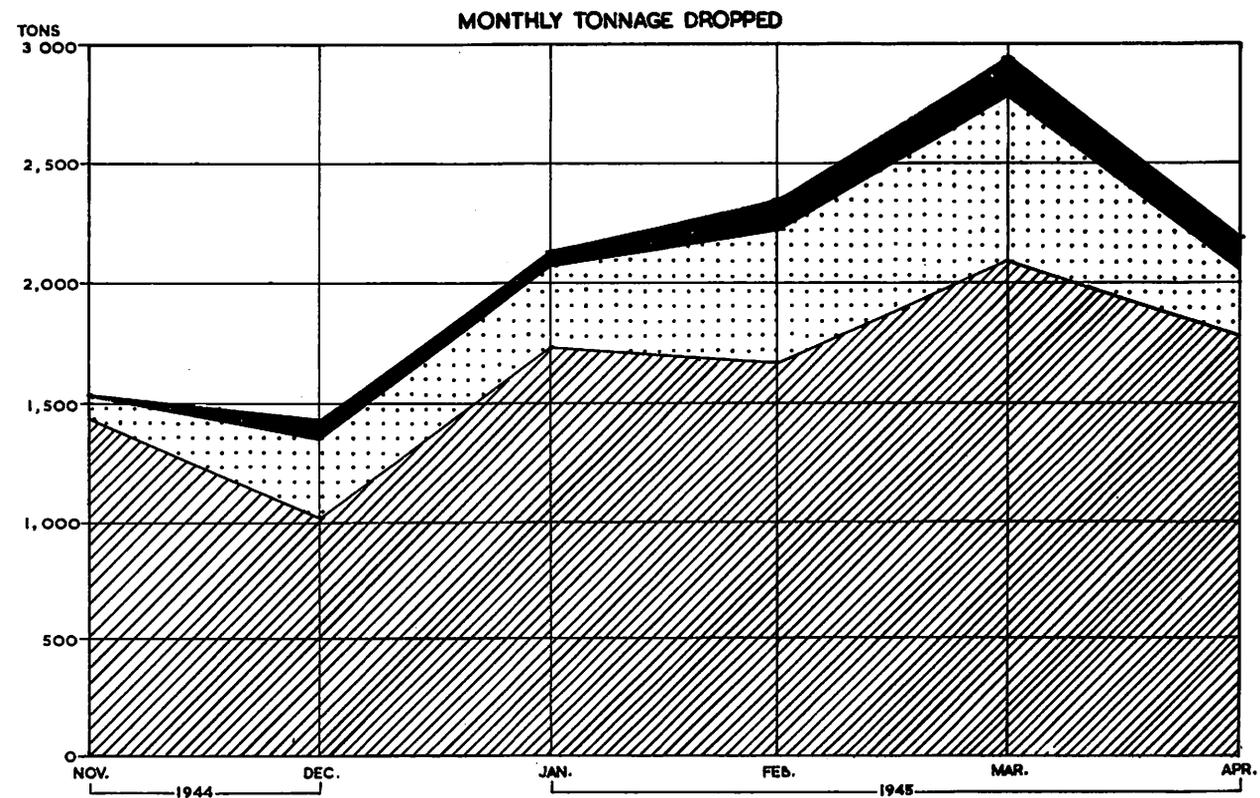
Ground reports and the indifferent ground defence reaction indicated the surprise of the enemy to this new long range venture into his homeland territory. New dispositions were made by him which drained the already overtaxed specialist resources of Italy. Previously, Von Pohl's jurisdiction as regards repair and protection had extended to the frontier only. The new situation gave added force to his plea for authority over the whole Brenner line and it was decided now to make him responsible for repair and protection of the railway system as far north as the line Innsbruck - Salzburg. In the meantime, the understaffed and confused Austrian units took much longer to repair breaks and make good the damage. The added delays created new bottlenecks both sides of the newly affected zone. The German Chief of Transport stated that the railway directorates at Innsbruck and Munich were unprepared for

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- (1) On 24 February an attempt in bad weather to reach a bridge on the Tarvisio route just over the Austrian frontier had failed.
- (2) By 18 Mitchells dropping 36 tons of bombs.
- (3) By only 6 Mitchells dropping twenty-four 1,000 lb. bombs. One half of the main arch was destroyed and both approaches cratered.

AIR EFFORT ON THE BRENNER ROUTE BY MEDITERRANEAN ALLIED TACTICAL AIR FORCE



MONTH	1944		1945			
	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL
MEDIUM BOMBERS	661	536	923	1,045	1,535	1,044
FIGHTER BOMBERS	168	619	639	1,117	1,148	532
LIGHT BOMBERS	—	46	55	67	121	107
TOTAL	829	1,201	1,617	2,229	2,804	1,683



MONTH	1944		1945			
	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL
MEDIUM BOMBERS	1,425	1,026	1,725	1,661	2,095	1,779
FIGHTER BOMBERS	98	332	340	554	660	252
LIGHT BOMBERS	—	69	82	98	181	162
TOTAL	1,523	1,427	2,147	2,313	2,936	2,193

these southerly attacks and were unable to accept big train loads of valuable material in transit. (1) Fuel, already severely rationed, limited the use of motor transport desperately needed. Substitutes had only a limited value and the Allies were already planning air attacks on methane and similar plants. The supply of coal through Switzerland had, as seen, been sealed off as from the first of the month. It was doubtful if the divisions withdrawn from the Italian front would reach the armies withdrawing before the Russians in time. Meanwhile, along the Brenner route in Italy, the air effort rose to record heights with the brightening weather. While attacks by both medium and fighter bombers continued on Verona and small targets on the Lower and Middle Brenner, the main emphasis shifted to the Upper Brenner, where the German railhead was being slowly but surely driven northward and the flak defences notably strengthened.

The Crescendo of Allied Air Effort in March

The defences of Bressanone rose from 44 heavy and 24 light guns to 68 heavy and 48 light guns; at Campo Di Trens the heavy guns rose from 8 to 20 and the light guns from 6 to 12; at Bolzano, the defences rose to a new intensity of 88 heavy and 48 light guns. Trento, too, was heavily fortified. This northward strengthening was made partly at the expense of Ora, Rovereto, Brantimo Belluno and ^{n/} San Ambrogio, on stretches of the line admitted now to be beyond redemption. The battle front was also milked, especially in the critical Bologna - Imola sector, to the measure of 100 mixed heavy and light guns. Additional guns were, however, photographed on the sites of vital diversions and viaducts such as Lavis and Ala; San Michele, previously defenceless, began to build up a small flak complex.

Against this formidable concentration of artillery and all the normal handicaps, the Mitchell forces dropped, during March, 2,095 tons of bombs all the way from San Ambrogio to Steinach, with the emphasis increasing on San Michele and the fighter-bombers now wholly responsible for the many-lived Lavis objectives. On 24 out of the 25 days they were airborne, the Mitchells attacked the Brenner, flying 1,535 sorties. They blocked San Michele without a break, held up the work on the diversion and gradually strangled the lower section of the line, even for use on a shuttle basis. The last handful of trains straggled out of Verona on 18 March. Forty-one railway bridges were destroyed by the Mitchells, ten more than the record set in July 1944, a figure which attains its true significance when one considers the general scarcity of Brenner bridge targets and the number of fills attacked. Eleven other bridges were seriously damaged. The Middle Brenner was out every day and the Upper Brenner for 23 days. There was no through traffic. Bolzano was the railhead when the month began, but frequently had to give way to the northward thrust of our air formations.

The record of air operations resembles in detail that of previous months. It is the results that are of most importance, when weighed against the increased offensive and repair effort, the denser flak, the surprise air penetration of Austrian air zones, from Italy and the better weather. The Lower and Middle Brenner had been largely neutralised. The Upper Brenner still defied our best efforts and the daily

(1) Refer to Appendix 20, the report by Oberst Schnez.

ding-dong of destruction and repair continued. Much of the damage was repaired in surprisingly short periods, but some of it was irreparable in time for the coming cataclysm of April. On 8 March, Rovereto bridge was destroyed and remained out until the 24th. The Ala - San Michele diversion and Ora bridge were destroyed. On 14 March, with eight cuts effective on the Lower Brenner and the Middle Brenner cut at San Michele, three formations reached the bridges up at Vipiteno and Campo, destroying one span of the former and blocking the latter. Troops now had to travel by truck or on foot all the way to Brennero, or, if loaded in the Bolzano area, had to be transhipped after a railway movement of only 40 miles. The repair gangs had opened the line again by the 18th. After further attack, Vipiteno was again opened, but Campo remained out until the 30th. The bad weather of the last five days of the month put back the clock again. There was a great deal of feverish movement on the ground and the score on the last day of the month stood at six effective blocks.

Enemy Radar Coverage of Northern Italy

Before finalising the record of the Brenner battle, a last word should be said on the enemy radar cover, so that the full depth of the German defensive system may be appreciated. It has been said above that their radar coverage of Northern Italy was virtually complete, a fact explaining the formidable Allied air problem of evasion. The radar coverage system established by the end of January 1945 remained more or less unchanged until the end of the war, and enabled them to give their defence organisations adequate warning of our attacks. Each of the wide variety of German and German-used sets had certain capabilities and limitations that determined its role, whether early warning, Ground Control Interception, naval detection, or any combination of the three.

The early warning network could employ information from any type of radar, but the Freya and Wasserman were the mainstays of the system. They had fourteen Freyas in Italy which furnished azimuth and range up to about 100 miles to aircraft warning centres. These alerted all defences and the civilian population in the area of the attack. (1) Italy was not given the Jagdschloss improved long range radar in use in Germany and Yugoslavia. G. C. I. stations normally used the Giant Wurzburg, (2) which operated in a radius of 50 miles and passed on its information by radio to fighter aircraft. The single Benito Pylon (3) north of Udine was used to watch escorting fighters. There were by this time four Giants operating, located near Mantua, Padua, Genoa and Treviso.

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- (1) Freya was the main type used for early warning aircraft reporting. Wassermann sometimes called 'Chimney', was used for long range detection of aircraft and occasionally of shipping.
 - (2) Giant Wurzburg, with a paraboloid 24 feet in diameter, was believed to be used for gun-laying as well as aircraft detection.
 - (3) Benito D/F Pylon, not a radar set, but a long-range radio system for control of interception of escort fighters.

There were three Coastwatchers⁽¹⁾ along the Gulf of Genoa⁽²⁾ and a fourth on the coast of Istria.⁽³⁾

From Padua, Mantua, Treviso, La Spezia and Pola, the enemy made sure that our aircraft, passing over routes and between hours become increasingly familiar, should be met, if guns and aircraft were available, by the stiffest opposition and that as little as possible fruitless movement and repair work was undertaken in unfavourable periods. Overflowing water, we now realise, neutralised their work in some periods, but in the fine nights their tireless energy achieved more than in the preceding winter months: so, in turn, the situation seemed to the Allies to call for even greater effort. Fortunately for them, by the end of March, the desired attrition had, although not realised, been achieved.

Luftwaffe Signals Intelligence Organisation

Distinct from, but complementary to, the radar cover organisation was the German Air Force Signals Radio Intelligence Service. Its southern sector organisation was responsible for monitoring traffic of the Allied Air Forces in firstly, the Western Mediterranean, North Africa and France, and secondly, Italy, Corsica and Sardinia.⁽⁴⁾ Its function was to pick up, decode if possible, evaluate and report on Allied radio traffic and to take counter-measures. The organisation was sub-divided into three groupings. The first covered Allied ground organisations and fighter bomber, close support, reconnaissance, supply and transport units: the second covered Allied radar signals and fighter control traffic: the third was responsible for jamming Allied radar and navigational aids⁽⁵⁾

End of the Air Battle of the Brenner

For five months, the Air Forces had fought a full-scale campaign of their own along the Brenner, Venetian Plain and Northeastern Routes. March had seen the culmination and peak of their effort. Operations continued at progressively diminishing level until 8 April, crowned by a heavy bomber participation. The preparations for the ground/air Spring offensive began at about this point to bear directly on the purely air force offensive, which had so long played the leading role in Italian operations. It will be time, after narrating the Brenner operations up to 2 May, to turn back to the record of the other aspects of the war on communications in the North and along the River Po, before presenting the general state of disorganisation of the international routes on D-Day. The isolation of Italy continued into the April fighting. The Brenner battle was sealed on 25 April, when the last Mitchell formations attacked. But those operations following 9 April fall naturally into the general narrative

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- (1) Coastwatcher, normally used for measuring range and azimuth, up to 20 miles, not elevation, of naval craft, for coastal gun-ranging and occasionally for aircraft detection.
- (2) Near Imperia, Savona and Genoa.
- (3) Near Pola.
- (4) On 1 January 1945, Abteilung I of No. 352 Regiment was in Italy. Sections 1, 2 and 3 were located at Canazei and Pardo Pass, and Section 4 at Montegrotto, near Brescia.
- (5) Intelligence Report 67A S.A.L. 12/USAFE/M.67, Part I. (A.H.B./Sigs.)

of the Spring offensive, not here.

The Germans continued to put back some of their bridges into commission, and the Allies continued to attack the Brenner up to 25 April, but as the armies swept forward the enemy supply system broke down. The Armies entered Verona, compelling the abandonment of the line up to Trento. It is not possible to fix any arbitrary date as the day of victory in the Battle of the Brenner. The results were manifest in the inability of the enemy to keep up with repairs, in the progressive abandonment of sections of the line and the creeping paralysis all over the North. He could neither reinforce and maintain an offensive front nor withdraw in time to escape defeat.

Operations on the Brenner up to D-Day

Blockade Report
M. A. T. A. F.
(A. H. B. /IIJ11/13).
The Battle of the
Brenner
57th Bomb. Wing
(A. H. B. /IIF2/22/
6).

M. A. T. A. F. and
D. A. F., O. R. Bs.

Tactical Air Force, with notable co-operation by Strategic Air Force, did everything possible, in the eight days of April remaining before the land battle flared up, to maintain the degree of interdiction attained in March. The fighter-bombers operated in force every day, the light bombers on every night but one, but the medium bomber effort fell off as preparations for the main offensive gathered momentum.

From 1 to 5 April, Mitchells averaged 50 sorties daily against Brenner targets, nearly half of them north of Bolzano. San Michele North bridge was destroyed on 5 April by 18 aircraft and Rovereto bridge on 4 April by 24 aircraft. They returned on 8 April to San Michele diversion, to Salorno bridge, which they destroyed, and to Vo Sinistro bridge and fill, which they blocked. The intervening three days saw their first diversion to army targets and communications south of the Po River for a long time.

The same day - 8 April - saw a return to the Brenner of the heavy and medium strategic bombers. At this time, the Brenner was cut in only five places in Italy and two in Austria. Four hundred and one bombers attacked seven targets that day, raising the number of blocks to thirteen. Photographs showed Parona bridge temporarily impassable, approaches at San Ambrogio and Vo Sinistro cut, Ala and Rovereto still impassable, both approaches of San Michele cut just after completion of repairs, the diversion there blocked, the line to the north blocked just south of Salorno, and the fill in the diversion the other side of the Adige blocked; the north approach to Ora bridge was cut, probably by fighter bombers, the diversion remained blocked; at Vipiteno bridge both approaches were cut, at Campo North one approach cut and two blocks on the line; at Bressanone one span was knocked out and another damaged; Campodazzo bridge was blocked.

No. 205 Gp.
O. R. Bs.

The R. A. F. No. 205 Wellington Group made a useful contribution to this climax: on the night 2/3 April, 66 aircraft dropped their bombs through low cloud on Trento marshalling yards, but failed, owing to the very bad weather, to do any major damage. They were more successful on the night 8/9 April. Two nights later, they bombed with success the north end of Innsbruck yards, cutting lines and burning out some waggons. Occupied most of the month in the battle area, they found time to attack Verona Parona bridge on the nights 20/21 April and 23/24, cutting the line, and holding up traffic on the bridge.

At this point, where the Brenner battle loses its sharp outlines and merges into the wider struggle, the record will be left, while a survey of air operations against the Venetian Plain and Northeastern Route systems is made. The general methods employed on both sides and the difference in terrain are by now sufficiently familiar for the narrative to omit pointless repetition.

THE BATTLES OF THE VENETIAN PLAIN AND NORTHEASTERN
FRONTIER ROUTES

The general Trend of Operations

M.A.T.A.F., D.A.F. and
M.A.A.F., O.R.Bs.

Blockade Report
M.A.T.A.F.
(A.H.B./IIJ11/13).

In November, the month in which all tactical bombing priorities were revised, the two medium bomber wings dropped 245 tons of bombs on the loop line from Trento to the Venetian Plain and 1,429 on railway bridges in the Northeast, establishing lines of interdiction at the Brenta, Piave and Tagliamento Rivers. But owing to the long run of non-operational weather, this inadequate weight of attack did not leave so deep a mark on the enemy system as did the Brenner operations. It was, notwithstanding, an impressive effort, with fighter-bombers participating on a major scale; yet not until the end of December could it be said that an effective barrier had been interposed in the German lines of supply in that area.

The campaign in the Northeast opened on 4 November with an attack on the Piazzola bridge over the Brenta, and was soon extended to cover all four river belts as far north as the Tomba bridge over the Tagliamento. The Brenta was a major problem; on the northernmost line from Vicenza to Udine, (1) the most important of the three coastal plain routes, diversions were already in operation round two of the three key bridges, presenting, as has been explained, a very tough proposition for our target sections. Five weeks of rough weather broke all continuity of air effort and through Christmas only five missions reached their targets on these routes. Desert Air Force, heavily committed to the aid of Yugoslavia, could do little to assist, but managed on the night 9/10 December to carry out an interesting experiment at Udine. For 45 minutes, 14 Bostons flew over the city while Partisans, in accordance with the plan and under cover of the air raid alarms, sabotaged the marshalling yards. The aircraft then bombed the railway station. (2)

From late in October, fighter-bombers on armed reconnaissance sweeps had familiarised themselves with the landscape of the Venetian Plain. At that early period, their chief targets had been rolling stock and locomotives in Verona and Padua yards and on the lines from them to Treviso and Castelfranco. On 22 November, Tactical Air Force directed Desert Air Force henceforth to employ a good proportion of its fighter-bombers against communications, on the pattern already initiated along the Brenner. It was given prime responsibility for the railway lines Mestre-Casarsa and Nervesa-Casarsa inclusive, both of them sections of the three coastal routes crossing the Piave and Livenza Rivers. A modest start was made the same day by rocket-firing Mustangs, who made ten cuts in the lines between

- (1) A major Allied air base after the war.
(2) D.A.F., O.R.Bs

Monselice-Padua and Padua-Castelfranco-Vicenza. From then on to the climacteric month of March, the fighter-bombers rapidly increased their effort. Sorties over the Venetian Plain rose steeply from only 68 in November to 3,251 in March. The monthly tonnage⁽¹⁾ of bombs dropped there rose from a bare 30 in November to 1,754 in March. This zone became increasingly fighter-bomber territory. By March, their total sorties were over six times those of the medium bombers.

Along the northeastern frontier routes, there was a sharp rise of fighter-bomber effort from only 79 sorties in November and none in December to nearly three times the medium bomber effort in January. In February, the medium bombers dominated the scene, but in March the bulk of the effort fell again to the fighter-bombers. Thereafter, as in the case of the Brenner, both categories drew away to the battle area, although some light night bomber sorties by all available aircraft of Tactical Air Force did something to counteract the decline and make some impression on the growing number of night-operational bridges.⁽²⁾

In the case of the Venetian Plain, increasingly the more critical of the areas from the German point of view, considerable enemy evidence became available and was systematically exploited later by Allied teams. The work is indicated on Figure 17, which shows the air attacks against the day-to-day traffic: neat correlations can be drawn between the heightened tempo of attack and dwindling train arrivals and departures.

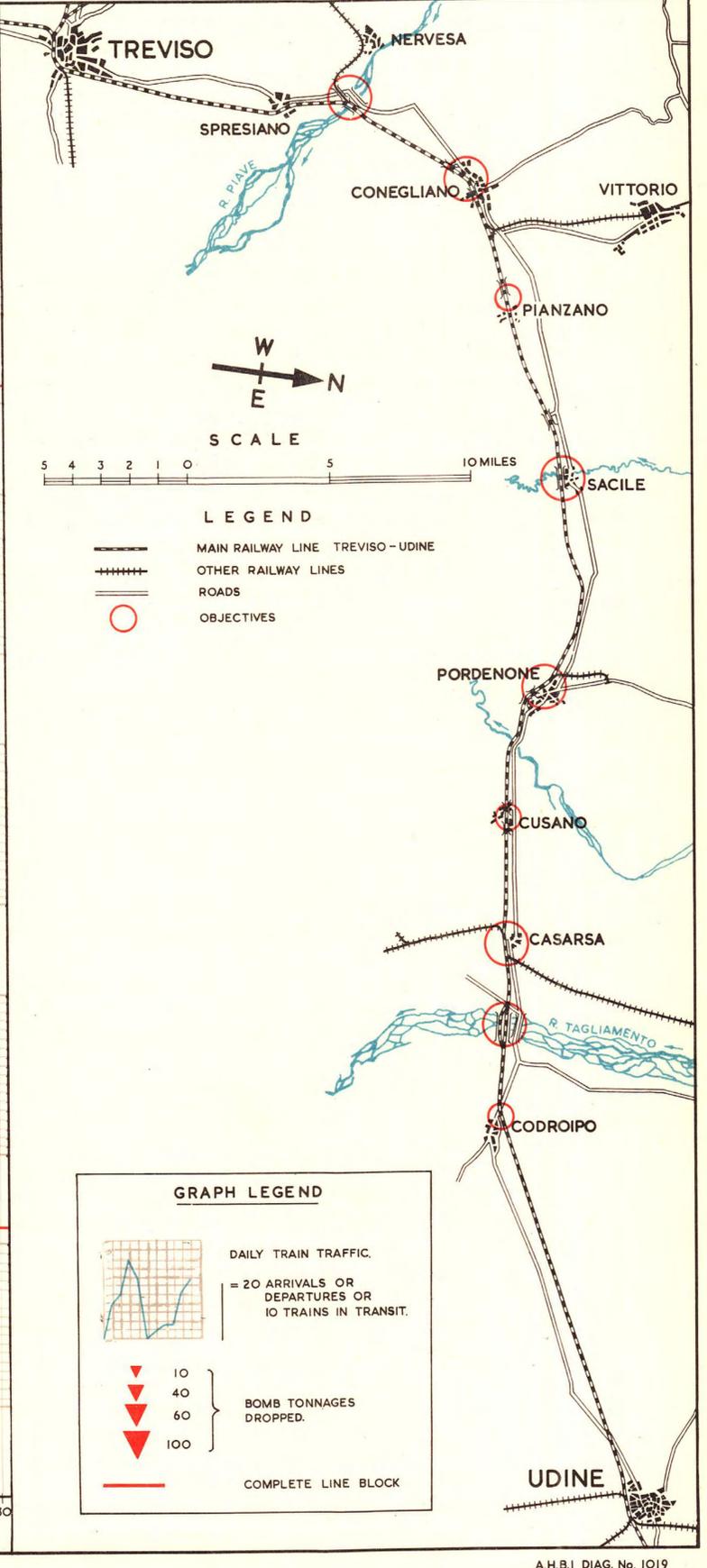
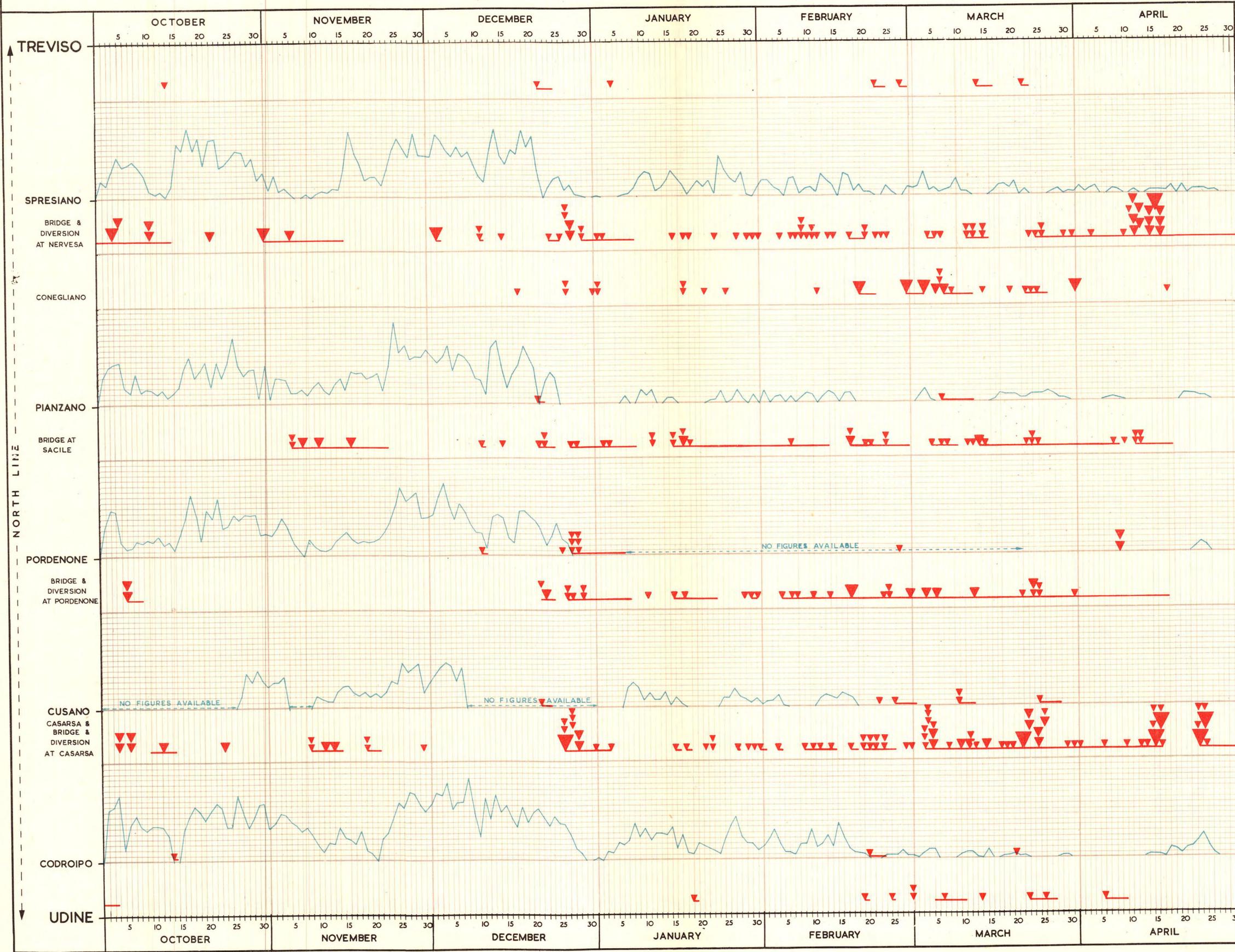
Results as revealed in Enemy Station Reports

Close counter-checks were made later by exploiting the serviceability logs of the railway bridges and diversions crossing the three rivers. These daily status records were compared with those kept by the Allied target sections. Those Allied records maintained solely from photographic reconnaissance were found to be satisfactorily accurate for operational planning; any differences - and these were slight - generally indicated a tendency towards conservatism on the part of the photo interpreter.

Again, as in the case of the Brenner battle, the number of trains per day were compared with the number of blocks on the three belts, i.e. the North line from Treviso to Udine, the Centre line from Treviso the Portogruaro and the South line from Mestre to San Giorgio.⁽³⁾ The rate of fall in traffic was different in degree in each case, but from the end of January in the case of the North and Centre belts and a month earlier in the more heavily attacked South Belt from Mestre,⁽⁴⁾ the fall was serious and continuous. When undivided Air Force attention was no longer possible in April, the rate of traffic fall slackened, but still continued.⁽⁵⁾

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- (1) All tonnages given in this narrative are the U.S. short tonnage.
 - (2) Refer to the statistics at Appendices 23 and 24.
 - (3) Stations used for train data:
North line: Pianzano, Pordenone, Codroipo, Spresiano.
Centre line: Fagave, Oderzo, Pramaggiore.
South line: San Dona, Idson, Latisana.
 - (4) The mainland station for Venice.
 - (5) Captured enemy station records.

DEVELOPMENT OF AIR INTERDICTION IN THE VENETIAN PLAIN OCTOBER 1944 TO APRIL 1945



The results of the six months' attack on the Tarvisio, Piedicolle and Postumia routes could not be checked so closely. Conditions along the Yugoslav border became unsettled on the conclusion of the war and remained so for some time. One may safely conclude, however, that as all three lines suffered heavy interdiction, results were comparable with those in other zones.

Phases of the Air Blockade in the Northeast

November and December had been strenuous but indecisive. January was marked by heavy weather. The medium bombers were only able to reach to 16 missions, divided equally (1) between the bridges over the rivers of the coastal plain and those on the mountainous frontier routes of Tarvisio and Piedicolle. At this period, the rise of the fighter-bomber effort occurred; it opened a new period of great efficacy. This effort rose steeply from 1,100 sorties in December to 2,500 in January. From open stretches of track, they turned to bridges and diversions, many simultaneously under attack by medium bombers. They could not hope to destroy the heaviest masonry, but were highly successful in erasing the approaches on either side of disabled bridges and in magnifying the work of repair. On occasions, photographs revealed very telling damage, which, when multiplied many times, conveys some idea of the over-all situation. The report of one of these attacks will illustrate the point. (2)

On 31 January, a squadron of South African Mustangs attacked one of the bridges on the Tarvisio route. A direct hit destroyed one span; 100 feet of the track north of the bridge were covered by a landslide; very near misses blew off five girders, damaged the supports and twisted the line; direct hits on the mouth of the tunnel south of the bridge partially blocked it; others broke the central span of the adjacent road bridge. A loading party assembled round a locomotive at one end of the tunnel was machine-gunned and another locomotive hit; a lorry was left in flames and two others smoking.

XXII Tactical Air Command's Thunderbolt formations concentrated on the main double track route from Vicenza to Casarsa. (3) Desert Air Force worked over the Postumia line from Latisana to Sesania. As a result of the combined air forces' 158 bridge attacks, there was no through traffic throughout the month of January, although the enemy maintained the Tarvisio route from the 18th onwards. The state of blockage rose and fell.

In February, the 6,364 sorties by medium, light and fighter bombers against supply lines through the Alps and across the Venetian Plain constituted two-thirds of Tactical Air Force's total effort against enemy communications. The Mitchells hardly visited the coastal plain, but struck repeatedly at the Tarvisio and Piedicolle routes; they scored an important success on 7 February by completely destroying

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- (1) They attacked Motta Di Livenza five times.
 - (2) M.A.T.A.F., D.A.F., and M.A.A.F., O.R.Bs. and D.A.F. Daily Intelligence Summary No. 211.
 - (3) In January 174 Thunderbolts attacked at the bridge and diversion at Cittadella, 124 at Casarsa and 122 at Nervesa.

the Canale D'Isonzo bridge. Although working desperately to maintain the Northern and Central lines across the plain, the enemy were compelled to abandon the Adriatic coast railway. The Postumia line was by now inactive. Desert Air Force was therefore directed as from 30 January to switch their effort to the Tarvisio route from Udine to Chiusaforte and to the Casarsa-Udine sector of the Northern belt.(1) Thereupon followed a series of co-ordinated attacks by every type of aircraft at their disposal. Marshalling yards as well as bridges became, occasionally, very profitable targets. A typical combined raid was that on 23 February on the diversion at Casarsa. The force comprised 33 Thunderbolts, 13 Marauders, 12 Kittyhawks and 10 Spitfires. First a force of Thunderbolts and Marauders neutralised the local flak defences. Sharply following came others to bomb the bridge, scoring four direct hits on it; the Marauders left delayed action bombs in the target area. The Spitfires acted as cover. The finishing strokes were administered by the Kittyhawks, who cratered the tracks on either side. At every point on the Northern belt, traffic fell catastrophically. Only on four days could a little traffic move eastwards as far as Chiusaforte. The last week saw the highest degree of interdiction in the Northeast yet registered - 20 railway crossings cut over the coastal rivers. The Tarvisio route, with four railway bridges crippled and six road bridges destroyed was relatively useless. The growing paralysis was accentuated by continuous fighter-bomber sweeps against locomotives trapped between the breaks and in yards.

Increase of Night Air Attacks(2) on Troop Movements

The path for the withdrawing German divisions lay through Northeastern Italy. February saw the slow departure of 356th Division by road and railway. Because of the many breaks, Tactical Air Force saw that train loading and assembly points were particularly sensitive to attack. It assigned the yards at Cittadella, Castelfranco and Verona to XXII Air Command, directing nightly armed reconnaissance of the Brenner. It assigned to Desert Air Force the yards at Camposiero and Vigodarzere in addition to nightly armed reconnaissance of the Tarvisio route. Throughout the month, Desert Air Force was handicapped by the heavy, enduring, seasonal mists that covered their base areas, but XXII Tactical Command were more fortunate with flying conditions. The effort overlapped and there is little point in isolating it. The results were what mattered most.

Among the weapons employed to harass the enemy troops were the anti-personnel 'butterfly bombs', winged booby-traps which detonated on the ground when handled or touched off. On the night 28/29 January, XXII Tactical Air Command began to drop them in clusters, as well as other normal and delayed action bombs, on the assembly points(3) and on damaged or destroyed

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- (1) 'Blockade' report, M.A.T.A.F. (A.H.B./IIJ11/13). Monthly Intelligence Summary, M.A.T.A.F. (A.H.B./IIJ11/18). M.A.A.F./Ops. O.R.Bs, D.A.F., O.R.Bs.
 - (2) During February No.253 R.A.F. Wing began converting their light bombers from day to night operations and carried out several night attacks. It comprised Nos.15 (S.A.A.F.), 454 (R.A.A.F.) and 500 R.A.F. Baltimore squadrons based at Cesenatico.
 - (3) 43 Bostons bombed 45 points in the Po Valley.

bridges. Ground sources and air reconnaissance reports revealed new loading points such as Codroipo and Cormons in the Udine area: these were duly bombed in mid-February. Castelfranco was a frequent object of attacks by the same intruding Bostons on February nights. Satisfied with the fall-off in enemy ground movement, Tactical Air Force called off the effort on 27 February.

Olimax of Attacks on N. E. Communications

In March, the medium bombers put in their largest effort since November 1944. In thirteen attacks, (1) Mitchells of 57th Bombardment Wing bombed all four river crossings in the coastal plain, while Desert Air Force's Marauders concentrated on marshalling yards. Their Baltimores were by now all converted to a night role; all Tactical Air Force's light bombers were thereby detailed for this work. Loading points were not neglected and Bostons and Mustang Invaders used the butterfly bomb on enemy personnel repairing the diversions at Nervesa, Sacile, Pordenone, Cittadella and elsewhere. Mitchells attacked the Piedicolle route twice and, on 12 March, added another block to the Postumia line, where the great Borovnica Viaduct, whose centre had been demolished on 27 December, still stood broken. Seven hundred men had laboured for months on the construction of a long diversion, stripping the broken bridge of steel in the attempt. But all was in vain. It was never finished.

Desert Air Force carried most of the weight in these areas. It threw all its available fighter-bomber force against the Tarvisio line. There, it was reported, 1,200 men were labouring by night to re-open it, but never succeeded in clearing the major block, because one or more of the bridges on either side of it were down most of the time. Chiusaforta and Dogna remained unrepaired. The mountain routes were not ideal terrain for fighter bombers, but then they were not such a menace, as supply routes, as the coastal plain lines. This explains the difference in effort in March over the two zones; 546 sorties over the northeastern frontier against 3,251 over the Plain, (or as many as in the three preceding months combined). Over one-half the effort fell on the Northern belt from Vicenza to Udine.

The Germans had been quietly and, they thought, secretly, working on the inconspicuous and neglected route running along the coast from Portogruaro through Latisana to Monfalcone. Towards the end of March, air photographs showed that repairs were nearing completion. A clear run, even for a week, would have been a godsend to the enemy movement controls, but it was not allowed to develop. Desert Air Force (2) fighter-bombers attacked it for three days running from 24 March.

On the Piedicolle route, Bodres bridge remained cut the whole month and a second block at Salcano from 15 to 20 March ensured increased delays. The enemy's difficulties in the Plain were vastly increased by the seasonal rise of waters. Over the four rivers the devastation spread, washing out

(1) 266 sorties.

(2) In March, No. 256 Squadron joined D. A. F., No. 324 Wing went to their new landing ground at Ravenna, No. 239 Wing to Cervia.

200 to 400 feet stretches on some of the river bed diversions, thus relieving the Allies of much anxious surveillance.

Over the Inner Belts, steady progress was maintained, but only at the highest expenditure of effort. Only on the Northern belt was any serious traffic possible, but it was noticed that cuts made by daily fighter-bomber attacks now took from 48 to 72 hours to repair as against the normal 8 to 12 hours. In the Piave River zone, although several bridges⁽¹⁾ remained abandoned, an intense effort was apparent at the Nervesa diversion. It was in operation at night, photographs proved, continuously between 1 and 26 March, except for seven nights. Our day photographs were misleading. They showed two 12-foot gaps constantly unrepaired and no sign of any of the much-sought-after heavy cranes (usually mounted on trains). What was happening was that the Germans held a reserve of short spans and manhandled these into position at nightfall.

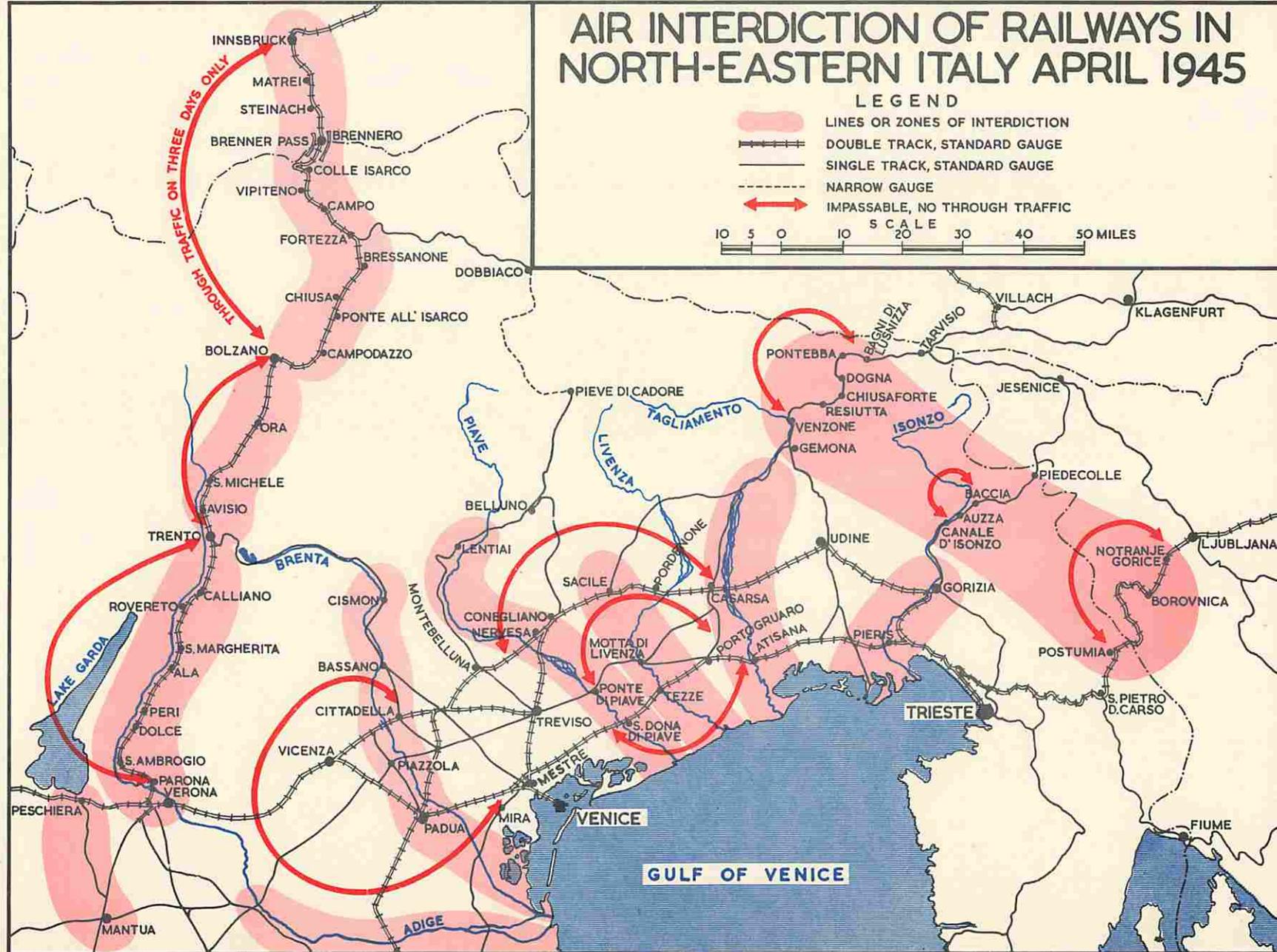
Enemy loss of Ground in the N.E. Zones of Interdiction

The Brenta River line presented the toughest problem across the Plain. Here the Germans achieved short periods of night serviceability on the Cittadella diversion and at the Padua/North replacement bridge. At Cittadella, a short 12-foot span was edged into position by hand and the bridge opened at night through the 5th. Every day, fighter-bombers attacked it; but the enemy overtook them and opened it on the 9th. Repeated attacks were necessary to put and keep it out over the following week. At last, a medium bomber attack on the 20th practically obliterated 200 feet of the fill. Complete flooding on the 26th guaranteed its closure until the end of the campaign. After five nights of activity, Padua/North was cut by fighter-bombers and did not recover. The East bridge at Padua and that at Piazzola had already been abandoned.

April operations were conclusive in both the main zones of interdiction as well as the Brenner. On the Northeast Frontier, no through traffic was possible on any one of the three routes. The Tarvisio line, from Udine to Arnoldstein, was blocked by cut bridges at Reslutta, Chiusaforte and Dogna/Town. Repair of the first two was under way when the west end of Chiusaforte was destroyed by medium bombers. No further repairs were attempted. Strategic Air Force fighter-bombers cut Arnoldstein bridge on 12 April. The Piedicolle route remained blocked by the completely destroyed Bodres bridge.

On the Postumia route, in spite of the irreparable condition of the great Borovnica viaduct, traffic flowed from 10 April onwards via the Postumia South bridge, which was put back into commission. Work went on at the Borovnica diversion, but the Spring offensive and the advance of Tito's forces prevented it from ever becoming operational. Lateral movement between the Postumia and Piedicolle routes, as in the Venetian Plain, might have partially offset the interdiction on the main lines, had not our fighter-bombers flown across the frontier on 2 April to cut the Radovljice bridge on the Tarvisio - Ljubljana line. In Austria, on the Villach-Maribor line, the Grafenstein bridge, east of Klagenfurt, was attacked by Strategic Air Force fighter-bombers on 7 April, so successfully that it remained cut. On the Spittal-Lienz line,

(1) For example, the Lentiai and San Dona di Piave.



A.R.B.I. Div. 46, No. 1020

FIGURE 18

Muhldorf, out until 12 April, was permanently cut on 24 April by heavy bombers.

True Tests of Efficacy of Air Blockade

While the winter air campaign against communications had led to the partial paralysis of the enemy system in North-east Italy, it had not destroyed it. Before this could happen, if it ever would have happened, the ground advance had begun to play in increasing measure on the situation. Some stretches on most lines were operative, some bridges or diversions functioning by day and certain crossings by night. Yet a certain desired situation highly favourable to the ground forces had been brought about. An army could have hardly opened an offensive under more favourable conditions. But the bomber offensive had not been able to finish the campaign alone. The same lesson had been learnt in the West. Nevertheless, the point reached when the air blockade ended was one ripe with possibilities. It was now possible to weigh all the factors in a bomber offensive against railway communications and to measure with a reasonable degree of exactitude the necessary weight and continuity of attack necessary to achieve specific objects. Furthermore, Mediterranean Allied Air Forces had the numbers of aircraft, although categories were badly balanced, to use this information effectively.

Efforts in 1944 to estimate necessary Bombing Effort

The apparently endless duration of the campaign engendered official doubts as to the soundness of the distribution of the air effort: this and the normal striving of the target sections towards excellence led to a series of enquiries. On 7 August, M.A.A.F. published a report based on bomb fall plots.⁽¹⁾ As fighter-bombers played only a small role in the Central Italian 'strangle' operations involved, no direct comparison between them and medium bombers could be obtained. But the indirect method led to a rough comparison. There were differences within M.A.A.F. itself as to what the true ratio was. The estimate by the Operational Research and Analysis Sections was of a necessary bomb tonnage for fighter bombers slightly less than one-half that for medium bombers to interdict continuously double-track lines. This figure seems to have stood up to the test of later, more searching surveys. All of them were, of course, based on certain constants, such as the terrain, the high degree of bombing accuracy attained in the theatre and the impressive local enemy repair effort.

The Necessary Bombing Effort for Continuous Interdiction of Railroad Lines
H.Q. XII A.F.,
1 Jan. 1945.
(A.H.B./IIF2/22/8).

In the late autumn of 1944, Twelfth Air Force made a survey of 'strangle' operations on three lines in Central Italy, confining itself for the major part to medium bomber attacks against masonry bridges. This report, already referred to, claimed that the average weekly tonnage for continuous interdiction of a double track line was 170 tons for medium bombers where a masonry bridge or a large steel bridge was involved. Heavy bombers would use more⁽²⁾ and dive bombers less,⁽³⁾ as height naturally affected accuracy. For lines

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- (1) Report No. 14, Operational Research & Analysis Section M.A.A.F., 7 Aug. 1944. (A.H.B./ILJ1/138).
 - (2) 500 tons.
 - (3) 80 tons.

with only open tracks⁽¹⁾ or with fills and short bridges,⁽²⁾ heavy tonnages would be called for. No firm figure was ventured in respect of lines with large steel bridges. It was a serious effort, but it was too early to be in a position to deal with enough samples of sufficient variety. Nor had photographic interpretation been used enough in anything but a direct reporting role.

Report No. 26
O.R. Section M.A.A.F.,
15 Nov. 1944.
(A.H.B./IIJ1/122/
83/23(A), Encl. 6a)

An effort had been made in November to analyse data on the influence of flak intensity on bombing accuracy. Again the scope was modest, but the interesting statement was made that the probability of hits by fighter-bombers was approximately five times lower for heavily defended targets than for undefended targets.

Use of Photo Interpretation in estimating Railway Bridge Repair Time⁽³⁾

Between these surveys and the final, more conclusive study, stretched the intense and highly significant operations recorded in the immediately preceding pages. The acid test of those operations was to be in their efficacy; that, in turn, depended to an increasing degree on the success of tactical and strategic intelligence in measuring the results against the methods used, so as to furnish reliable data for operational planning.

It has already been shown how our photographic reconnaissance organisation was perfecting the latest weapon of intelligence and it will be remembered that the gap caused by the paucity of night photographs was being filled. A significant new departure was now developing, which was to strengthen the whole basis of our communications bombing policy. This was the use of the photographs to build up a reliable schedule of enemy repair times for a whole range of structural types. The advantage gained in organising the schedules of attack was manifest.

As the intensity of attack mounted through the Winter and Spring, it became progressively clearer that to block segments as well as whole lines, one had to select from the limited number of highly vulnerable targets the best available and then to attack them not once, but repeatedly. It was known that the best period to attack one of these targets was as close to the scheduled completion of repairs as possible. What was more difficult, but vital to discover was, what would that date be? It was the task of the interpreters to provide the answer.

Basis and Technique of estimating Repair Times

Use was made of a running photographic history of the important railway bridges in Northern Italy and Austria. Dry-to-day coverage was added to stock evidence; a detailed study was undertaken of types of structure, the nature of bomb damage and enemy repair methods. Types of structure and damage were classified. It was found that the standardised repair methods

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- (1) Dive bombers 200 tons: medium bombers 500 tons: heavy bombers 1000 tons.
 - (2) Dive bombers 140 tons: medium bombers 350 tons: heavy bombers 700 tons.
 - (3) Blockade Report P. 208 M. A. T. A. F. (A. H. B. /IIJ1/13).

employed by the Germans facilitated a ready analysis of repairs and working hours needed. By maintaining dossiers on each important bridge, the minimum range of repair time could be closely gauged. (1)

After a bombing attack reconnaissance aircraft took photographs. From them a detailed assessment and a preliminary estimate of repair were made. Frequent, often daily photographs were taken, and, in the later stages, frequent night photographs. Clearance, filling of craters, arrival of repair trains or cranes or the erection of scaffolding were indications of repair preparations. As the work proceeded, the estimate was revised, but as the general tempo became known, this happened less often. Where revised estimates were based on a series of covers, the date of serviceability could almost always be determined to within 24 hours at least two or three days in advance.

This technique of estimating and reporting length of repair time was developed through the winter and put into practice in routine reportage in February. Through March and April, the technique had so improved and the results were so impressive that the practice was considered as warranted in the case of almost every damaged bridge. By extending its use to cases which failed to correspond with our forecasts, intelligence of primary importance was revealed. It was the unexplained delays in the functioning of bridges under repair that first indicated the enemy's deception technique, the growing shortage of materials, the effect of water on soil conditions on the Brenner, and that served as a gauge of the fluctuating strength and capacity of local repair crews. It was by such advances that the air forces in Italy brought the technique of interdiction to such a high degree of efficiency and the air forces in Northwest

(1) Table of Minimum Ranges (Partial List)

<u>Type of Structure</u>	<u>Required Repairs</u>	<u>Minimum Range</u>
(a) Standard, low pier	Erect one pier, set two spares	2 - 4 days
(b) Standard, high pier	Erect one pier, set two spares	4 - 7 days
(c) Standard, high pier	Erect one pier, set two spares	10 - 14 days
(d) Steel truss, greater than 90ft. length, medium or high pier.	Restore truss, repair damaged members	Over 14 days
(e) Steel truss, 90' - 180'	Discard truss, erect pier and set two spares	See (a), (b), (c)
(f) Masonry arch, spares less than 90'	Set girders in place over weakened arch	3 - 6 days
(g) Masonry arch. 90' - 180'	Erect pier and set two spares	See (a), (b), (c)

Note: Time is estimated from actual beginning of repairs.

Europe successfully bombed the Seine bridges and isolated the Ruhr. (1)

Final Report on Timing, Blocks and Bomb Tonnage

Well-intentioned as previous reports were, they could never hope to be, in the absence of full confirmation from ground sources, anything but speculative, although by this time our Intelligence was earning the general confidence of both forward units and rear planners. On the surrender of the Germans, an exhaustive survey was made by the Twelfth Air Force of operations on the Inner Belt lines extending from Venice to Udine, involving precisely those bridges recently under discussion in this narrative. Photographs and measurements were taken, workers at the sites interrogated and station records collated. The investigation was directed to the solutions of three questions, namely, was photographic interpretation an accurate guide in the timing of attacks, what was the necessary number of blocks for a complete 'strangle' and what were the necessary bomb tonnages in given situations of interdiction? The conclusions of this report are worth considering.

Confirming the earlier survey of 1 January 1944 on 'strangle' operations, the investigation showed that estimates of the time of bridge repair could be given from photographic interpretation with sufficient accuracy to serve as a basis for the timing of attacks; bridges could be kept continually blocked without waste of effort. If the target was a railway system similar in density and pattern to that of Italy, and if complete interdiction was to be achieved, that is, interdiction of both shuttle and through traffic, then as many blocks had to be maintained by bombing as were necessary to cut the line into sections of an average length of 15 miles.

The necessary weekly tonnages given above were confirmed. If more than two blocks were needed, the tonnage rose. If fighter-bombers were used (as they were increasingly) against targets with dense flak defences, at least twice the tonnages given in the January survey were needed. There was a simple ratio of approximately 1:2 in the tonnage needed against temporary diversion bridges of medium height. Low diversions were not, as some had thought, better targets than ordinary bridges.

Exact analysis produced measures of bombing efficacy per type. For fighter-bombers it took 2.6 tons for a one-day block, for medium bombers 5.8 tons. The only factor unaccounted for was height. The factor of 5 for the change of effectiveness of fighter-bombers from light flak targets to intense flak targets was confirmed and it was proved that twice as much bomb tonnage was needed against strong flak defences than against medium flak defences.

All this testimony had a more than academic significance and for that reason it is embodied in this narrative, so largely concerned with tactical operations. It is essential to examine every scrap of evidence which would justify or condemn the methods employed, as the case might be. Fortunately our intelligence did progress and refine its

(1) R.A.F. Narrative of the Campaign in Northwest Europe. (A.H.B.) (first draft)

Rail Line
Interdiction
in N.E. Italy
H.Q. XII A.F.,
5 July 1945
(A.H.B./IIJ11/
37)

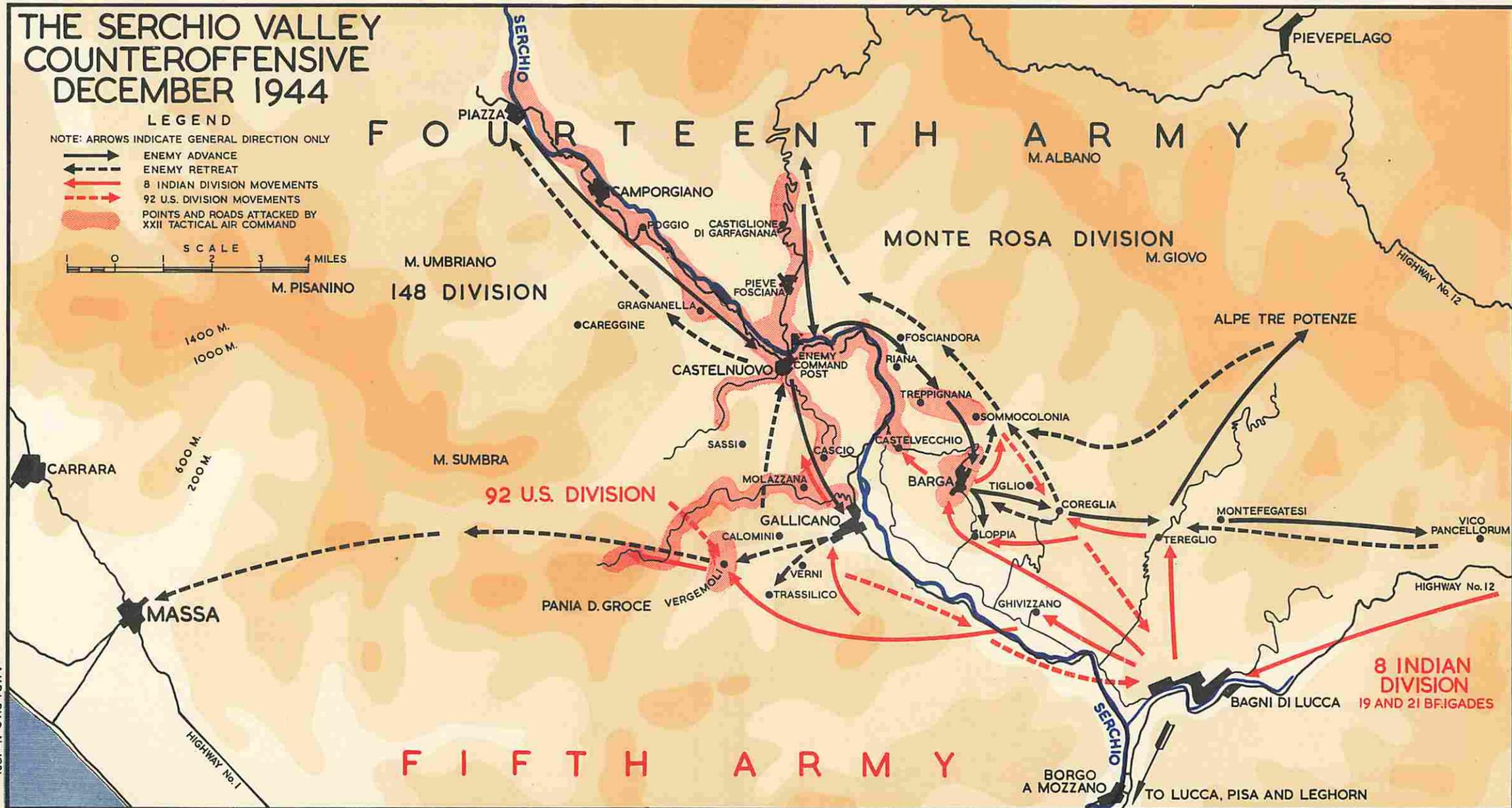
THE SERCHIO VALLEY COUNTEROFFENSIVE DECEMBER 1944

LEGEND

NOTE: ARROWS INDICATE GENERAL DIRECTION ONLY

-  ENEMY ADVANCE
-  ENEMY RETREAT
-  8 INDIAN DIVISION MOVEMENTS
-  92 U.S. DIVISION MOVEMENTS
-  POINTS AND ROADS ATTACKED BY XXII TACTICAL AIR COMMAND

SCALE
0 1 2 3 4 MILES



methods to the notable advantage of those planning and operating, and, by implication, of the entire ground and naval forces engaged, while the enemy's intelligence became weaker in effect and poorer in evaluation in the most critical period of his career as a fighting force. (1)

AIR INTERDICTION IN THE ZONES OF THE
PO, ADDA, OGLIO AND MINCIO RIVERS

Secondary River Targets in the Winter of 1944-45

After deducting the effort of Tactical Air Force from November 1944 to April 1945 in the blockade of Italy from the total effort against Italian communications as a whole, one is left with a weighty residue, as yet unaccounted for, (2) of medium, light and fighter bomber sorties. As the footnote clearly shows, this effort fell in harmony with the steady rise of effort against the international routes and was overtaken and surpassed by it in February. It did, however, increase in March: in April, the ground battle, demanding a new deployment of effort, again became the absorbent of the major part of the anti-communication forces.

The policy behind this subsidiary effort was first contained in the air directive of 3 November 1944, (3) as that of reducing the flow of supplies by rail and road from existing dumps in Italy to enemy forces on the Italian front and of 'destroying the enemy's means of transport....' 42nd and 57th Bombardment Wings of medium bombers were allotted, as third priority, the tasks of interdicting the Po and Adda Rivers. The fighter bombers of both commands within the Tactical Air Force were to disrupt railway communications between the Po River and the battle area from the Adriatic

(1) Figure 17 gives a clear exposition of the interdiction of one line of the Inner Belts as analysed in this report. Originally it had been hoped that the complete records of all trains having passed over the three lines in question could be obtained in the central office at Venice. But the havoc created in the telephone and telegraph system by the air bombing made centralised record-keeping during the interdiction operations virtually impossible. Therefore, it was necessary to resort to the use of the records of 13 small stations selected for their significance in the system, a plan which yielded representative and fair results.

(2) Table of Effort, M.A.T.A.F., in Sorties

MONTH	NOV.	DEC.	JAN.	FEB.	MAR.	APR.
Blockade	1,844	3,185	4,725	6,364	8,162	4,162
All Other Communication Targets	6,624	5,788	5,220	3,148	5,220	8,746
Other Combat Sorties	10,937	12,513	9,380	8,995	14,089	25,881
	19,405	21,486	19,325	18,507	27,471	38,789

Source: 23rd S. C. O. R. U.
(3) Appendix 16.

coast to Piacenza as a first priority task. Their second priority task was to disrupt movement north of the Po. There were loose clauses relating to alternative targets, due respect being paid to the weather prospect, which frequently forced our air formations on to a second best course of action. It must be remembered that the Italian theatre did not enjoy the advantages of radar-directed bombing until the final stages of the campaign and that a few bombers only were converting from the by then obsolescent Norden bomb sight to something better.(1).

After the directive of 9 January 1945,(2) operations in the Po Valley became second priority tasks. Desert Air Force was allotted the eastern Po Valley, XXII Tactical Air Command the Po Valley as a whole. A new feature was the introduction of shipping as an important weather alternate. The medium bomber wing, if weather forbade operations on the isolation of Italy programme, was to concentrate on the permanent railway bridges over the Po (3) and the Oglio River line: the latter attacks were aimed at interfering with the evacuation of industrial loot from northwestern Italy. It is worthy of note that the Adda and Mincio Rivers, tributaries of the Po, were not mentioned by name. Dumps were third priority. This was in early January, a time of bad flying weather and quiet on the front.

So much for the directives behind the operations. One must not look for a perfect parallel between them. Directives at all levels were of necessity flexible, in general terms and susceptible of variants in rendering. They were interpreted by the field commanders to fit local circumstances. The weather conditions, different in different zones and, in the case of the heavier aircraft, often different at base and target, ensured that there were periods when low priority targets received an unpremeditated weight of attention.

The Significance of Northwest Italy in Air Operations

Although overshadowed in the critical winter of 1944-45 by the international frontier zones and the Venetian Plain, Northwest Italy was very important as a target area. From reference to Figure 2, it will be seen that from the opening of the campaign, both sides viewed the points of Milan, Turin, Monza, Gallarate and Alessandria as vital targets. The complex was an industrial one; in spite of war damage and material and manpower shortages, its output was still considerable.

Some idea of the economic stature of the area may be gathered if one considers the potential of Milan and Turin. These were respectively the first and second industrial cities of Italy and the hubs of thriving productive regions. Milan was not only the first industrial city, it was the financial and commercial capital of Italy. It was the centre of outstanding engineering work^s with more than 100 firms producing

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- (1) The British Mark IX - E.
 - (2) Appendix 17.
 - (3) A curious order, for although some repair work had been going on on the bridges destroyed in Operation Mallory Major' in July 1944, the real menace was the night-operational pontoon bridge and night ferry system.

Italy Vol.IV
B.R.517(c)
Restricted
N.I.D.
(Admiralty)

turbines, diesel engines, motor cars, lorries, locomotives, motor cycles, aircraft, railway equipment, hydro-electric pumps, electric cables, precision instruments and all types of radio, telephone and electric equipment. It was also the main centre of the chemical, leather and rubber industries. The Central Station was the most important junction in peacetime in Italy. Six main lines converged (1) and six others began there. (2)

The main industry of Turin was mechanical engineering. The Fiat Company, with a staff of some 70,000, accounted for 90 per cent of the Italian production of motor vehicles and included two large steel works. Turin and Avigliana combined used to produce 100,000 tons of steel before the war. The finished products included motor cars, lorries, tractors, tanks, aircraft engines, diesel engines and locomotives, cables, pumping engines and chemical manufactures. Six railway lines converged on Turin. (3).

By November 1944, the regional output had of necessity fallen, but was still important. Most of the iron ore, coal, (4) steel, scrap iron, (5) and chrome ore (6) was almost certainly converted to military purposes. The progressive contraction of the Swiss routes was a serious blow to the region in respect of the manufacture of arms, ammunition and transport during the winter. It will be recalled that on 7 December the Swiss confined the use of the Simplon route to local traffic. On 8 March 1945, they agreed to add coal, iron, steel and scrap-iron to the list of goods unacceptable for transit from Germany to Italy. All northbound traffic was to be regarded as loot, unless proved otherwise and the northbound maximum was fixed at 5,900 tons a month. By mid-March, only about one-fifth of the daily coal requirements were believed to be reaching Italy. None passed through Switzerland thereafter.

The importance of Northwest industrial Italy may therefore be seen as continuous. What plant potential could not serve an immediate military purpose was dismantled and sent back to Germany for re-assembly or salvage (together with great quantities of other plunder from the rest of Italy), by rail to Bolzano, across the Brenner Pass, and through Switzerland until the embargo. Far from being the no-man's-land its low place on the target priority list might suggest, it was functioning as a powerful source of energy enabling the Germans to move and make war. It also provided the means of transporting material and men to and from Genoa, Savona and La Spezia, so feeding the seaborne traffic system.

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- (1) (i) St. Gothard - Chiasso - Como (ii) Simplon - Domodossola - Arona (iii) Turin - Novara (iv) Genoa - Pavia (v) Rome - Florence - Bologna (vi) Venice - Verona - Brescia.
- (2) (i) To Alessandria (ii) To Varese (iii) To Leco, Sondrio and the Engadine (iv) & (v) To Bergamo (vi) To Cremona.
- (3) (i) Modane and Mt. Cenis tunnel (ii) Milan - Novara (iii) Alessandria (junction for Piacenza, Genoa and Rome (iv) Savona - Ceva - Fossano (v) Torre Pelice - Pinerolo (vi) Cere - Lanzo. Loop lines connected with (i) - (v).
- (4) 133,504 tons in September 1944.
- (5) 4,773 metric tons in September 1944.
- (6) 988 metric tons in September 1944.

Air Operations northwards from the Po in November(1)

The aim of the November air directive was to give greater zonal depth to our interdiction, impose as long a motor transport lift as possible on the enemy and isolate the battle area from near supply points. The 'north of the Po' line was first shifted eastward from the Ticino to the Adda River. The Adda had equally good bridges, interdiction of which would do more to prevent movement from enemy dumps and the industries of Milan and Turin to the front of the East Po Valley. The boundary north of the Po as between XXII Tactical Air Command and Desert Air Force ran south from Verona along the Adige to Legnano, thence due south to the Po.

Fighter-bombers played the major role in November, but none of the air operations could be described as decisive or of first rate importance. The whole air campaign, as already seen in the preceding sections, took time to develop to the point of success; the prospect of bad weather was certain. XXII Tactical Air Command flew over four thousand sorties in the area, 60 per cent of their total effort against all communications. They claimed some successes, including the destruction of 40 railway cars at Desenzano on 10 November and 10 at Borgoforte on 22 November. Desert Air Force worked over the Ferrara-Faenza-Rimini triangle for seven days. The medium bombers attacked communications over most of the Po Valley and bridges over the Po.(2) At night, U.S. Bostons and Thunderbolts concentrated on river pontoons and petrol pipelines.

Permanent Po Bridges still functioning(3)

The myth had taken root, in some quarters, that Operation 'Mallory Major' had completely destroyed for all time all the permanent Po bridges. This was untrue, as photographs began to reveal. The intense Allied preoccupation with enemy counter-measures had thrown a highlight on their night activities on pontoon and suspension bridges. It could hardly be worth while repairing the massive masonry piles and arches of the old bridges, it had been thought. But it was worth while, and the Germans did not shrink from the task.

By mid-December, the block at Pontetidone over the Trebbia near Piacenza was repaired, rendering traffic to Piacenza without the use of ferries possible. Four pontoon bridges were in action. With the aid of all the crossings, it looked as if the Germans had actually reached the stage of zoning. One prisoner-of-war stated, for example, that east of Ferrara, all crossings were reserved for 26th Panzer Division. During January, the number of permanent Po bridges in action had risen to three. They were attacked, but Piacenza remained open from 15 to 31 January. It was put out by air attack on 8 February, as were the other two, but on 28 February another was serviceable. In the western reaches of the Po, Torreberetti bridge, although air attack had cut a span, remained 'operational when required'

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- (1) T.A.F. O.R.Bs. 'Enemy Lines of Communications' M.A.T.A.F. Monthly Intelligence Bulletin, Nov-Dec. 1944. (A.H.B./IIJ11/18).
- (2) Refer to Appendix 29 for medium air effort against the various river crossings in December.
- (3) A.H.B./IIJ11/16.

all through March, although from Bressana Bottarone to the Adriatic all permanent bridges remained impassable. Foot passengers crossed Borgoforte and Ostiglia on light cat walks.

The Po Crossings

A.H.B./HJH/18

The general physical features of the Po, Operation 'Mallory Major' (against bridges from Piacenza to the Adriatic) and its complementary operation (against bridges to the west of Piacenza), have already been dealt with. From west of Piacenza as far as Turin, the lines of communication fed into the industrial areas of Turin and Alessandria and the port of Genoa. In the Po's upper reaches, between Turin and Piacenza, there were five railway and eleven road crossings, all excellent. The most important was at Chivasso (where the railway line and the Autostrada connecting Turin and Milan intersect), and at Bressano Bottarone.⁽¹⁾ In view of the changed situation since 'Mallory Major', in November 1944, our Air Intelligence was hard put to say which of the seven major railway crossings, (with the exception of Cremona and Casal Maggiore), was the most important to the enemy. Near the river mouth there was a crossing at Corbola,⁽²⁾ of minor interest in itself. There were 16 road crossings between Piacenza and the Adriatic, the combined road and rail bridges at Ostiglia and Cremona, four permanent bridges at Piacenza, Pontelagoscuro, Corbola and Taglio, and ten additional semi-permanent pontoon bridges⁽³⁾ serving practically all the important road links.

Even with most of the permanent bridges neutralised, such a complex system presented the air forces with a formidable task, which could never be fully met in the face of their new commitments. Photographs showed pontoons anchored alongside the banks, M/T movement and jetty works, all suggesting night operations; but until November, no actual photograph showing pontoons actually in position could be obtained. For this, the misty weather and changing policy were blamed. Ground reports of night crossings continued to come in. By the end of November, our Intelligence was in possession of photographs of night bridges assembled and in use at Camatta and Ficarolo, but not in simultaneous use. Reports from ground sources and prisoners of war⁽⁴⁾ indicated others.

The Po Ferries

Ibid

Hardly less important than the crossings were the ferries. A very great effort had been put into the building of railway spurs, jetties, wagon-loading facilities and train ferries,

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- (1) A few miles south of Pavia. Here the 2,900 feet road and railway bridge carried the Genoa - Milan traffic.
 - (2) The shortest, something over 1,000 feet long. It carried the then unimportant local line between Adria and Ariano.
 - (3) Assembled anchored concrete boats, capable of handling loads up to 20 - 25 tons and only taken apart during times of excessively high water. They could be considered, to all intents and purposes, permanent structures.
 - (4) Prisoners stated that the night bridges took 2 hours to assemble or dismantle, also that some bore traffic between 2000 and 0600 hours and others between 2200 and 0500 hours.

designing pontoon units and fitting outboard motors to them. The results accounted for the transfer of the heaviest equipment. No pontoon crossing was believed capable of bearing a load over 25 tons; but ferries carried loaded rail wagons and lorries with up to 20 men. At rural crossings, light loads were carried in hand-pulled boats. The latest train ferries at Pontelagoscuro, Ostiglia and Piacenza could carry up to three loaded train cars at a time. The daily army supply needs south of the Po were estimated at 4,000 tons for all purposes and at more for a major action. The front-line troops could exist on 1,500/2,000 tons daily. It was clear that they were getting all of it, as well as fuel pumped across the river through pipe lines.

Enemy Freedom of Action increasing in December and January

Ibid

With heavy commitments in the North and Northeast and much non-operational weather as a background, Tactical Air Force was able, in December and January, to do little more than seriously harass communications in the Northwest. There were, however, several interesting operations and developments during this period which must be recorded so that the line of progress leading to the conclusive operations of March and April may be traced.

What was held most of the month was a north-south line of interdiction from Lake Garda to the Po, with XXII Tactical Air Command working over the lines between Milan and Verona, and Desert Air Force over the lines between Padua and Ferrara. In the west, the highlight of the scanty operations was the efforts of Mitchell formations to knock out the repaired major bridges at Torreberetti and Chivasso. Some effort was also put out against the tracks in the Adäa-Adige area(1) and the Oglio(2) and Mincio(3) bridges.

The enemy used the lull in operations to good effect. In addition to the major repairs already recorded, it was observed, that he made a second crossing of the Ticino possible (as our aircraft left it in immunity), by repairing the combined road and railway bridge at Magenta, laying the rails across part of the road bridge. Weather cleared in the last ten days of the month, enabling the photographic reconnaissance units to furnish a clearer picture of night activities; there were four night bridges in action across the Po.

Brescia, east of Milan, was a traffic junction of importance. A piece of deception was uncovered in this area. One span had been knocked out of the bridge at Calcinato by our aircraft. The line was thus blocked. As time went on, suspicions were aroused by the enemy's apparent neglect of the relatively simple repairs and by evidence of a traffic build-up on both sides of the block. Photographic prints showed tracks on both sides of the neatly trimmed gap and a railway crane on the tracks bearing long girders. This crane moved very slightly as the days passed. The trick was revealed by a night photograph taken on 27 December. The crane had laid the girders and the bridge was passable. The crane was not in evidence. Next morning the span was open again.

-
- (1) 150 sorties.
 - (2) 20 medium bomber sorties.
 - (3) 37 medium bomber sorties.

January was a month of fairly limited operations, but of several noteworthy changes. There were 19 Mitchell attacks on railway bridges bearing trains filled with industrial loot from Milan, Turin and Genoa to the eastern Po Valley up to Bolzano and so to the Reich. Mitchells also attacked three repaired permanent Po bridges. In the Po Valley area, the emphasis was now on the carriers, not on the lines. The months of concentration on railway targets had thrown more M/T on to the roads. Clear evidence of this stood out from the claim that over 500 motor and armoured vehicles were believed destroyed weekly, the highest rate since 16 September. Most of it was caught in the Milan - Bergamo - Brescia, Milan - Piacenza, Turin - Vicenza and Parma - Piacenza areas.

Increased Night Air Effort in January

Ibid

It was not until January 1944 that the night air forces showed signs of a slight approach to adequacy. Desert Air Force transferred two squadrons of Baltimores to night operations. The Black Widow(1) and Invader(2) entered the field as night bombers and intruders. Bostons made over 1,000 sorties against trains, junctions and buildings in the Northeast and attacked ten of the Po crossings. Night fighters looked for motor traffic in the Central Po area and claimed, most probably with good reason, 343 M/T destroyed or damaged: this was quite a useful score, but it would have needed far more effort to make serious inroads into the locomotive stocks, which remained, on the whole, sufficient for German needs until the final collapse.

Air Attacks on static Repair Facilities

Ibid and P/W
Interrogation
Reports
summarised in
Jan. 1945 issue of
M.A.T.A.F.
Monthly
Int. Bulletin
(A.H.B./ITM/18).

In the Brenner, Tarvisio, Piedicolle and Venetian Plain systems, the German repair organisation was literally on the road. Prisoners-of-war stated that repair trains, staffed with maintenance crews thoroughly briefed, travelled from point to point when alerted. These repair trains, they said, comprised one car for files on repairs, with three to nine expert technicians, two to four workshop cars, one to two cars for quarters and kitchen facilities, one to two cars for spare rails and large replacement parts, and one to two cars for cement and other materials for track bend construction. All the visual evidence went to make the statement feasible.

On the other hand, in the great industrial complex of the Northwest, left in relative immunity, the repair system was at this period still static. This situation was, then, one to which the Zuckerman Theory might still be applied. The heavy bombers were irrevocably committed to targets outside Italy. The medium bombers were fully occupied. For these reasons, it was the fighter-bombers who, numerically at any rate, put out the highest effort against communications. On 11 January, in particular, they concentrated on repair facilities at La Spezia, Milan, Novara and elsewhere.

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- (1) The U.S. P-61.
(2) The U.S. A-26 Mustang.

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Damage was hard to assess in specific detail, for it was the season of fogs and mists. (1)

Enemy Situation in the Po Valley and Northwest Italy at End of January

Ibid

In spite of the Allied air effort and the new directive, the month of January ended in a stalemate. In the Northwest, the enemy traffic still passed with immunity; across the Po, supplies still poured south to the battlefield. The attrition was never relaxed, for that would have been fatal when the Spring offensive opened. The enemy soon overtook his handicaps, given a free ~~run~~ run.

Corbola bridge on the Po, reopened on 12 January, was put out on the 31st. At twilight, however, the crossings started operating. The position was similar all up the river. The Germans had decentralised the old system of a few major crossings and played such tunes on the system of bridges, crossings and ferries that he could safely say that his position was even more secure than when all the permanent bridges were serviceable.

Inconclusive February Air Operations against Communications

Ibid

February was a quiet month along the Po and in the Northwest. With bad weather and insufficient aircraft available, the Po became temporarily an unimportant area, but was not entirely neglected on days when weather allowed. One of the Piacenza bridges was attacked on 8 February: this meant that from then until the 28th no permanent bridges could be used; but towards the end of the month, Torreberetti could be used in emergency.

The medium bomber wing put in 200 sorties in February against a variety of targets. There was more M/T on the roads to bomb, the steady toll on the railways throwing up the need for motor driven vehicles and so eating into the dwindling fuel reserves. It will be seen later how the local and natural resources such as oil, gas, beet sugar refineries and alcohol fuel installations were coupled as targets with the carriers and how small coastal and canal shipping came under intenser fire. The important Verona - Milan line remained blocked by cuts at the Serio and Oglio river crossings. XXII Tactical Air Command made a spectacular attack on a Mentua car park, which was set on fire by fuel tank incendiary bombs, eighty vehicles reported destroyed and one hundred damaged. The vital line from Milan and Verona was successfully blocked most of the month, an important achievement in view of Verona's status as a Frontleitstelle - a forward transit point. It was certain that, by now, the Air Forces had guaranteed that the enemy was unable to achieve anything like a major build-up, although he could and did successfully feed the static front line by road, rail, river, canal and sea.

(1) No primary evidence is yet available from enemy or other sources as to the precise results here or at many other points. The ultimate solution would be to examine all the local records of almost every town and village in Italy, if still existent and for what they are worth.

GERMAN RAILWAY INTERDICTION CHARTS DECEMBER 1943 TO MARCH 1945

FIGURE 20

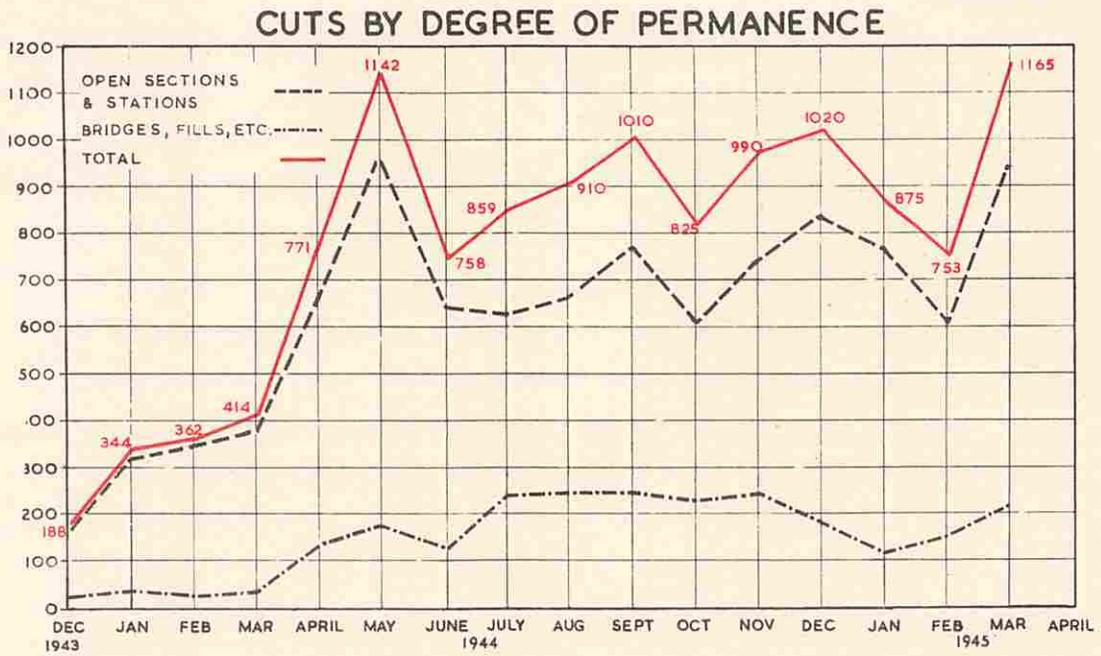


FIGURE 20A

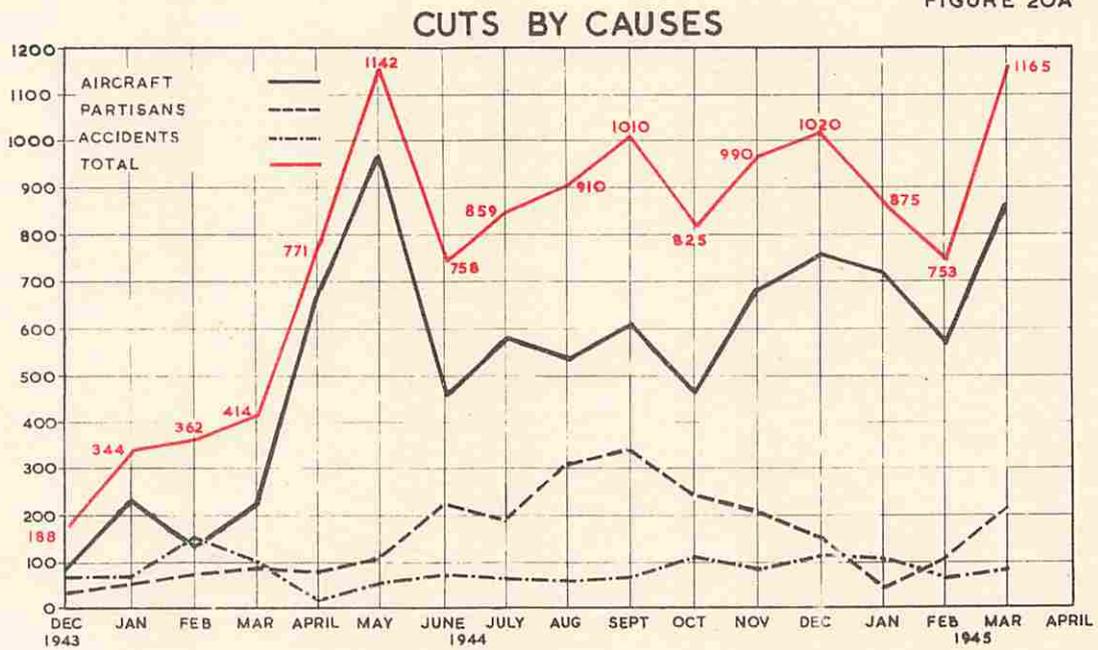
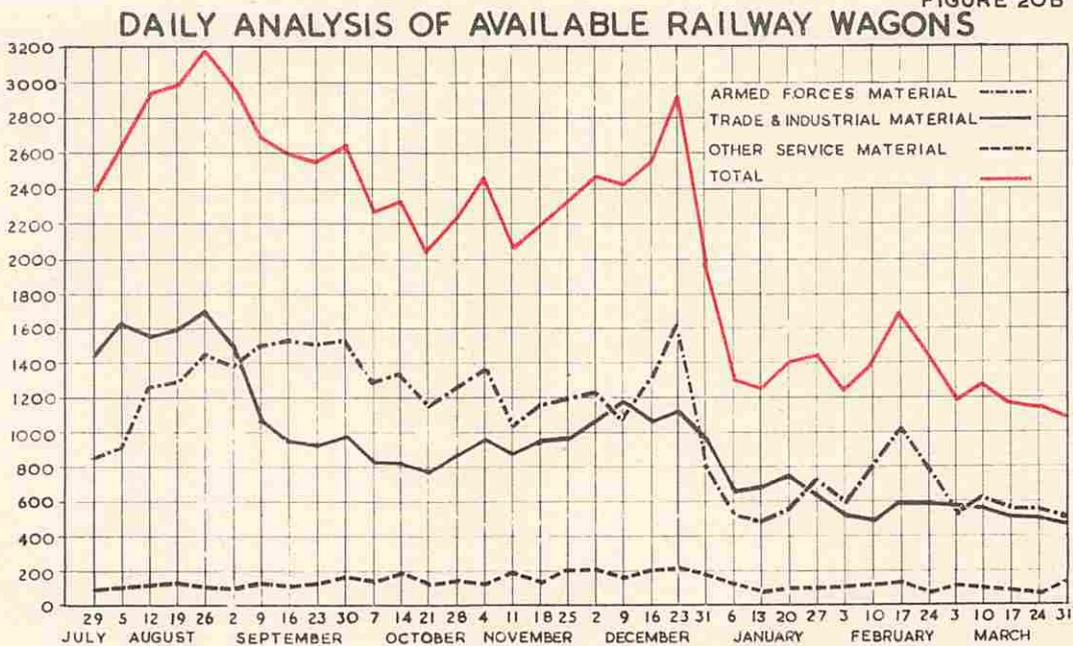


FIGURE 20B



DOCUMENTS CAPTURED FROM THE RAILWAY TRANSPORTATION SECTION
AT THE H.Q. OF THE COMMANDING GENERAL OF THE WEHRMACHT IN ITALY

March Air Operations in the Po and Northwest Areas⁽¹⁾

March was remarkable for a steep increase in the Allied night effort. The improvements in navigational methods,⁽²⁾ the conversion of more types to night operations and the steady arrival of new aircraft in small numbers made, for the first time, a rough approach to more balanced day and night operations possible. Night intruders doubled their February sortie totals, reaching 2,903 sorties. These, added to the growing number of day sorties when bombing through overcast and mist was carried out, gave the Germans little rest or hope of protection by weather and darkness. The targets were the customary ones - the Po crossings, troop assemblies, marshalling yards, motor transport and so forth. Particular emphasis was laid on the Po crossings on the five nights 16 to 20 March, when intruders of XXII Tactical Air Command bombed 17 of the crossings. One quarter more motor vehicles were destroyed than in February, it was estimated, but, all in all, there was less motor traffic in evidence.

In spite of intermittent attacks on the Po, the Allies had only the vaguest idea of the volume of traffic crossing it. Night photographs were taken up to 13 March, but none were possible for the rest of the month on account of the haze. This bad element in the flying weather accounted for the Po figuring at all in the medium bomber programme; 42 out of 43 medium bomber operations against the Po area were weather alternates.

There were no air operations in March in Northwest Italy worth recording. It was not of great importance that the Germans could move freely there so long as they were being dammed up, as they were, at more critical points. Furthermore, it was discovered to be high time in March to concentrate on the active enemy coastal shipping and the traffic on the inland waterways.

The Po Status at D-Day 1945

Ibid

For many months, the great River Po, cutting across the entire width of North Italy, had been an object of study and attack. Under static ground conditions and with so many commitments, the Allied air forces were unable to neutralise it as a supply route feeding the front line forces. This was the physical position at D-Day in April 1945.

The most probable area of major crossings of the Po which would be used by the enemy in case of his withdrawal was considered to be from Borgoforte to Corbola - especially in the Borgoforte - Ostiglia, the Ficarolo - Occhiobello and the Polesella - Crespino areas. All night pontoon bridges, heavy ferries capable of transporting tanks and motor transport ferries were targeted and a priority list for air attacks established. The plan was kept up-to-date by intensive night photography right up to the night of 20/21 April, on which occasion very intense ground and river activities indicated a critical moment in the battle. Up to

(1) M.A.T.A.F/Ops and S.A.S.O., O.R.Bs. M.A.T.A.F. Intelligence Bulletins, March - April 1945. (A.H.B./IIJ11/18). *Appendix 26*

(2) Refer to the following ~~section~~ for the history of the development of 'Shoran' and SUR.584 bombing.

this point the river had figured as a means of southward transport of reinforcements and supplies. Now it was the means of escape of whole armies and their equipment, and, as such, demanded immediate and major treatment.

At this point the status of North Italian land communications must be left, the ground retraced back to November 1944, the final phases of the winter air campaign against Axis shipping in the Ligurian and Adriatic seas, the growth of Venice and La Spezia as supply bases and the Allied air attacks on them.

MARITIME AIR WAR IN THE NORTHERN ADRIATIC

The Problem of Axis Merchant Shipping and Naval Units

It was recorded in Chapter 2 how the problem of enemy coastal shipping and naval offensive action was approached by the Allied Air Forces in the early autumn of 1944 and how, although the operations were deterrent, they failed to bring the seaborne supply traffic to an end. The front line units and the whole industrial and social economy of Italy were bolstered by a small, flexible force of surface craft. Furthermore, their naval forces continued to constitute a continuous, though hardly a very grave menace to our loading and unloading ports, and, with their continuous mining, torpedoing and one and two-man weapon activities, to our small convoys.

It will now be time to re-examine the position in the Adriatic and the Gulf of Genoa and to trace what steps were taken to reduce the threat. The head of the Adriatic will be dealt with first. The operations and results will, it is suggested, bear out the opinion put forward in Chapter 2 to the effect that no decision could be reached until sufficient weight of effort had been put out. After months of diffuse operations during the winter, major attacks by the Strategic Air Force on the ports of the Istrian Peninsula destroyed a good part of the enemy shipping and forced an important body of what was remaining into Venice, thus creating the long awaited opportunity of neutralising the enemy's sea transport system once and for all.

Coastal Air Force, drastically reduced after the successful landings in the South of France, was by this time quite incapable of handling the enemy coastal traffic unaided. Tactical Air Force was committed up to the hilt in the campaigns of the Brenner, the Venetian Plain and the North-eastern routes. It was quite logically, therefore, by a synthesis of effort by three air forces that the desired stoppage was eventually brought about.

Enemy Naval Shipping in the Adriatic.

In the Adriatic, the enemy, in February 1945, had at his disposition, it was believed, the Fleet Destroyer 'Pigafetta', (1) four Torpedo Boats, (2) about twenty E-Boats, (3) about fifteen small E-Boats, (4) about five Italian M.A.S. Boats,

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- (1) Mounting 6 x 4.7 guns.
 - (2) 3 modern and 1 old ex-Yugoslav.
 - (3) German and Italian types.
 - (4) German types.

five R-Boats, one minelayer, a considerable number of special assault craft similar to those encountered in the Western Mediterranean, and five or six Italian 4-man midget submarines. (1) Trieste was the base for the destroyer and the torpedo boats, Pola the principal base for E- and M.A.S. boats. Lussino Island, (2) south of Istria, was believed to be the base for explosive motor boats, 2-man torpedo boats and human torpedoes. The latter were also known to be used for training with a group of naval parachutist saboteurs on the island of San Giorgio near Venice.

A parallel with Ligurian Sea warfare was that the enemy destroyer, torpedo boats and minelayer were largely engaged in defensive minelaying. The special assault craft had occasionally taken the offensive against such ports as Zadar (or Zader or Zara), near which an Allied air base was developing, and Ancona, the principal forward Allied supply port. This offensive action might well increase; aerial photographs and other sources of intelligence had revealed that a second destroyer, two torpedo boats and three submarines were being fitted out.

Enemy Merchant Shipping in the Adriatic

Ibid

The Allied advances had left the enemy with no big forward unloading port on the East Italian coast. The only ports worthy of the name began with Venice and continued round the head of the Adriatic and the peninsula of Istria. The final stage of delivery for supplies to the front line was by barges. During the winter, photographs showed a steady river barge activity at Venice, from whence they were routed through Chioggia at the southern entrance of the Veneta Lagoons into the canal system in the great Po Delta. (3)

As the breaks on the lines crossing the river Tagliamento, Livenza and Piave were increased by air attack, so the enemy looked with increasing apprehension for a remedy. He found this in the sea route between Trieste and Venice. The ex-British Delesman, (4) and a K.T., (5) ship were regularly employed; there was a steady turnover of small coastal vessels, F - lighters and supply barges, the latter being routed either coastwise or through the coastal canal from Grado. The Mediceo, (6) after a month's inactivity in Trieste, reappeared in dry dock at Venice, obviously destined for re-entry into service. Another long idle ship - the Lina Campanella, (7) was now working as a collier in Trieste harbour. Traffic at the Istrian ports, except Pola, was mainly commercial, coal being handled at Arsa Channel and bauxite at Parenzo. Replacement for a 3500-ton tanker - (the Prometheus - presumed sunk), another vessel - the Otto Leonhardt (8) - had been tracked by aircraft from Venice through Pola to Trieste and thence to the Arsa Channel by 29 January. The port of Fiume, also in Italy, operated a motley collection of Siebel ferries, launches, landing craft and caïques on the reinforcement and supply of German garrisons on the Adriatic coast and islands.

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- (1) C.B. type.
 - (2) Lussinpiccolo was the capital town, not an island.
 - (3) Notably the Fontelongo, Gorzone and Dianco canals.
 - (4) 6300 tons.
 - (5) Kriegstransport - War Transport.
 - (6) 5100 tons.
 - (7) 3500 tons.
 - (8) 3200 tons.

Adriatic Anti-shipping Operations in December 1944. (1)

In view of the air switch from early November onwards to the interdiction programme in the North, the Adriatic air operations in November and December were on a reduced scale. Not only was Coastal Air Force restricted in strength, but had commitments in the Gulf of Genoa and the Ligurian Sea and was operating intruders and fighter-bombers over the Alpine Front. (2) Chioggia port was not to be attacked; nor were trains between Chioggia and Trieste. Only locomotives were permissible as targets, unless special permission was obtained from Desert Air Force. (3) All land targets in Istria, (which included the ports) were on the restricted list, owing to partisan activity. Similar rulings relating to Northwest Italy forbade attacks on harbours unless specifically ordered. With the passing of time, even though the ground offensive was doomed to stalemate, the ultimate use of these ports to the Allies was already being taken into account. (4)

November was a month of little achievement in this sphere, almost the only effort worthy of mention being an attack by two missions of 24 Spitbombers on the training school for swimming saboteurs on the island of San Giorgio, the results of which have not yet come to light. The total claims made by Tactical Air Force by the end of the month reached the not unimpressive total of 28 ships and small boats destroyed and 63 damaged on the two sea flanks.

December saw no significant change in enemy shipping movements. The river barges plied steadily between Venice and Chioggia and along the canals in the Po Estuary. Venice and Trieste seemed normal and quiet. There was little going on in Fiume, but a perceptible stirring at Pola. Photographs and ground source reports were not considered disturbing. But when local reports were merged with others on the enemy system as a whole, the leaven of apprehension began to work. The apparent unimportance of the activity here and there belied the true state of affairs. A fresh review was made. The situation in early January was then revealed as follows.

Anti-Shipping Adriatic Operations in January

Ibid

Regular convoys of medium tonnage ships and small craft were running between La Spezia and Genoa and Savona, evacuating industrial equipment and bringing in fuel and ammunition for

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- (1) T.A.F. Ops and S.A.S.O., O.R.Bs. D.A.F., Ops. O.R.Bs.
 - (2) It must not be overlooked that there was still a minor front along the Franco-Italian border, sustained on the Allied side by the Airborne Division dropped in Operation 'Dragoon' and British, French and U.S. aircraft of Mediterranean Coastal Air Force.
 - (3) Signal A 46 from M.A.C.A.F. to its formations 5 Dec. 1944 App. C.13 MACAF/Air Staff O.R.Bs.
 - (4) Sustained requests by Army and Navy for abstention from bombing ports must be reviewed against the revival of the old optimism - which the Air Forces did not share. It was known at the time that the Germans could and did achieve more in a few days by methodical mining, demolition and blockship sinking to render ports unserviceable than the Air Forces in as many weeks. However, the facts were that the Army and Navy views prevailed and the enemy ports and sea supply continued to function.

the armies. To relieve the growing pressure on the Brenner Pass Line by air attack, a good deal of cargo was carried up and down Lake Garda. River and canal traffic between Venice, Chioggia and Porto Garibaldi was developing. Twenty-four barges were photographed one day in Chioggia alone and many more in the canals of the area. Shipping between Trieste and Venice began to increase.

Venice was busier than usual. It harboured two of the largest merchant vessels in the Adriatic, namely the ex-British Dalesman and the Mediceo of Trieste, as well as E-boats, barges and other craft: Trieste had lost in past weeks two large active merchant ships but was active. On 4 January, the Prometheus (3500 tons), not located since 2 January, was photographed in Pola.⁽¹⁾ Several large and previously inactive vessels were back in use there. It was a busy port, with both naval and merchant shipping on the move. Fiume was not so much the concern of Desert Air Force as of Balkan Air Force.

Desert Air Force intended to cover the situation closely during January, but, in the event, hit only a few barges; a mere handful of Bostons were able to carry out night reconnaissance. Low cloud, icing conditions and deep snow on airfields made any continuity or major effort out of the question. On the few fine days, targets in the North and the Balkans and over the front absorbed all the available effort. On 20 January, a single mission of Mustangs got through to Trieste and Pola and bombed shipping there with unobserved results. Altogether, January was a fruitless month as regards progress against enemy shipping. But a photograph taken of Venice harbour on the 22nd was to lead to effective action. Nothing had been contributed to the problem during November, December or January by the Strategic Air Force.

CAF/Intell.
O. R. Bs.

The credit for the sinking of the converted tanker Prometheus on the night 3/4 January went to Squadrons Nos. 458(2) and 272.(3) She had been photographed loading coal in the Arsa Channel on 29 December and seen leaving Pola for Trieste and Venice, then lost until sighted again and sunk. Rocket Beaufighters of No. 287 Wing sought shipping when the poor visibility allowed, but seldom found any. Venturas joined the search and all three types occasionally attacked merchant vessels, tankers, F-boats, barges, tugs and E-boats, but without any major observable results. A Ju. 188, doubtless on long range reconnaissance, was shot down on the night of 3/4 January near Mestre Point.

Strategic Air Force Participation in February 1945

All above main
references

At any time, the participation of Strategic Air Force in the tactical air campaign, with adequate safeguards, was a possibility that would have been seriously considered. But its terms of reference were, and remained until the last phase of the campaign, unfavourable to such a course. It will be recalled from a point early in this chapter that from

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- (1) After having been sunk the previous night by air attack.
 - (2) Wellington - C.A.F.
 - (3) R.P. Beaufighter C.A.F.

11 November onwards oil was stressed as first priority.⁽¹⁾ Communications targets were generally outside Italy, unless weather made it more expedient to attack them in Italy. This latter clause and a wide range of alternative targets, added to the growing concern within Mediterranean Allied Air Forces with the enemy merchant and naval shipping, undoubtedly were behind the series of strategic attacks on ports in February. A few were planned, but most were alternatives.

The effort opened with a light attack on Pola⁽²⁾ on 15 February; 49 Liberators and 22 Wellingtons were despatched to attack the naval armament depot there. Finding it obscured by 10/10ths cloud, they proceeded to Fiume, with the oil refinery⁽³⁾ as their target. The over-all results, as revealed by photographs, were reasonably good. There were 20 craters cutting tracks in the marshalling yards, complete destruction of a large building by the oil harbour and damage to several factories.⁽⁴⁾ On 16 February, Fiume was again visited,⁽⁵⁾ with an armed merchantman and the fitting-out basin installations selected for attack. The vessel was hit and exploded; the engine repair shop was set on fire after a violent explosion; adjoining installations, including the chemical works, were hit, the boiler shop completely gutted, the floating dock severely damaged and left submerged and an 86-foot launch sunk. There was general damage elsewhere.

17 February saw a joint Anglo-American heavy bomber attack on Trieste. Aircraft of the force of U.S. bombers both preceded and followed the aircraft of No. 205 R.A.F. Group over the harbour, with a total force of 47 Liberators. A force of 65 Liberators and Wellingtons bombed, mostly accurately, though a few, mistaking (it was a pardonable error) the local coastline for an almost identical one somewhat to the south, led to a wide dispersal of bombs. However, it was reported that the docks and shipping had been hit.⁽⁶⁾ The second American attack went in before photographs could be taken. The credit for the extensive damage throughout the dockyard and shipbuilding yard cannot be accurately allotted. The same day, 83 Liberators attacked Pola harbour and oil storage depot and 33 Liberators Fiume shipyard (the latter as an alternative target).

The offensive was resumed two days later, when Pola harbour and military installations were attacked in daylight by 10 Fortresses and 103 Liberators (as an alternative). Again, on 20 February, Pola was attacked, on that occasion by 48 Liberators; a concluding blow was struck on the night 3/4 March when, as a diversion to mining operations off Venice, 30 Liberators and 8 Wellingtons, aided by bulls-eye marking, dropped their bombs in a fair concentration on an island in Pola harbour, damaging workshops and administrative buildings.

(1) See M.A.A.F Operations Instructions 83 of 13 September, 87 of 19 October, 88 of 16 November, 101 of 26 January, 102 - 106 of 27 January, 109 of 1 March, 112 of 2 April and 115 of 23 April, O.R.B. Appendices.

(2) By 17 Liberators.

(3) 221½ tons.

(4) 224½ tons were dropped.

(5) By 46 Liberators and 22 Wellingtons, all of No.205 Group.

(6) Refer to 'Enemy shipping losses in the Mediterranean' (A.H.B.) for details of losses in this and all other air attacks on ports.

One of the most successful operations the R.A.F. Group had carried out for some time was the attack of 21 February on Pola naval armament depot. After three cancellations and one abortive attempt, a force of 56 Liberators and 17 Wellingtons reached the target area, to meet moderate to intense, accurate, heavy flak fire. Thirteen aircraft were hit, most of them not seriously; but one Liberator, believed hit in the bomb bay, caught fire and disintegrated. Another, disabled, returned to Iesi. Bomb strike photographs confirmed aircrews' belief in good concentrations. At 1630 hours, an extremely violent explosion was seen in the artillery depot, followed by flames up to 2,000 feet and a column of smoke up to 12,000/13,000 feet. At least eight large revetted buildings and several smaller ones were completely obliterated. Wooded areas cleared by the blast disclosed ruins of other buildings. A quay, two barges and the seaplane station causeway were all severely damaged.(1)

The reduction of Fiume's value to the enemy was continued by two surprise attacks in force on 19 and 20 February. Turning to the shipyards as the best alternative to their primary targets, 33 Liberators on 19th and 112 on 20 February bombed the shipyards, directly hindering supply to the enemy opposing Tito's forces and indirectly depriving the Germans of general flexibility.

After the big attacks of 17 February, only three days elapsed before bad weather in the north threw up Trieste as an alternative. Two hundred and four Liberators bombed the shipyards. There were a number of other very small alternative attacks on these ports and on 1 March the only attack of the period on the Arsa coal wharf - by four Liberators.

There were a considerable number of individual and chance attacks, especially in the latter half of February, by Desert Air Force Spitbombers against canal traffic observed in the course of their armed reconnaissances. There were three especially profitable days - 22, 23 and 24 February - when the Spitfires bombed to good effect in the Commacchio - Padua - Castelfranco area. It was estimated that in these three days alone some 20 barges were destroyed and some 65 damaged.

General Effect of February Attacks on Adriatic Ports

The cumulative bombing of Trieste, Pola and Fiume led to two interesting results. The first was the appreciable destruction and damage of port installations and naval and merchant shipping. Three merchant vessels and several coastal craft had been destroyed in Trieste alone. Although certain vessels returned there and fitting was observed, its capacity had been drastically reduced. The second result was a general exodus of shipping from the three ports and its concentration in Venice, further up on the mainland at Porto Marghera and in the coal base at Arsa Channel.

Among the enemy losses had been the merchant vessel Pluto, (the ex-Dalesman), and the Mediceo, torpedoed by Coastal Air Force, aircraft on the night 12/13 February off Gorle. Naval

(1) All this was effected for the expenditure of 258½ short tons of bombs.

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losses included the battleship Cavour, (1) another of 180 feet length, and the newly-completed auxiliary minelayer Locchi; a second War Partenope was damaged in dry dock. There was little the enemy could do to replace these losses. It was true that the destroyer Beograd was ready for service and that there were a few other repairable craft, but the gap torn in the naval forces was beyond repair.

OPERATION 'BOWLER' - THE AIR ATTACK ON VENICE

The Role of Venice in Enemy Shipping Activities

On 21 January, an air photograph of Venice showed two large enemy vessels active and ten inactive. Tactical Air Force looked on Venice as an obvious base for supplies by sea, fuel especially, to the Tenth Army front. In view of the satisfactory progress made to that date in interdicting the northern railways, they presented their view to Mediterranean Allied Air Forces and asked if the ruling restriction against the bombing of Venice precluded attacks on the harbour, if special care were taken to avoid damage to the city.

The reply of 25 January to this request was that, if undertaken, attacks would have to be restricted to a certain area defined by Tactical Air Force. Also, not only would attacks have to be visual, but selected crews would have to be used in order to ensure as far as possible that no bombs were dropped outside the target area. They knew of the sea traffic plying between Venice, Trieste and Pola and suggested that the desired results could be obtained by attacking this shipping when in Trieste and Pola, to which no restriction applied. They should maintain close liaison with Coastal Air Force, in case a suitable target for rocket-firing aircraft presented itself. Tactical Air Force then informed Desert Air Force that attacks on shipping in Venice harbour might be carried out by their fighter bombers, provided every precaution was taken to avoid damage to the city. They also gave permission for mining operations directed to blocking Venice and other Adriatic ports.

The Plan for the Air Attack on Venice

The original Desert Air Force operational instructions for the air attack on Venice harbour were in circulation by 30 January. It was pointed out that the enemy was seeking alleviation of the growing blockages on the northern railways. Coal was very short in the Venice area, hence much of the shipping from across the Adriatic. The shipping and barge concentrations in the Venetian lagoon should therefore be destroyed.

Two target areas were chosen. The first was the Porto Marghera docks, a regular concentration point for barges and sometimes for colliers. The second was the docks on the south-west corner of Venice island. Barge concentrations and merchantmen, if present, were to be destroyed. Very special stress was laid on the importance of not bombing outside the boundary line given on the photograph attached, which indicated the delicacy of the operation. Within a few feet of the dock boundary were churches, shops, a garage,

(1) Capsized.

tenements and warehouses. Beyond lay a close texture of dwellings of many centuries, housing, with the adjacent Giudecca island, a large population and many noble and beautiful buildings and works of art.

No. 239 Wing⁽¹⁾ was detailed for the attack on Venice and 79th Fighter Group for the attack on Porto Marghera. No. 3 Wing S.A.A.F. was to supply four aircraft against four flak batteries.

Reporting Locations, Method and Cover

Ibid

Because of the need for choosing a day when shipping was plentiful and of the strong local defences, photographic and tactical reconnaissance was to be flown. On the strength of the photographs, an advance warning of preliminary locations at the targets was to be sent to the wings, who were working on gridded harbour charts. The attack was to go in the next day, closely following a last minute tactical report on local positionings, and covered by Spitfires.⁽²⁾

In the case of both targets, the first phase was to be anti-flak attacks by fighter bombers. At Venice, in view of the heavy defences, it was intended that four Marauders should lead the fighter-bomber attacks on the batteries. There was at the period a total of 34 heavy, 7 medium and 24 light guns in the area Venice - Mestre - Porto Marghera - Porto Di Malamocco and Porto Di Lido. Then followed the main attacks. The larger vessels were to be attacked with 1,000lb. bombs and 500 lb. bombs; and rockets, when possible, were to be used against other targets. To synchronise all aircraft, No. 239 Wing was detailed to move forward with bombs on to Cesenatico airfield, refuel and stand by. Air/Sea rescue launches were to be stationed at points along the route.

Such was the rough plan which appeared after the Air Officer Commanding Desert Air Force's conference of 26 January and was developed while the removal of bombing restrictions was under discussion.

The Plan to mine Venice and other Adriatic Ports

On 9 February, No. 205 Group, to whom much of the credit for the idea was due, was detailed by Strategic Air Force for the task of mining the North Adriatic ports as from 21 February onwards.⁽³⁾ There was point in the suggestion that aircraft should lay the mines. Naval laying from surface craft in constricted waters closely patrolled by enemy craft presented too high risks.⁽⁴⁾

No. 205 Group designed a quadruple operation, comprising two forces laying mines in the approaches to Venice and Pola, while diversionary bombing attacks proceeded against Porto Marghera oil storage depot and Pola naval dockyard respectively. Aircraft were standing by on the night 28/29 February but the mines could not be prepared in time for laying.⁽⁵⁾

-
- (1) Mustangs and Kittyhawks.
 - (2) Controlled by No. 1 Mobile Operations Room Unit.
 - (3) There were 150 naval mines Mark AMK.7. available.
 - (4) M.A.T.A.F/S.A.S.O., O.R.Bs.
 - (5) No. 205 Group O.R.Bs.

The Mining of Venice and Pola(1)

Everything was ready on the night 3/4 March. Eight Liberators(2) successfully laid, from low level, 42 mines in two beds immediately outside the main Venice harbour entrance and six in the entrance itself. Light flak tracer was encountered from Porto Di Lido, but no aircraft were hit. Of the diversion force, two Halifaxes and twenty Liberators bombed the oil storage depot, achieving fair concentration but, according to later photographs, adding no serious damage. An interesting feature of the occasion was the enemy air activity, pointing to the success of the diversion.

Across the water, four aircraft laid twenty-four mines from low level in the Fasana Channel and another dropped five mines into Pola harbour. The low level miners were engaged by light flak from Brioni Island, but none were hit. A photograph taken after the diversionary attack on Pola naval dockyard suggested that it had some success. Although it attracted little opposition and the marking was very accurate, the aiming was uneven. There were several explosions in shops and administrative buildings, and a submarine was damaged.

Air Reaction to the Porto Marghera Attack

The heavy bombers of No.205 Group reported twelve sightings of enemy aircraft, including Ju. 88s, F.W.190s, Me.410s and Me.109s. There was no combined enemy attack. Crews stated that a jet aircraft, conspicuous because of its high speed, was present. As a Halifax had been on fire for a short period in the target area and a Liberator had had exhaust damper trouble, the reports were treated with some reserve.

The other aircraft observed belonged to the units last referred to in Chapter 4. At the time of the mining of Venice, the Axis had about 155 aircraft based in the North of Italy. There was a mixed long range reconnaissance force(3) of 20 aircraft, 30 tactical reconnaissance aircraft,(4) the 3 jet aircraft, 60 Italian-piloted single-engined fighters,(5) 25 night ground attack aircraft,(6) 10 night fighters(7) and 10 Italian-piloted torpedo bombers.(8)

The reason why the aircraft with which this narrative is concerned so seldom met these enemy forces was that the main fighter force had been organised to intercept long range strategic aircraft bound for targets outside Italy. The general practices of the reconnaissance aircraft were known to our recording units; the torpedo bombers were seldom in evidence and the few occasions when Stukas approached the battle area had no more than the most paltry nuisance value. In fact, there had been none in February. Flares were

-
- (1) of No. 240 Squadron and No. 2 S.A.A.F. Wing.
 - (2) No. 205 Group O.R. Bs.
 - (3) Ju.188s, Ju.88s and Me.410s at Bergamo and Ghedi.
 - (4) Me.109s and F.W. 190s at Udine.
 - (5) Me.109s at Udine, Aviano, Lonate and Osoppo.
 - (6) Ju.87s at Villa Franca and Ghedi.
 - (7) F.W. 190s at Villa Franca and Ghedi.
 - (8) S.M.79s

dropped over Naples: on one of these occasions the intruder was destroyed before he could return to safety with his photographs. The handful of night fighters could be turned to dual purposes. There was probably sporadic air supply, but not on a sufficient scale to warrant concern.

Close Air Watch on Venice(1)

D.A.F. and
No. 239 Wing
O.R.B.s

To the south-west of Venice lay the docks, standing out in clear relief from the rest of the island. There had been for some time past a number of vessels, both large and small, lying inactive alongside the quays in the New and Maritime Station Basins and the Scomenzera canal. In view of potential refitting, they were of more than passing concern. But what interested Desert Air Force most was the movement of active merchant and naval vessels and tankers within the dock area outside the Venice sanctuary. Daily photographic reconnaissance was now carried out whenever weather permitted.

The situation had quickened in intensity by 18 March. The S.S. Otto Leonhardt(2) was loading at the western quay of the Maritime Station Basin. Two War Partenope torpedo boats, an F-boat, a coaster and a number of barges were nearby and there was a great deal of activity. No. 239 R.A.F. Wing and 79th Fighter Group (U.S.A.A.F.) were alerted. Visibility was bad on 20 February and it was feared the Germans would speed the loading of the Otto Leonhardt and she would sail that night. On the morning of 21 March a photograph was taken by an aircraft. One small vessel had sailed, but the Otto Leonhardt was still there loading: a coastal tanker had moved up ahead of her. The other vessels were still there. The time for attack was ripe. Weather reconnaissance was flown every two hours until conditions were considered favourable. This was at 1530 hours. The early morning mist and low cloud had cleared.

(1) The main part of Venice is built on a compact group of islands in the middle of the large, shallow Laguna Veneta. Some of the suburbs of the city, however, extend on to other more scattered nearby islands. The main industrial sections of Porto Marghera and Mestre are nearby on the mainland. Causeways for road and railway link the city with these industrial suburbs. The Laguna Veneta, about 5 miles wide and 20 miles long from north to south, extends between the mouth of the Brenta River in the south and the Sile River in the north. The lagoon is separated from the gulf of Venice by a chain of long, low, narrow, sandy islands and spits. The city of Venice lies near the junction of the laguna viva and the laguna morte. It extends over about 120 islands, which owe their origin mainly to 13 centuries of human ingenuity, most of the houses being built on wooden or concrete piles.

Most of the main part of the city is residential. The Rialto district, (the original nucleus), remains an important centre of communications (although motor cars are rarely seen), but the civic, religious and artistic centre is St. Mark's Square. The Grand Canal is lined with palaces of the great Venetian families, but north of the Ponte Di Rialto (towards the station) they tend to be used for commerce and as warehouses. The main industrial establishments are in the west, generally north of the Grand Canal and near the station, though there are some south of it, especially near the Maritime Station Basin. The royal arsenal and its docks are at the eastern end of the city.

(2) 3,200 tons.

Execution of Operation 'Bowler'

Venice lay below in the sunlight. First, 16 Mustangs⁽¹⁾ and 20 Thunderbolts⁽²⁾ attacked the 45 flak positions with bombs, rockets and machine gun fire. Some of these positions were on armoured and concreted islets, very difficult to hit; but all were silenced by the attack. Closely following came in No. 250 Squadron⁽³⁾ of Kittyhawks, then others, and the 16 anti-flak Mustangs, until there were 24 Kittyhawks and 40 Mustangs bombing the dock area.⁽⁴⁾ The attack lasted for 20 minutes.⁽⁵⁾ One dock-side explosion was so great that its concussion was felt by the photographic Spitfire at 20,000 feet and its resulting columns of smoke dominated a scene of increasing obscurity and chaos.⁽⁶⁾

The first wave scored direct hits on the Otto Leonhardt, struck two warehouses on the quay, and scored a near miss on a torpedo boat at the western quay. The second formation found the target partially obscured by smoke, but scored direct hits on the coastal tanker at the western quay and on three adjacent warehouses. Another bomb fell close to the Otto Leonhardt, now well on fire; a barge nearby was smoking. The third wave scored direct hits on the escort vessel lying between the eastern and Scomenzera quays. Two barges broke up; four more direct hits were scored on the eastern and western quays. By the time the last wave went in, the Otto Leonhardt was ablaze and the air thick with smoke and dust. Then followed the major explosion. The bombing continued, but accurate visual observation was by then impossible. Only one Allied aircraft was hit: the pilot, who baled out, was rescued. The attack on Porto Marghera was never carried out.

The Damage in Venice Docks

Ibid

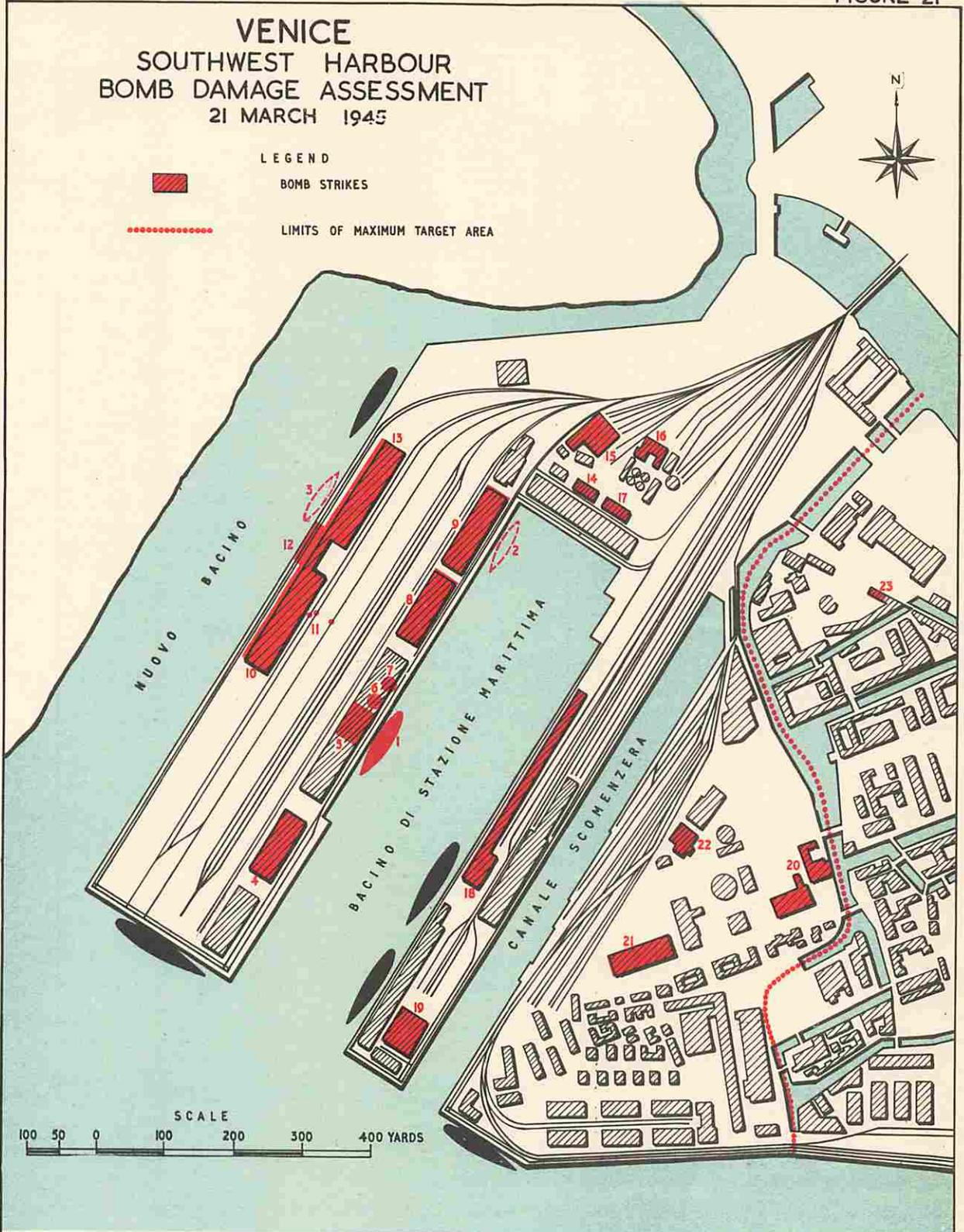
How cleanly the task was accomplished can be seen from the accompanying figure drawn from the photograph taken by a Spitfire⁽⁷⁾ at the time. The Otto Leonhardt was severely damaged (it was submerged two days later); one torpedo boat and one tanker were sunk; several warehouses were gutted or severely damaged; tracks were cut and wagons damaged; buildings suffered damage. Only one bomb fell outside the target area and destroyed what appeared to be a small private dwelling. This spot was embraced by the water works area, however, and did not form part of the residential district proper.

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- (1) Of No. 260 R.A.F. Squadron.
 - (2) Of 79th U.S. Fighter Group.
 - (3) Wg. Cdr. Westlake leading.
 - (4) No. 1 M.O.R.U. records an escort of 34 Thunderbolts of 79th Fighter Group. This was impossible, as there were only 3 squadrons in the Group and they were already engaged.
 - (5) 69 x 1000 lb. and 31 x 260 lb. bombs were dropped.
 - (6) No. 1 M.O.R.U. O.R.B. No. 239 Wing O.R.B. D.A.F. O.R.B. M.A.T.A.F. Monthly Ops. - Int. Bulletin March 1945. (A.H.B./IIJ11/18).
 - (7) Of No. 285 Wing.

VENICE
SOUTHWEST HARBOUR
BOMB DAMAGE ASSESSMENT
21 MARCH 1945

LEGEND

- BOMB STRIKES
- LIMITS OF MAXIMUM TARGET AREA



- 1 340 FOOT M/V OTTO LEONHARDT 3200 TONS SEVERELY DAMAGED AFT
- 2 WAR PARTENOPE TORPEDO BOAT 697 TONS SUNK
- 3 COASTAL TANKER 1000 TONS SUNK
- 4 WAREHOUSE 290x100 FEET HALF DESTROYED
- 5-7 ROOFS OF WAREHOUSES PENETRATED BY BOMBS WHICH CAUSED FIRES AT 6 AND 7
- 8-10 TWO WAREHOUSES 8 & 9 COMPLETELY GUTTED AND ONE 10 SEVERELY DAMAGED
- 11 3 TRACKS CUT AND 20 WAGONS ON SIDINGS DAMAGED
- 12 HOLE 170x100 FEET BLOWN IN QUAY
- 13-14 WAREHOUSE AND 2 BUILDINGS VERY SEVERELY DAMAGED
- 15-17 ROOFS OF 3 SHEDS BADLY DAMAGED
- 18-19 ONE WAREHOUSE 18 COMPLETELY GUTTED; ROOF OF WAREHOUSE 19 PARTIALLY DESTROYED
- 20-22 DAMAGE TO ROOFS OF 3 LARGE BUILDINGS IN GASWORKS
- 23 SMALL BUILDING DESTROYED IN WATERWORKS

Venice City's Immunity from Damage

In the official reports⁽¹⁾ of war damage in Venice there is mention of three cases only. One is of minor damage to the Tiepolo frescoes in the Palazzo Labia, as a result of the explosion of a German ammunition ship, but no date is given. Another is of the campanile of the church of St. Niccolo Dei Mendicoli being struck by a German shell during the evacuation. The third is of the loss of some window glass. Unless, as is unlikely, further evidence to the contrary comes to light, the Allied Air Forces' crews may be granted a clean bill as regards Venice.

Operation 'Bowler' set the seal on the series of attacks. The enemy's sea supply in the Adriatic never recovered and his general system, shaken seriously in the Ligurian Sea by a similar offensive, functioned thereafter on an insignificant scale. The naval strength, too, had been eaten away by air and sea attack, and some of what had escaped had been attacked a few days before the Venice operation at Monfalcone.

The 205 Group Attack on Monfalcone

Monfalcone was valuable to the enemy because of its berthing and repair facilities.⁽²⁾ Naval craft evicted from the other Adriatic ports by the February air attacks had been observed making for the harbour. There were three floating docks and, a matter of the greatest interest to the Allied Command, two 290-foot submarines fitting out.⁽³⁾

On 16 March, Monfalcone was attacked by 60 Liberators of No. 205 R.A.F. Group⁽⁴⁾ without loss. A small oil lighter was hit and exploded. Strikes were recorded across the shipbuilding yards and the C.A.N.T. Aircraft works; other installations and the mole were hit. It was proved later that the three floating docks had been sunk and the two submarines severely damaged. There were odd attacks thereafter on Monfalcone and other Adriatic ports. The crisis had passed, however. The Axis shipping moved in small units until captured or sunk, but the pattern they wove no longer counted to any appreciable degree.

MARITIME AIR WAR IN THE LIGURIAN SEA -
WINTER 1944 - 1945

The Ligurian Ports

From November 1944 to April 1945, the most important active ports along the Ligurian coast, running from West to East, were Ventimiglia, San Remo, Imperia, Savona, Varrazze, Genoa, Rapallo, Sestri Levante and La Spezia. From these bases, mostly at night, single merchant craft and convoys maintained the supply to the Fourteenth Army of ammunition, rations, hay and straw, moved essential coal and transported dismantled industrial equipment and scrap metal for transit to the Reich. Naval escorts were often provided. This

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- (1) Works of Art in Italy. Losses and survivals in the war Pt. II. H.M.S.O. 1946. Compiled from War Office reports by the British Committee on the Preservation and Restitution of Works of Art, Archives and other Material in Enemy Hands.
 - (2) Developed by the firm of C.N.T. - Cantiere Navale Triestino.
 - (3) No. 205 Group O.R.Bs.
 - (4) Of Nos. 231, 236, 240 and 2 S.A.A.F. Wings.

traffic persisted all through the last winter of the war. In addition to the merchant shipping, a small but active naval force of mixed units continued to lay mines, attack our surface craft and port defences and furnish convoy escorts. Among these were some interesting one or two-man explosive craft and submarines. Genoa and San Remo (adjacent to the Franco - Italian front)(1) were the most active naval bases. Savona, Genoa, Imperia, Sestri Levante and La Spezia were the main supply bases. La Spezia had the additional reputé of a great, heavily defended hinge on the left flank of the Allied front.(2)

La Spezia (3)

The harbour and defences of La Spezia had frequently been attacked by Allied aircraft in 1944. The damage inflicted was turned to good account by the Germans at the expense, as was normal, of the Italians. An interesting account of the dismantling of La Spezia Arsenal was given by a prisoner-of-war: it was confirmed from other sources that heavy sea and railway traffic, under attack from Allied air formations, was devoted to this class of transport.

In April 1944, it was stated, the Italian directors of La Spezia Arsenal were informed that on account of Allied air bombing the German High Command had decided to remove all machinery and stores from La Spezia to a railway tunnel near Genoa, in which work was to be continued. In the course of the next few weeks, 35 trucks were loaded under supervision of Italian volunteer mechanics and eventually reached Grondola railway tunnel on the Spezia - Parma line, to join six to seven hundred other trucks filled with industrial material. This was all in-keeping with a longstanding German policy of the stripping and despatch to Germany of Italian industries, in so far as consistent with the continuance of active production in Italy for the benefit of Germany.

Photographs revealed the progressive sinking of blockships to prevent landings, the entry of Allied offensive craft and the eventual use of the port. On Punta Bianca several powerful coastal batteries were installed south-east of the harbour. The Germans attached great importance to this base, now the most southerly loading port. It would have needed a combined operation to neutralise it. The extreme vulnerability of its main east-and-west railway and road from sea and air ceased to apply between Sestri Levante and La Spezia. There, a large section ran through tunnels: the hope of hitting traffic concentrations was thus reduced to a minimum in that area and marshalling out of the reach of aircraft proceeded in safety.

Axis Merchant and Naval Forces in the Ligurian Sea

The strength of the Axis merchant and naval forces varied from week to week. On the one hand, they suffered loss and damage to all categories by Allied air and naval offensive action. On the other, they were reinforced by building, refitting and repair and to some extent by ingenious technical

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- (1) Officially referred to as the Alpine Front.
 - (2) The German System of Supply in the Field of 1943/45 AFHQ-G-2, Feb. 1946. (A.H.B./IIJII/58/39).
 - (3) 15th Army Group Intelligence Summary No. 80 G-2., 6 Feb. 1945. (Cabinet Historical Archives).

developments and new fighting craft. It will suit the purpose of this survey if the position at the end of January 1945 is used.

Merchant shipping had been reduced to one merchant vessel of 1,000 tons, five K.T. ships (of which three were active) 35 supply barges, a dozen or more small coasters and schooners, and 35 F-lighters (dual-purpose craft with heavy armament, fitted for both cargo carrying and escort duties).

As naval forces, the enemy employed one fleet destroyer,⁽¹⁾ two modern torpedo boats, four escort corvettes, two minelayers, five motor torpedo boats⁽²⁾ and ten R-boats, used as motor minesweepers or escorts. All were based at Genoa and used in defensive roles. The torpedo boats and minelayers both laid mines; the remainder often escorted convoys. For offensive purposes the enemy had relied, since the landings in Southern France, on a number (unknown at the time) of one-man explosive motor boats, human torpedoes and one-man midget submarines. These, based in San Remo, had been used with a conspicuous lack of success against Allied forces bombarding and minesweeping off the French and Italian Rivas. Some were sometimes photographed by our aircraft. One photograph showed twenty one-man boats in San Remo.⁽³⁾

Aerial Minespotting

One of the tasks of Coastal Air Force was the spotting, plotting and reporting of mines laid by these Axis surface craft. The extent of the threat may be gauged from the report on naval operations at Appendix 30. The Navies appreciated this contribution by the Air Forces as a necessary ingredient in their progressive taking-over, opening-up and maintaining of Italian ports, on which in turn the supply of much air force equipment and stores depended.

Before the Allied minesweeping forces began operations, aerial reconnaissance was carried out and results passed to the Senior Officer Minesweepers. The best types of aircraft for the task were considered by the Navy to be the Walrus and Catalina of Coastal Air Force, or the small Piper Cub also used for artillery spotting. They flew normally at 400 feet at a speed of 70 knots. The ideal weather was a smooth, glassy sea, a blue sky and clear atmosphere. The best time was between 1100 and 1400 hours, when the sun had reached an altitude of 60 degrees and the glare on the sea surface was at a minimum.⁽⁴⁾ Smoke floats were dropped where mines were sighted.⁽⁵⁾ The records show such operations by Coastal Air Force aircraft proceeding steadily throughout the winter. They performed a task impossible by any other means, for their speed and flexibility enabled them to cover a greater area and to give earlier warning, providing security and greater freedom of action to our surface forces.⁽⁶⁾

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- (1) The ex-Yugoslav 'Dubrovnik', mounting four 5.5" guns.
 - (2) Italian Mag. type.
 - (3) M. A. A. F. Intelligence study in No. 116 Air Intelligence Weekly Summary, 4 Feb. 1945. (A. H. B./IIJ1/43).
 - (4) Runs were best made at right angles to the sun's bearing, since nothing 'up sun' could be sighted.
 - (5) Position, direction and length of lay were ascertained.
 - (6) Notes on opening up of captured ports in the Mediterranean, Admiralty M. 02556/45 by Rear-Adml Morse.

Allied Naval Forces

Although the detail of naval operations does not come within the scope of this narrative, some idea of their general nature is essential at intervals for the appreciation of how air operations fell into the over-all pattern. The terrain was peculiar in that there were two seas flanking the peninsula; to the east a partisan campaign drawing off an increasing volume of men and equipment and to the west a minor front on the Franco-Italian border. Tactical and Coastal Air Forces were both concerned with the sea flank and co-operated with the Navies.

The naval forces at the time General Alexander became Supreme Commander in December 1944 included four British cruisers, (1) one American, five French, and four Italian cruisers, six destroyer flotillas of the Royal Navy, twelve American, nine French, seven Greek and seven Italian destroyers. A Flank Force was formed to operate in the Gulf of Genoa and the Ligurian Sea. In the Adriatic the organisation was one of smaller coastal craft, some of which later merged with heavier ships to assume duties from Yugoslav bases. (2)

Naval Operations in the Adriatic affecting the Italian Campaign

Naval craft were always on the look-out for enemy shipping in the Adriatic. In January, Split and Zadar were in Partisan hands and British naval forces operating from them and various island bases. There were several brisk engagements with E-boats and small destroyers. In February, two large merchant vessels and three armed patrol craft were sunk. A few explosive motor boats were sunk on the 12th. Actions in March, mostly at night, resulted in the destruction of five merchant ships, six F-lighters and several small craft. There was much work sweeping channels free of mines, many of which were spotted by Allied aircraft. A cable was laid from Zara to Ancona. On 26 March, the latter port discharged its millionth ton of cargo.

April proved a particularly active month for Allied coastal craft. In the course of ten clashes with enemy craft, eleven F-lighters, a torpedo boat and a loaded schooner were reported sunk, with serious damage to three of our craft. Enemy midget submarines were active in the landing of agents. Joint action by aircraft and anti-submarine vessels proceeded, but the only sinking fell to the credit of a Wellington crew, who sank the C. B. 6 submarine during the night of 2/3 April 40 miles eastward of Porto Corsini; her personnel were picked up by a Catalina.

Naval Operations in the Ligurian Sea and Gulf of Genoa

In January, Flank Force ships bombarded enemy territory near San Remo and Porto Maurizio. Axis supply traffic was hampered by bombardment of barges at Pietra Ligure. In the course of numerous minor engagements, several explosive motor boats and F-lighters carrying ammunition and troops were sunk.

(1) Of the 15th Cruiser Squadron, R.N.
(2) Admiralty Historical Section (Appendix 30).

In February, San Remo and Ospedaletti were bombarded, an armed supply vessel torpedoed (1) and two small merchant ships sunk. (2) Porto Maurizio, San Remo and Bordighera were shelled. American motor torpedo boats sank two F-lighters, but others were less fortunate on the night of 13/14 March, when radar-controlled fire from Savona forced their withdrawal. There was a successful engagement in the Gulf of Genoa with enemy destroyers on a minelaying expedition. The Supreme Commander attributed a large part of the credit for the sinking of two torpedo boats (3) to the constant and accurate information supplied by plots taken by the R.A.F. radar station on Cap Corse and the R.N. radar station at Leghorn. The operation probably saved one of the Leghorn-Marseilles convoys from destruction: it was turned back just in time. Continuous minesweeping was carried out through the winter and until the end of operations. (4)

Enemy Merchant Shipping Activities in the Ligurian Sea

The principal activity continued, as for some months past, to be evident between Genoa and La Spezia. The capacious K.T. ships sailed only on this run, in one or two convoys nightly in each direction. A typical fast convoy comprised a K.T. ship, with escort. A slow convoy comprised armed F-lighters and supply barges. West of Genoa, Savona was the main port of call for coasters, F-lighters and supply barges. West of Savona there was only occasional activity.

Between 1 January and 1 April 1944, the supplies carried monthly by sea to the Fourteenth Army along the west coast were between 8,000 and 12,000 tons, i.e. about 12 to 18 per cent of the total supplies for that army. Statistics for the corresponding period of 1945 show the damaging results of Allied offensive air and sea action. The monthly figure had by then fallen to 1,500 to 2,000 tons of supplies to Army Liguria (5) and Fourteenth Army, representing 6 to 8 per cent of the total supplies. Although the figures for the Adriatic had themselves fallen from 4,000 to 6,000 tons to 2,500 to 4,000 tons, the enhanced activity on this eastern sea front did much to compensate the enemy. Nevertheless, the bare 1,500 odd tons a month in the Ligurian went a long way to maintain the Fourteenth Army in some of its essentials and it would have been highly desirable if the Allies could have prevented it passing. But this they failed to do.

Apart from this southbound traffic, the following figures of northbound goods for German industry and armaments (6) carried monthly show how much was being done, in spite of our great air superiority, to bolster up the economy of the Reich. (7)

-
- (1) Off Mesco Point.
 - (2) Outside Savona.
 - (3) TA. 24 and TA. 29.
 - (4) For a fuller record of naval operations in the Mediterranean from January to the end of the campaign refer to Appendix 30.
 - (5) Formed in the early summer of 1944.
 - (6) Wirtschaft and Ruestungsgueter.
 - (7) M.A.T.A.F. Monthly Intelligence Bulletin. (A.H.B./IIJ11/18)
T.A.F. O.R.Bs. German Field Supply Italy 1943-45 CMF. Hist. G-2 A.F.H.Q. (A.H.B./IIJ11/58/39).

From Savona to Genoa over 2,000 tons of coke; from La Spezia to Genoa, 500 tons of chrome and nickel-yielding shells, 1,000 tons of scrap and 250 tons of copper ore; from Sestri Levante to Genoa, 1,500 tons of manganese ore, 250 tons of steel ingots and 3,000 tons of fireproof clays. All this, added to the 1,500 tons of bauxite, large quantities of salt, cement, grain, flour etc. passing round the head of the Adriatic still represented an appreciable contribution; the cargo ships also helped the enemy to retain their hold on the civilian population by carrying from Genoa to La Spezia, Sestri Levante and Imperia over 8,000 tons of flour, rice and sugar monthly. (1)

Inconclusive Air Operations in November and December

Air operations along the Ligurian seaboard during November and December were inconclusive. The Alpine front, like the mainland front, was in a condition of partial stalemate. The main tactical air forces based in Italy and Corsica were switched to interdiction. The strategic air forces were bent on objectives outside the Italian theatre. The weather steadily worsened. Coastal Air Force, reduced to the dimensions of an air combat team, spread itself as well as it could over reconnaissance, armed sweeps, occasional attacks on land targets and mine spotting. Towards the end of November, there were nine minor attacks on blockships at Genoa and La Spezia, which changed nothing. On 16 December, a few fighter-bombers set three merchant vessels on fire at La Spezia: three days later a formation bombed the guns there.

Enemy sea supply traffic continued at about normal during these two months. Of the five K.T. ships available, three ran between Genoa and La Spezia, one was in dry dock, one inactive. Genoa and Savona showed a small increase in merchant shipping. There was a steady movement of supply barges and F-boats, especially to West Ligurian ports. Twelve one-man explosive motor boats were photographed in San Remo. Shipbuilding was observed at Sestri Ponente (near Savona), where E-, R- and F-boats were assembled; but the yards at Genoa and La Spezia, increasingly the object of Allied reconnaissance aircraft, were idle.

Spasmodic January Air Attacks on Ligurian Ports

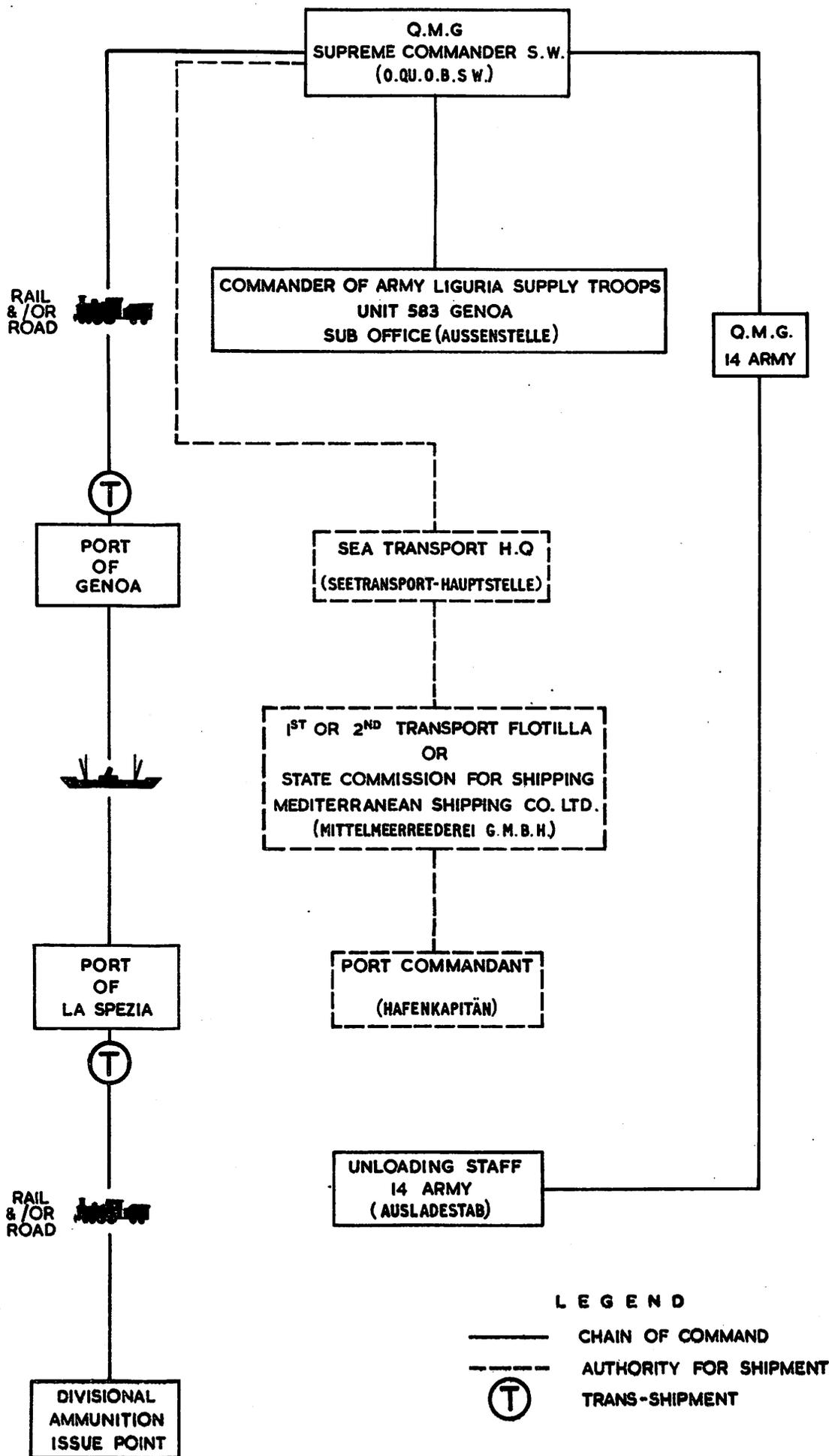
Ibid

It was hardly worth despatching aircraft to attack shipping in January. Spitfire reconnaissance never reported anything by day, for the simple reason that most vessels sailed at night. Yet this expensive day reconnaissance, once initiated, had to be continued as a deterrent. If it had ceased, the enemy would certainly have increased his daytime sailings. The only attacks likely to repay the effort were, in spite of the opinions held against them, attacks on harbours and shipping in them. Bad weather and other more urgent commitments only allowed XXII Tactical Air Command to carry out strikes on five days. Coastal Air Force recorded small offensive actions on nine days.

XXII Tactical Air Command's most spectacular effort in a modest month was made on January. It was a bad day for flying,

(1) Figure 22 shows the lay-out of responsibility of the Axis sea supply organization.

AXIS SUPPLY TRANSPORT IN THE LIGURIAN SEA CHAIN OF COMMAND AND AUTHORITY



but there was a break in the weather round Genoa, a phenomenon by no means unfamiliar. In the course of armed sweeps, Thunderbolts turned from primary, cloud covered targets to Imperia harbour and Genoa docks. A 5,000-ton merchant vessel was seen to be damaged at Imperia. At Genoa one large and three small petrol tanks were destroyed. Two attacks were made on the aircraft carrier Aquila. The first missed it altogether. The second scored two direct hits and four near misses, damaging and leaving it burning. There was no question of it being used again as a carrier, but it was a good potential blockship or supply ship. On 10, 25 and 26 January, Thunderbolts on area sweeps included calls at San Remo and Savona, Genoa and Savona and Genoa respectively. Irritating as these minor operations were to the enemy, his practised repair organization undoubtedly made light of the damage. More would have been attempted if it had been possible, for the full picture of the extent of enemy sea activity was becoming apparent. Weather, other commitments and the very wide selection of tactical targets made it difficult to bring any major individual task to a conclusion.

Coastal Air Force aircraft, on the nine days they worked in the area, maintained the steady attrition of enemy equipment, kept him on the alert and absorbed his manpower. Reference to operations in support of the Franco-Italian front by British, American and French aircraft based in the South of France will be omitted, as the concern here is with the supply of the main front. On the night of 1/2 January, three South African Air Force Venturas(1) were despatched on reconnaissance of the Gulf ports. One was forced back by adverse weather, another observed three vessels leaving Genoa and five barges leaving La Spezia. The third ran into violent action with a convoy of four barges and three F-boats off Sestri Levante. Twenty bombs were dropped across the convoy and showers of sparks followed the bursts. Thick flak came up from the escorts and prevented the Ventura from getting close enough to check results. The aircraft came in again and dropped another 20 bombs, straddling the F-boats, who although believed hit, proceeded later on their course. The Ventura dropped to 1500 feet to machine-gun the convoy, through intense flak fire, but was still unable to check the extent of the damage. Again on the next night, a formation of five Venturas(2) demonstrated the formidable difficulties of night attack on mobile and well-defended targets at sea without the aid of modern precision instruments.(3) Reconnoitring between La Spezia and Genoa, five Venturas picked up three F-boats off Sestri Levante, under way. The first aircraft hit one ship. The second was about to bomb when the flash and smoke from the hit ship persuaded delay. Soon after, he dropped five bombs, but missed. The vessels continued on their course. So also did five barges off Santa Margherita, bombed by the third aircraft in the face of flak dense enough to prevent observation of results. The fourth aircraft dropped 40 small bombs on the town. The fifth dropped the same weight on

-
- (1) Of No. 17 Squadron.
 (2) Also of No. 17 S.A.A.F. Squadron - B-34s.
 (3) For an official admission of the difficulties of effectively attacking small precise targets at night refer to Air Ministry Signal AX.303, 23 Nov. 1944 (A. H. B. /IIJ1/90/4(b), Encl.49a).

Rapallo harbour, but returned without definite claims.

No. 38 Sqn. ORBs

M.A.A.F. (Ops
Summary No. 433
O.R.B.

A parallel case illustrating the hazard of such operations will now be quoted, although it occurred a month later. On the night of 27/28 February, two Coastal Air Force Wellingtons (1) based in Italy were despatched to illuminate enemy shipping off Portofino for attack by surface craft, and to bomb shipping in the area. One aircraft reported to destroyers the presence of four barges off Portofino. It illuminated the target, but the range was too great for the destroyers. The Wellington dropped 11 bombs, scoring a near miss, but apparently caused no damage. The second aircraft dropped 10 bombs on two barges off the port; cloud obscured results. One bomb hung up and could not be jettisoned. On landing, the aircraft burst a tyre, swung and collided with another aircraft. The bomb exploded and both aircraft were destroyed by fire. The crew were saved.

The Expensive Nature of Air Superiority

Day after day and month after month, similar deterrent missions achieved similar barren results and aircraft returned from wide sweeps with the same monotonous comment of 'nothing to report'. The Operations Record Books are swollen with details of this far reaching system of umbrella patrol which our air superiority made possible. Undoubtedly there was a constant drift towards redundancy, but efforts were periodically made to correct this. Under reasonable conditions, our intelligence was well fed by reports of air sightings. It was unfortunately not always possible to take advantage of the situation thrown up or, if it was, to operate with the equipment the task demanded. Waging an offensive air war was far more expensive and wasteful than waging a defensive one with no air force to speak of. What had to be proved was that the attrition and restriction imposed on the enemy could, at a given point, surpass his powers of maintaining his forces and distributing agencies before the Allied personnel and material were exhausted. It was, on the whole, a very close thing and what would have happened in Italy but for the pressure of external events is highly problematical. Probably a succession of stalemates, with the superior Allied air power and productive potential turning the scale in their favour.

Renewed Enemy Activity in February

Ibid

February began normally. Coastal Air Force's effort remained low, with mine-spotting and reconnaissance almost the only maritime activity. But the latter end of the month brought increased enemy activity. Genoa, La Spezia and Savona were all busy. On 20 February, two fresh active merchant vessels were photographed in Genoa; and it was realised in this period that the Dominante (2), which usually ran between Genoa and Savona, had made at least one run to La Spezia. In La Spezia a sunken merchant vessel (3) had been refloated and repaired and was ready to sail. It would hardly be seaworthy enough for coastal work in convoy, but might very well serve as blockship for the gap at the western end of the harbour.

-
- (1) No. 38 Sqn.
 - (2) 1,000 tons.
 - (3) M.712 of 480 tons.

Sesto Calende assembly plant was chosen for attack on two consecutive days in an effort to stop the output of small offensive naval craft. On 24 February, 18 Mitchells of Tactical Air Force dropped 137 bombs in a good concentration, mostly on the west buildings. The next day, a similar force attacked also visually, but reported no confidence in their bombing. Photographs showed an overall result by no means unsatisfactory. Seventy-five per cent of the buildings in one area and fifteen per cent in another had been either destroyed or damaged. Coastal Air Force, in the same period, made small attacks on a headquarters and the harbour at San Remo and on Imperia. The San Remo attack may have done a little to enhance the effects of the naval bombardments, which had led to a notable decrease in the output of midget assault craft. There were two of these naval attacks in February. (1) One on the 6th and another on the 22nd. On 12 February, two French Thunderbolts (2) on tactical reconnaissance made machine gun attacks on the Royal and Imperial hotels. The following day a force of 24 Thunderbolts of the same unit dropped 48 bombs on the Royal, straddling the target. Although not stated, it may be safely assumed that these hotels were Axis headquarters.

Allied Coastal Air Force on Southern France Bases

M.A.A.F./S.1643/
Org.3 31 Jan.
1945. H.Q.,
M.A.A.F., O.R.B.,
App.C/Org/12 Feb.
1945

These incidents at San Remo are reminders not only that there was a minor front in the area, but that Coastal Air Force units were at the time well established in Southern France. They supported the Alpine front tactically, and with sea reconnaissance and anti-shipping strikes. Their operations must be seen not only in this light, but as part of the Allied air security pattern for the Ligurian Sea and Gulf of Genoa. San Remo served the enemy in a dual role operationally, as the seat of headquarters and as a busy constructional naval base.

No. 340 R.A.F. Wing at Aix-en-Provence controlled five squadrons, with an initial establishment of 84 aircraft. Typically enough, the night-operating Beaufighter squadron, (3) based at Le Vallon, was American and the other four were French. Two of these latter, (4) also based at Le Vallon, were fighter units flying Airacobras. The third (5) based at St. Mandrier, and the fourth (6) based at Cuers, were employed on air/sea rescue work. No. 22 (S.A.A.F.) general reconnaissance squadron was on loan to Gibraltar and in view of the periodic submarine attacks on Allied ships in the approaches to the Straits, was fully employed. (7)

A Coastal Air Force commitment of importance was the surveillance of Allied convoys approaching the ports captured

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- (1) Refer Appendix 30 for record of naval operations in the Ligurian Sea and the Gulf of Genoa.
 - (2) Of III/6 Squadron.
 - (3) No. 417.
 - (4) II/6 (Vendée Squadron) and III/6 (Roussillon Squadron) of No.3 Escadre de Chasse in the French Air Force chain of command.
 - (5) No. 2 S, flying Latecoeres.
 - (6) No. 4 Flying Walruses.
 - (7) On 17 February the American Liberty ship Michael J. Stone and the British tanker Regent Lion were torpedoed 10 miles N.W. of Tangier.

in Operation 'Dragoon' in August 1944. By this time a high rate of discharging of war cargoes for the N.W. European front was being maintained. Marseilles, for example, cleared in February alone 450,109 tons of dry stores, 29,701 tons of fuel and 14,753 vehicles.(1)

Decline of Anti-Shipping Air Operations in March(2)

While in theory the air forces were bound to assist naval operations when necessary and the month of March was a very active one for the Flank Force of Allied cruisers and destroyers in the bombardment area and the minesweepers and destroyers in the Gulf of Genoa, there was no perceptible pattern in maritime air operations. Routine mine-spotting reconnaissance, illumination of targets and convoy escort proceeded according to established practice, but there were only small and intermittent efforts to interfere with sea supply. Reasons for this are apparent in the major air effort, in improving weather, to neutralise the northern Italian railway system, a task which absorbed the greater part of the Tactical Air Force, and in the continued preoccupation of the Fifteenth Air Force with target systems outside Italy and its waters. Furthermore, the quiet pressure of Allied naval operations and small scale air attacks on both sea flanks had, without any claim to complete stoppage, taken the sting out of the enemy sea supply system and offensive naval policy. There were only two War Partenope torpedo boats in the Ligurian Sea when the month opened and they were both sunk in action off Corsica on the night 17/18 March by allied destroyers. On 21 March, another had been destroyed in Venice during Operation 'Bowler'. One remained in Venice, two were in Trieste, but one of these was damaged and in dry dock.

Photographic reconnaissance during March indicated a general slackening in the movement of what shipping remained available to the enemy. Three and sometimes four K.T. ships ran steady trips between Genoa and La Spezia. The Dominante prepared for service. In view of future requirements, it was thought worth while to attack the blockships, actual and potential at La Spezia. On one of the rare occasions when medium bombers were diverted from their primary targets, 12 Mitchells bombed the blockships on 18 March, but missed them. It was the only mission of its size and nature during March. The rest were small and occasional. Coastal ship and barge traffic remained steady, a few craft reaching La Spezia.

From 2 April, when Mediterranean Allied Air Forces issued a new operations instruction(3) on air participation in the

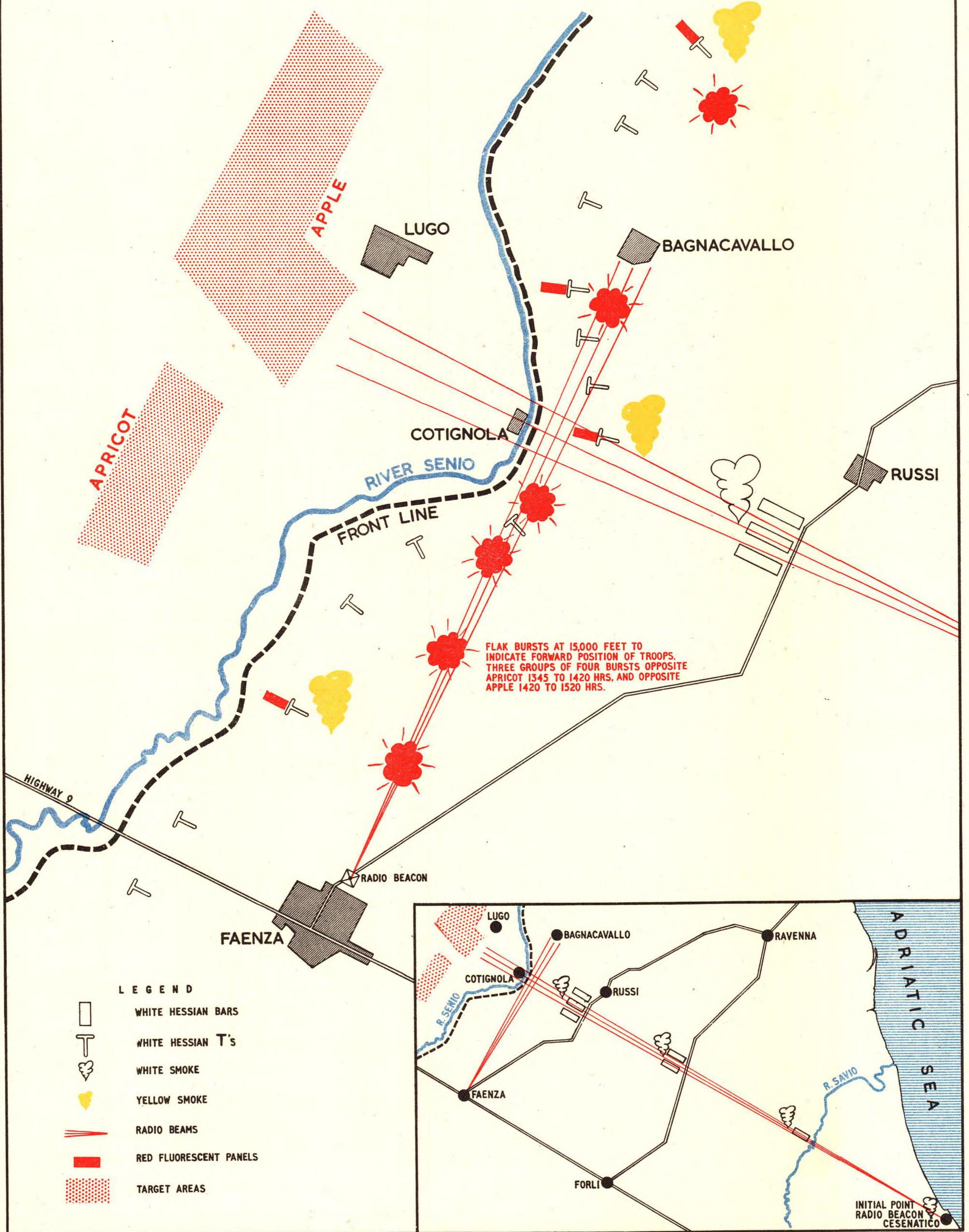
(1) Total discharge in South of France ports February 1945:-

Port	Dry	Wet	Personnel	Vehicles
Marseilles	450,109 tons	20,701 tons	49,866	14,753
Toulon	11,913 "	bulk. POL 50,543 barrels	3,672	7
Port Bouc	64,491	78,000 "	--	--

(2) M.A.A.F./S.1643/Org.3,31 Jan. 1945: M.A.T.A.F. and M.A.C.A.F., O.R.Bs.

(3) Operations Instructions No.112, M.A.A.F., 2 Apl.1945. O.R.B. Appendix.

DIAGRAM OF SAFETY PRECAUTIONS FOR HEAVY BOMBER OPERATIONS IN BUCKLAND D-DAY - 9 APRIL 1945



Spring offensive, (1) a new phase began. Here the narrative of the Air Forces' effort without the influence of land operations ends.

THE AIR OFFENSIVE AGAINST ENEMY SUBSTITUTE FUEL

Energy Supply Lines maintained on substitute Fuels. (2)

The crux of the enemy motor transport fuel problem in Italy as it affected Allied Air Forces was the volume of substitute fuels produced and processed in the country itself, and the fact of its sufficiency for the maintenance of the minimum essential supplies at a time of chronic shortage of importable fuel. Coupled with the oil offensive of the Strategic Air Forces in Europe, attacks were planned and executed by the Tactical Air Force in Italy, after a lengthy investigation and assessment of the important nature of this local fuel, but this problem was not completely solved until the Spring offensive.

The heavy bomber offensive from the U.K. and Italy in the first half of 1944, coupled with Russian advances later in the year, had dealt a crippling blow at the German oil system. Nevertheless, in January 1945, the problem still remained a serious one. In the bombing directive of 26 January, (3) it was admitted that, largely as a result of the Allies' strategic bomber effort on the enemy's petroleum industry and communications and because of Allied preoccupation on the Northwest European battlefield, the German Air Force had been allowed to recover a great deal of its fighting strength and its expanding jet aircraft industry was a menace of such a nature as to force it up to an equal place in first priority with oil. Hence a divided air effort ensued and a corresponding easing of tension in the German transport system.

In Italy the effect was not very appreciable. Fortunately for the Germans, there existed relatively close to the front a system of natural gas and oil wells, which they organised and turned to good account. By themselves, these substitutes would not have sufficed, but mixed and eked out with the limited supplies of normal gasoline and supplemented by other products and mixtures they did suffice.

The stimulus of this important effort may be measured if one glances at the declining figures for quotas of fuel supplied for the Army Group, the Todt Organisation, commercial uses, civilian and air force traffic from late 1943 on. In Autumn 1943, the Italian theatre received 40,000 cubic metres of liquid fuel (Otto and Diesel) per month, (4) plus 2,000 - 3,000 cubic metres for fortification of defences and airfields by the Todt Organisation. The total fell to about 29,000 cubic metres in the summer, 12,000 in the autumn, (with no guarantees for fortification work) and

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- (1) Operation 'Grappeshot'
 - (2) 'The German system of supply in the field - Italy' A.F.H.Q., G-2, February 1946. (A.H.B./IIJ11/58/39).
 - (3) Given in full at Appendix 31. Operations Instruction No. 101, M.A.A.F., 26 Jan. 1945.
 - (4) The two types of fuel were normally supplied in the ratio of 1 Diesel to 5 Otto. Otto was petrol/gasoline for M/T.

during the winter of 1944/45 it was well below 10,000 cubic metres. Hence the drive for substitute means and a tightening of Army Group allotment.

Italian Sources of Mineral Oil and Methane Gas(1)

The exploitation of mineral oil in Italy was confined to the northern slopes of the Apennines in the area south of the Via Emilia between Piacenza and Parma, where oil and methane gas fields were often adjacent. The daily yield of oil was about 8,500 litres, but this figure fluctuated with the weight of air and partisan attack, the electricity supply and the labour situation. Until it was destroyed in early April 1945, a little refining was done at the Salsomaggiore plant.

The principal sources of methane gas (2) were the natural gas wells located in the Po Valley, (3) between the Piacenza area and the coast country beyond Ferrara. A pipe line ran from Milan south-east to Modena - not a worthwhile target; it was too fine for precision bombing and invisible in large sections. It was estimated that the fields were capable of producing a volume of gas which, compressed, bottled and used as a substitute for petrol in motor vehicles, would represent a saving of 500,000 barrels a day. One very reliable source (4) had reported that of 12,000 vehicles seen moving along the east side of Lake Garda between 6 and 16 March 1945, 40 per cent were methane burners. Other reliable information indicated that M/T could operate on methane throughout the Po Valley, and that a substantial proportion of the enemy's M/T fuel requirements for both supply and administrative purposes could be met by its use alone. In July 1943, methane production amounted to 4,000,000 cubic metres, equivalent to 30,000 U.S. gallons of petrol a day. The enemy's total stock in Italy was believed to be in the region, in March 1945, of 1,000,000 gallons of petrol and 500,000 gallons of diesel oil, (diluted with it). The potential value of methane gas fuel is apparent.

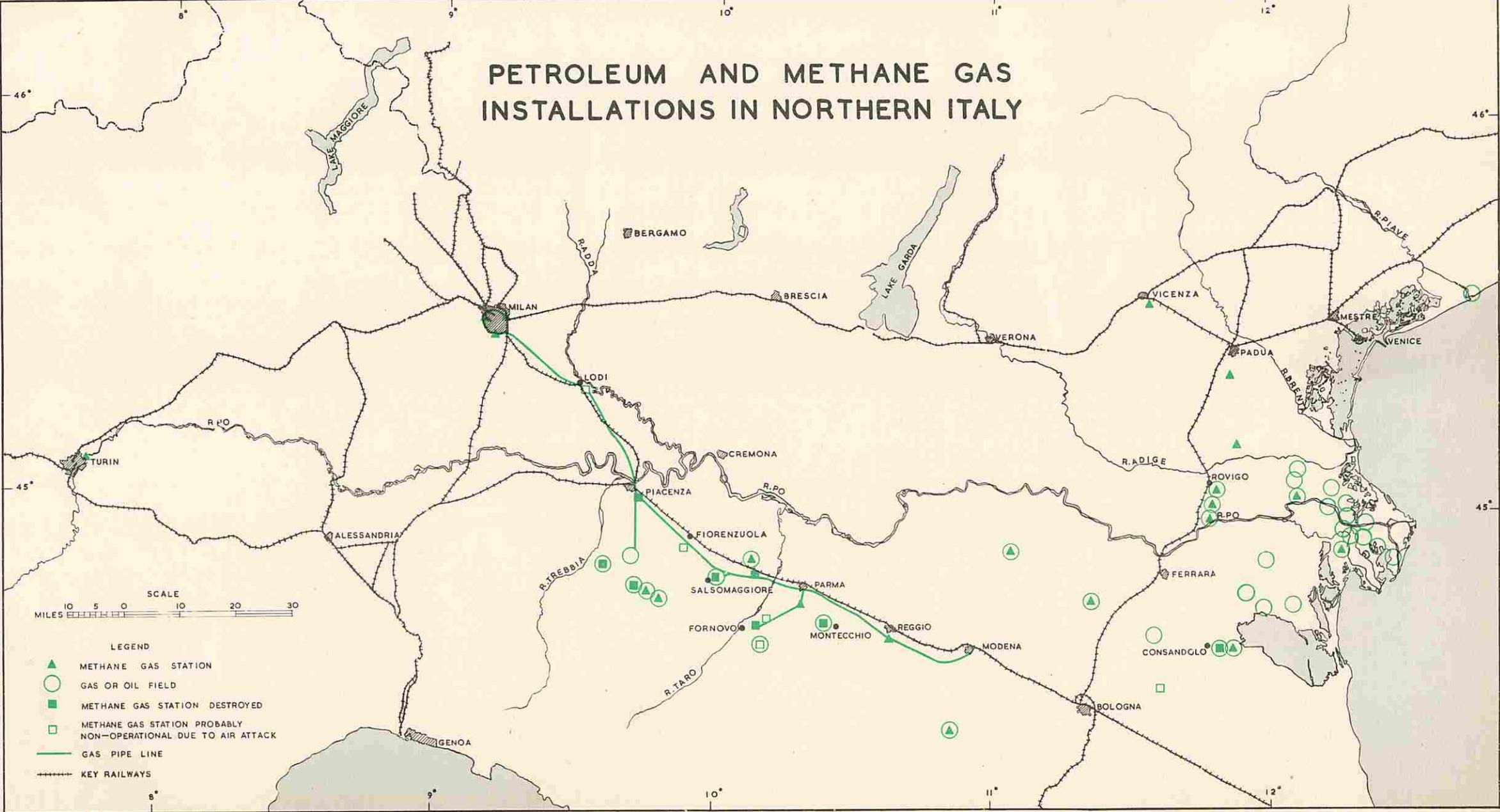
Before Tactical Air Force began its offensive against methane fuel, there were 25 confirmed gas compressor stations in operation, the most important being at Piacenza, Salsomaggiore, Rovigo, Parma and Montechino. These compressor stations, at the vital link between plant and distributing station, were the best targets.

Other Forms of Enemy Fuel Substitutes

The Germans thinned out their petrol with alcohol obtained from sugar-beet molasses, wine and wine residue left after pressure of the grapes, the crude beverage called Grappa, and from readily volatile hydrocarbons such as acetone which could be found in varnish factories. The German Fuel Testing Detachment (5) did valuable work ascertaining possible

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- (1) 'The German system of supply in the field - Italy' (A.H.B./IIJ11/58/39) A.F.H.Q. G-2, February 1946. M.A.T.A.F. Intelligence Bulletins. (A.H.B./IIJ11/18).
 - (2) Metano in Italian: not to be confused with the liquid alcohol methanol.
 - (3) Refer to Figure 24 for locations of methane gas and mineral oil fields, installations and pipelines in N. Italy.
 - (4) Quoted in a preliminary report by experts and M.A.A.F. Intelligence.
 - (5) Betriebsstoffuntersuchungstrupp.

PETROLEUM AND METHANE GAS INSTALLATIONS IN NORTHERN ITALY



mixtures, but its work was progressively handicapped by the falling-off of Diesel supplies, lack of coal and air and partisan attacks on distilleries and oilfields. Diesel oil was mixed with petrol. The Diesel quota was never reduced at the same rate as Otto, but supplies declined seriously. Of the above sources, M.A.A.F. decided that the sugar beet refineries were the best targets.

Enemy Conversion of Transport to Generator Gas Fuels

The question may well arise against the background of this frustrating winter of 1944/45, as to why the great and continuous expense of air effort, backed up by a superiority in the region of thirty to one, failed to cripple the enemy road transport system more effectively. The exploitation of natural gas and oil and synthetic fuels provides part of the answer. It is also necessary to understand the steps the enemy took from August 1944 onwards to convert his vehicles to the use of wood, charcoal and methane gas. It was a laborious process, but the Germans carried it through with their usual singlemindedness. If this is understood, it will lead towards comprehension of the great expense of Allied air effort against the German transportation system in general.

The Germans had taken over all the charcoal drive generators made in Italy. Then the supply of charcoal had dried up. Italian industry was therefore converted to the production of wood gas generators. On the German model, an urgent task in late 1944, when the quota of generators⁽¹⁾ from Germany dropped progressively until it ceased in January 1945. Italian production began in March 1945 and was so well geared that in Army Group C's area at the end of the campaign there were two thousand eight hundred vehicles converted with wood gas generators. Wood gas, like methane, meant lower performance, but this was of less consequence than might appear, for the whole transport system, because of constant air attacks, turned to a slower tempo than that of the Allies. But it worked so long as the battlefront was relatively static. By such means as a system of ten-day quotas, blocked reserve stocks, limitation of travel permits, reduction of speeds for private cars, motor cycles, trucks and motor coaches, the use of Otto fuel for battle only, the use of light motor cycles, horse and oxen-drawn vehicles, bicycles, trains, and by extensive towing, a decent degree of mobility was maintained to the time of their collapse, both in operational⁽²⁾ and rear areas.

Air Attacks on Substitute Fuel Installations up to late March (3)

In both the bombing directive of 26 January and that of 1 March 1945,⁽⁴⁾ Tactical and Coastal Air Forces were directed to apply maximum pressure, consistent with their primary commitments, upon known or suspected enemy fuel points. This maximum pressure was reduced by other high priorities to

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- (1) About 100 per month.
 - (2) 30 kilometres depth behind the front line.
 - (3) D.A.F. and T.A.F., O.R.B. M.A.A.F. Intelligence Bulletins Feb-Apr, 1945.
 - (4) Refer to Appendices 31 and 32 for full text of both, which explains the inter-relationship of the tactical and strategic effort.

a relatively low degree until the end of March 1945. The position was never lost sight of and there were frequent occasions in February and March when tactical aircraft attacked such targets. They will not be dealt with in detail here. The narrative will expand, however, on the heavy co-ordinated attacks of late March and early April on the methane plants and gas fields. The long intervening periods, the worsening weather, longer nights and the German repair system went a long way to neutralise the earlier diffuse efforts. The really effective series came at a chosen period highly critical to enemy stability, just before a major offensive, when the Allied land forces were about to add their effort to that of the air forces.

During February there were frequent small scale attacks by Desert Air Force and XXII Tactical Command aircraft on sugar beet and oil refineries throughout the Po Valley area. Some of these individual attacks were well executed, as, for example, that by 19 Desert Air Force Marauders on 23 February on the Pontelungo (1) sugar refinery. Photographs proved severe damage to the refinery plant, boiler house, tanks and storage. Legnago refinery was also severely damaged. But the general problem remained unaffected.

Although March presented better weather conditions, Tactical Air Force had not the forces to spare for these targets in any volume for the first three weeks. Mitchells bombed the methane plant at Fornovo Di Taro; a fair number of small scale missions, but less than in February, dealt with oil refineries. It was during the latter end of March that air plans for the Spring offensive threw up the need to attack more systematically the enemy's methane plant system, with the object of doing all possible to immobilise him once he was put on the road. Nineteen fuel dumps were also destroyed as part of a sweeping plan of attack on supply and fuel dumps before the battle.

The effort in late March was intended to be a steady series, but the fine spell of weather ceased in the last week and broke the continuity. Spitfires and Kittyhawks (2) attacked Salsomaggiore oil field, gas and compressor plant on 24 and 25 March. (3) Kittyhawks scored six hits on plant and tanks and then made 28 'strafing runs', starting fires which spread until the whole area was smoke-covered up to 5,000 feet. Five of the Spitfire bomber missions reported many hits, good cover, fires, destruction of five buildings and explosions from others. When Spitfire bombers renewed the attack on Salsomaggiore on the 29th, they destroyed two buildings and added to already serious damage, without being clear as to details. Two days later, aircraft of No. 8 S.A.A.F. Wing achieved mixed results at Neviano oilfield. The smoke from early hits made exact observation difficult, but they admitted a partial lack of precision.

The greatest concentration of attacks on methane installations took place over the first eight days of April. These must be mentioned, but later attacks of this nature and

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- (1) 13 miles S.E. of Padua.
 - (2) Of XXII T.A.C.
 - (3) With 500 pound bombs.

others on fuel dumps thereafter merge into the operations of the Spring offensive. (1)

Air Attacks on Substitute Fuel Installations in late March and early April

Ibid.

Between 24 March and 18 April, air attack was concentrated on four of the major combined fields, compressors, storage and distribution centres. These were the methane gas stations at Piacenza and Parma and the gas and oil fields at Salsomaggiore and Montechino. Although severe damage was inflicted elsewhere, it was the high degree of destruction on this major complex of four sub-areas that nullified any hopes of repair before the April offensive threw the German armies off balance.

Salsomaggiore was neutralised first in three attacks, on 24, 25 and 29 March, by Spitbombers and Kittyhawks. The over-all effect was to render complete re-building essential. The cumulative results of the three attacks, photographed after the third attempt, were the central power house destroyed, most of the gas collecting plant destroyed or damaged, one storage tank buried and the roofs of two others burnt out. Underground storage tanks, although voted unprofitable targets, could be destroyed by bombs of 500 pounds.

Montechino was put out of operation in a single attack on 7 April. Piacenza, which served a large amount of traffic, was similarly destroyed beyond hope of repair by, like Montechino, Thunderbolts and Kittyhawks. (2) Parma proved more difficult. After eight fighter bomber attacks between 7 and 18 April, the compressor was still intact. The sum of all attacks was very satisfactory. Of nineteen compressor stations attacked, eight were completely destroyed, four so seriously damaged that they were probably non-operational and all but one of the remainder sustained moderate or minor damage. Serious damage was also inflicted on the storage units and filling stations.

Here the situation brought about by unilateral air action to the general advantage of the Allied forces when the Spring offensive opened must be left. To the partial paralysis of the railway and sea communications system it had added the certainty of acute shortage of every kind of propellant fuel; this did not in itself produce standstill on the roads, yet was a small but important ingredient in the tactical victory to follow.

(1) Operation 'Grapeshot'.
(2) Of XXII Tactical Air Command.

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CHAPTER 5

AIR PARTICIPATION IN THE GROUND BATTLES OF THE
AUTUMN AND WINTER 1944-1945

AIR SUPPORT IN THE BATTLES OF THE RIVERS RONCO,
MONTONE AND LAMONE

Flying Conditions in the Advance from the Marecchia to the Senio

Allied strategy:
Brit. Hist. Section,
C.M.F., A.F.H.Q.
(A.H.B./IIJ11/58/14)

M.A.A.F. and
M.A.T.A.F., O.R.Bs

From 20 September 1944 to 12 January 1945, the Eighth Army made a slow, costly advance from the Marecchia to the Senio, river by river, in rapidly worsening weather conditions. Ground operations were seriously hampered and the possibility of air support a doubtful factor in planning.⁽¹⁾ Only a low proportion of days were good for flying and many were unsuitable. On the majority of days, cloud base was about 2,000 to 3,000 feet at the best and dive bombing therefore impracticable for Kittyhawks and Mustangs. Spitfires, constituting the bulk of the close support aircraft, had to start their bomb dive from 8,000 feet. Light and medium bomber attacks, usually made from over 10,000 feet, were often cancelled.

Desert Air Force supported the advance in September as far as the Savio River. From Cesena⁽²⁾ the roads to Ravenna, (Highway 67) and to Forli, Faenza, Imola and Bologna (Highway 9), the primary objectives, implied the storming of six major rivers and several tributaries. These rivers were, in order, the Bevano, the Ronco, the Montone, the Lamone, the Senio and the Santerno. When the offensive broke down in early January, the army had not yet crossed the Senio. Desert Air Force was now committed to the new advance. Its operations, in particular its contribution to the capture of Forli, Faenza and Ravenna must now be recorded.

Brief Outline of the Ground Advance to the End of the Offensive

After 12 October, when the Eighth Army was across most of the Savio River, the course of the land battle followed broadly the following lines until the offensive was halted on 12 January 1945. From 21 October to 1 December, they advanced from the Savio to the Lamone. Between 2 December and 12 January, they advanced across the Canale Naviglio towards the Senio River, on the east bank of which they consolidated their winter line.

From 24 to 26 October, they advanced to the Ronco River and built bridges for tanks and artillery. Porterforce (which embodied units of the R.A.F. Regiment) was created, with the task of protecting the right flank of V Corps (the main force), to capture and occupy Ravenna, push northwards and open up Highway 16. On 2 November, the advance continued. Forli was captured and the advance continued to the Montone - Cesina line⁽³⁾ between 7 and 20 November, an operation involving strong participation by Desert Air Force. The Lamone River⁽⁴⁾ was reached on 1 December. Air support of

- (1) The air plan for Operation 'Merlin' (21 November), first of a number of operations designed to capture Faenza, included four alternative plans. (two main, each with two alternatives).
- (2) Refer to Figure 6.
- (3) Hedwig II Line.
- (4) Heidemarie Line.

this phase was entitled Operation 'Harry'. Offensives were opened from 2 to 9 December on the enemy's switch-line between the Montone and the Lamone, and from 3 to 7 December south of Highway 9. The Canadians, after repelling a highly dangerous counter attack, advanced from 10 to 18 December to the Canale Naviglio. From 14 to 17 December, Eighth Army advanced to the strongly defended Senio River;(1) and from 19 to 31 December, as Allied hopes guttered out, the east bank of the river, except for a strong German redoubt south of Alfonsine, was filled with Allied units.

It was intended to postpone further operations. An attack by the Fifth Army was due to start after 7 January, both armies having the capture of Bologna in view. A counter-offensive in the Serchio Valley on the Fifth Army front, threatening to cut Allied communications with the vital Leghorn base was the most immediate cause of the abandonment by both Armies of any further major advance. The Commander of the Eighth Army pointed out the supply and ammunition shortage which must follow any extension of operations.(2) As the Fifth Army could not advance in harmony, unilateral fighting by the Eighth Army could only be inconclusive. Allied Force Headquarters ordered drastically reduced ammunition quotas. All idea of a general offensive had been dropped by the New Year. The Army settled down to awaiting Spring weather, training and exercising new weapons. Drastic changes in the air support policy followed, which were poorly received by Eighth Army H.Q. They were, however, inevitable in the interests of the right application of air power and on account of the serious reduction of theatre air forces on orders from the Combined Chiefs of Staff.(3)

Tactical Air Support from the Savio(4) to the Ronco

The main direction of Eighth Army's thrust was along Highway 9, from the Savio across the Bevano and the Ronco to Forli and its airfield, thence across the Montone, on to Faenza on the Lamone, with Ravenna now only a minor target. Air support in the phase which finished at the east bank of the Lamone was handicapped, like the Army's operations, by intermittent spells of hostile weather. The same viscous, yellow mud that made vehicular traffic and even simple walking sometimes out of the question told on the serviceability of air bases and created blank spells of up to four days when close support was impossible. The support given to the ground effort to draw enemy forces away from Fifth Army's front, enhance their chances of taking Bologna and Eighth Army's of capturing Faenza and Ravenna, although not decisive, was highly appreciated. Two major efforts in particular and the evolution of new tactics call for mention.

From 21 to 24 October, Polish Corps on the left captured the Monte Grosso massif and most of Monte di Marina, V Corps and the Canadian Corps on the main front fought against stout opposition to cross the Savio. After three days of frustrated

(1) Irmgard Line.

(2) H.Q. Eighth Army letter. 19 Dec. 1944.
(A.H.B./IIJ11/58/15(B), App. J-1)..

(3) Details follow in the appropriate context later.

(4) Erika Line.

attempts, Desert Air Force⁽¹⁾ enjoyed better weather on 24 October. Their effort of 550 sorties was mostly devoted to the Army, moving forward on drying ground. Attacks by fighter bombers were directed against gun and mortar positions, strongpoints, observation posts and occupied buildings, and reduced much of the fierce ground opposition. Road and railway bridges over the Reno were attacked, one being completely destroyed, another severely damaged. The enemy's withdrawal was hampered.⁽²⁾ Where only a few days previously the Desert Air Force had put out the Savio bridges, 4th Division fought and bridged its way across.

The next day, as Porterforce edged its way towards Ravenna and V Corps poured over the Savio towards the Ronco, the weather prevented air coverage of all the roads on which it had been hoped to reap a harvest of transport. Low clouds helped the enemy, giving them time to scatter their convoys at the sound of approaching aircraft whose pilots could not see them. It rained all that night: morning revealed a chaos of blown and flooded tents and seas of mud on airfields. Not until the 29th could any effort worth recording be put out and by then the Army itself was bogged down. Weather closed in again until the 31st. Three hundred and twenty sorties were then made against the normal front line targets, but were inconclusive, for the Army lost touch that day.

Changes in Army Air Support Control

No.2 Army Air Support Unit was disbanded and No.1 Army Signals Support Unit⁽³⁾ created in its place on 31 October. This reorganisation terminated the position, considered by some anomalous, of having a composite unit comprising Army staff officers and signals personnel and R.A.F. signals personnel. The Army Signals Support Unit so formed was designed for deployment to an army of two corps. In practice, Eighth Army almost always had three corps in the line and very often had, for security reasons, to operate a split H.Q. For this reason, it was necessary for No.1 A.S.S.U. to have under command the Army Signals element of No.9 Army Air Support Control.⁽⁴⁾ Throughout this period of the campaign it was always possible to deploy tentacles on the basis of three per division in the line and Forward Observation Post with command cars as required.⁽⁵⁾ No.1 Mobile Operations Room Unit continued to co-ordinate for Desert Air Force.

Ibid

Rover Developments

One change to note in passing is the replacement of the old visual observation post for Rover controls (as at Monte Trocchio in the Summer fighting) - no longer possible in the flat river terrain - by good communications and mosaics on photographic papers⁽⁶⁾ overprinted with a grid. The mosaics

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- (1) Their Advanced Headquarters moved to a new site at Rimini from Cattolica and was operational by 0800 hours.
 - (2) No.1 M.O.R.U., O.R.B.
 - (3) Under operational command of G (Air) Branch of H.Q. Eighth Army. History of G-2 (Air) A.F.H.Q. (Cabinet Hist. Archives).
 - (4) It had been retained as an Army Group reserve.
 - (5) Neither Desert Air Force Advanced H.Q. nor No.1 M.O.R.U. (concerned with the tactical operations of all fighters, fighter bombers, light and medium bombers) mention this change in their records.
 - (6) Scale 1/30,000.

were used by pilots and controllers. By the winter, it had become possible to control aircraft without overlooking the front line, backed up by a reliable signals network and large scale photographic cover of the whole area of operations.

New systems tried out at this period were Rovers mounted in Sherman tanks(1), in White type half-tracked armoured cars manned partly by R.A.F. Regiment personnel; and the 'Horsefly' system of a Rover Control airborne in a light aircraft.

Plans for the Capture of Forli and its Airfield

To the northwest, along Highway 9, lay first the airport of Forli and then the city itself. The next major task was to capture them and seize crossings over the Montone River. The position by 2 November was that the Poles(2) had crossed the Ronco River, and covered the country south and east of Forli. Eighth Army was hotly contesting the possession of the airfield, which it had invested on two sides, fighting along the northern rim and trying to encircle it from the south under very intense fire from infantry and Tiger tanks. Rain intervened to put an end to all ground operations until 6 November(3)

Air Prelude to the Assault on Forli(4).

Air operations on the first four days of November were almost impossible. On the 4th, the effort picked up and 155 sorties were flown, improved to 360 on the 5th. Several times that day, Forli airfield was bombed by Desert Air Force, and again the next day without forcing any radical change in the position.

In the meantime, more ambitious plans involving medium and light bombers, fighters and fighter/bomber support on the eve and day of the attack were drawn up. In this operation, known as 'Seitent', 4th Division attacked with the right of their thrust along the axis Carpena - Forli, with Forli and the main bridge as their main objectives, and with armour to follow up their northwesterly thrust. 46th Division on the left captured in succession two villages south of Forli.

Desert Air Force's Appeal to M.A.T.A.F. for Medium Bombers

Eighth Army requested Desert Air Force to carry out a heavy attack on the village of Villafranca di Forli, a reserve area harbouring important bodies of German troops, as early as possible on the morning of 8 November, to synchronise with their own attack of the previous night. At that time, Desert Air Force's Marauder squadrons were passing through a period of bad luck. Their airfield at Pescara, after being waterlogged for some time, was written off as unserviceable; they moved to

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- (1) Two tanks were used: one known as the 'Control' or 'Rover' Tank and the other as the 'Tentacle' or 'Army' Tank.
 - (2) 3rd Carpathian Div., 2 Indian brigades and 10th Inf. Brigade.
 - (3) No.1 M.O.R.U., O.R.B.s. V Corps Operations Order No.31. Operation 'Seitent', 6 Nov. 1944. (A.H.B./IIJ11/58/16A-C, App. B-29).
 - (4) No.1 M.O.R.U., D.A.F. and T.A.F., O.R.B.s.

Iesi, but there they were too congested with other aircraft to function normally. Tactical Air Force H.Q. was therefore asked to direct 57th Bombardment Wing to execute the task.

Air Operations over Forli

Softening-up attacks were put in on 6 November by Desert Air Force, but the 7th was the day of greatest success. Sixty-six missions flew 424 sorties, most of them in close support. Twenty-five missions under Rover control achieved generally good results. After one attack by Spitfire bombers⁽¹⁾ on enemy buildings and strongpoints near Ronco, the Army reported the area well covered and sent an exhilarated message of thanks. Aircraft losses meanwhile were steadily increasing; six were lost the next day. The climax was reached on 8 November, when 27 close support missions ahead of the Army called forth more praise, this time from the Commanding Officer of 28th Infantry Brigade. He said the air formations had 'put new life' into them. Ninety-two Marauders⁽²⁾ bombed troop reserves at Villafranca. Forli airfield was captured and forward elements were in Forli that night.

On the impetus thus acquired, the army pressed on towards the Montone River. Weather conditions were bad and foggy on 9 November and the Air Forces did not get into their stride until late afternoon. Defended houses, guns and tanks were hit in attacks by 26 missions. Baltimores⁽³⁾ struck at ammunition dumps south of Porto Corsini and stores north of Forli. Thunderbolts claimed direct hits on road bridges over the Montone River. When the Army reached the river the next day, their crossings were hampered by the torrent, the muddy banks and the poor visibility. The air effort, in bad light, seems to have assisted to an appreciable degree. Its extent was over 200 close support sorties that day and a similar volume on the 11th. But the bitter German resistance, coupled with the above-mentioned handicaps, forced a temporary deadlock, which could only be broken by a weighty, combined attack in favourable weather. It was at that point, on the 12th and the night 12th/13th, that such an attack was launched and air Operation 'Timothy' executed for the first time in the campaign.

Air Operation 'Timothy', Execution

V Corps' plan for the assault, by their own forces and those of Polish Corps, towards Faenza, included an attack on the enemy reserve area in Borgo Durbecco by medium bombers, and cabranks and normal close support with attacks on targets preselected by divisions from day to day on their line of advance.⁽⁴⁾ In the event, the most important and only novel feature of the air operations was the method employed by some of the fighter bombers to give the closest possible support to the infantry, while retaining sufficient elasticity to conform with the ground situation at any time during the attack.

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- (1) Of Nos. 87 and 185 Squadrons.
 - (2) Of 57th Bombardment Wing.
 - (3) Of No. 253 Wing, in 3 missions, 21 sorties.
 - (4) V Corps O.O. No. 32, 12 Nov. 1944 (A.H.B./IIJ11/58/16A-G, App. B.30).

Although Desert Air Force and No.1 Mobile Operations Record Books give 13 November as the date of the first 'Timothy' operation, all available Army records, including the V Corps history, are firm in their statement that 12 November was the date. This appears to be so. On 11 November, the G (Air) Branch at V Corps requested close support for 4th British Division(1) in a novel form, which might do much to solve the pressing problem of safe bombing over a fluid bomblines. Early on 12 November, 12th Brigade led 4th Division's advance, after heavy artillery preparation and with the support of fighter-bombers. The brigade attacked in three phases of approximately 1,000 yards advance. Artillery first laid down a coloured safety bomb line, when and where indicated by the Rover control, 300 yards in front of the brigade post. At 0730, 0830 and 0930 hours, aircrews bombed and machine-gunned everywhere possible within an area to a depth of 1,000 yards from the smoke line and within lines parallel to, and 1,000 yards either side of, the brigade axis of advance; each pilot selected his own individual target. After five minutes of air attack, 'Timothy' - the name given this form of limited 'blitz' - was lifted and the infantry attacked. In phases 2 and 3, i.e. at 0830 and 0930 hours, the method was the same, but the smoke line was then 300 yards ahead of the front line. Results were so good that the attacks were repeated. On the next day, twelve squadrons carried out six 'Timothy' attacks; they were joined by rocket-firing Thunderbolts, who reported the destruction of ten strongpoints.

Results of, and Conclusions from, Operation 'Timothy'(2)

By the close of 13 November, German resistance in this sector was crumbling. V Corps had made important gains. On 12 November, the attacking brigade had advanced 2,000 yards and, on the next day, a substantial distance with only slight casualties, in spite of the powerful enemy defence. The Brigade Commander was very enthusiastic about the accuracy and closeness of the air support and confirmed his casualties as the lightest for such an operation in his experience. Eighth Army officially described 'Timothy' as 'the greatest step forward in air/ground cooperation since the innovation of the Rover controls.'

Enthusiasm cooled as time proved an excess of caution. The first tendency had been to put the artillery smoke down 500 to 800 yards ahead of our forward troops; in the great majority of such cases, affirmed prisoners-of-war, our aircraft bombed and strafed up to 400 yards behind the enemy's main line of resistance. I Canadian Corps, after consolidation of evidence, declared that normally the smoke points should not be more than 400 yards or less than 350 yards apart, so that smoke should not obscure the target area; and, even more important, the smoke bomblines should be put down about 300 yards from our forward troops, but no further, in order to ensure that the most forward enemy positions were included in the target area.(3)

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- (1) 12th Brigade.
 - (2) No.1 M.O.R.U., O.R.B. G (Air) 8th Army History, Aug. 1944 to May 1945 (Hist.Sec. 1002/40/202 at Cabinet Archives).
 - (3) Notes on new developments in air/ground cooperation 34711/8/G (Trg)3/Appx.B,G.H.Q.,M.E.F. 5 Jan. 1945. (Cabinet Hist.Archives).

Under favourable conditions, four more points of interest emerged, which reinforced the confidence with which the method was later regarded by the Armies and which, added to the results of similar attacks in the flat country of Holland after the capture of Walcheren Island,(1) led to the permanent inclusion of 'Timothy' in the Air Forces' armoury. These four points were its elasticity, the success of individual pilot selection of target under leaders' guidance, the decision that twelve was the maximum safe number per formation, and the damage effected on the enemy in denying him recovery time by ten minutes of machine-gunning after bombing.

The most important of these from a tactical viewpoint was the elasticity. Even when, through unexpectedly heavy opposition, the estimated rate of ground advance did not conform with plan, aircraft could still directly support the infantry. On 12 November, each attack was originally timed to 'tie in' with the opening of an infantry attack phase, but subsequently it was found that the aircraft could be used with equal efficacy at pre-arranged intervals, irrespective of the line reached by forward troops. This was possible because the smoke bomb safety line - the main factor as far as pilots were concerned - could be put down to conform with the ground situation at any given time. It might even be put down diagonally to the axis of advance; pilots were briefed for this eventuality. Should an infantry commander, during a 'Timothy', want any particularly troublesome strongpoint singled out for attack, Rover 'Paddy', the by now semi-mobile control unit, could arrange this at short notice.

Two other developments - 'Pig'(2) and 'Toby'(3) - belong to this winter period.

Ground Plan for the Assault on Faenza

On 16 November, the time appointed for the start of the concerted offensive to secure Bologna and Ravenna was a bare fortnight ahead. On 18 November, it was decided to secure Faenza as a starting point for Eighth Army's drive for Bologna. Faenza was eight miles ahead. The terrain was very difficult, the enemy in good heart and the weather full of vagaries.

In Operation 'Merlin', as the attack was named, there were three phases.(4) In the first, bridgeheads were to be seized over the Cosina River; in the second, these bridgeheads were to be exploited as far as the Lamone River and across it; in the third, a crossing of the Lamone was to be made and Faenza

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- (1) R.A.F. narrative of Operations in N.W. Europe (first draft). [A.H.B.].
 - (2) On 14 December, forward troops of 1st Canadian Div. requested a 'Timothy' when weather conditions did not permit bombing. A strafing attack was agreed to by Desert Air Force and was carried out by three squadrons of fighters. The code name for this operation was 'Pig'. It was similar in all details to a 'Timothy', except that the aircraft did not carry bombs.
 - (3) The Air equivalent of an accepted artillery practice. 'Toby' targets, with code names, were pre-arranged targets along a divisional thrust line. On receipt of code name and time of attack, aircraft could attack 1½ hours thereafter.
 - (4) V Corps O.O. No.34 Operation 'Merlin', 18 Nov. 1944. (A.H.B./IIJ11/58/16A-C, App.B.33).

captured. There were two main air plans, each with two alternative timings, dependent on weather, also an artillery plan.

Air Plan for the Assault on Faenza⁽¹⁾

On the strength of the satisfactory results of medium bomber participation in the assault on Forli town and airfield, Eighth Army were anxious for something of the kind in the still more strenuous task of crossing the Lamone and reducing Faenza. Again, Desert Air Force reported its Marauder formations unable to operate in strength and appealed to Tactical Air Force for the loan of some of 57th and 42nd Bombardment Wings' aircraft. Eighth Army had asked for the bombing over a period of one hour, with fragmentation bombs, of three large gun areas, during which it was hoped to establish a bridgehead over the Cosina. Simultaneously with the medium bomber attack, an artillery barrage was to cover the crossing area, fighter-bombers were to attack strongpoints etcetera continuously. The attack was delayed 24 hours until the 21st. Comparable targets for the medium bombers on the following two days on an estimated rate of advance were notified.

Here was another case of aircraft using their superior line of vision and mobility to fulfil tasks beyond the powers of the artillery in a plan woven into the timing system of a ground advance.⁽²⁾ Within the three areas chosen were concentrations of nebelwerfer,⁽³⁾ mortar, field gun and semi-portable gun units. The Army wanted the crews killed or dazed at the period of first impact.

The instructions went out on 19 November. 57th Wing was to control both its own and 42nd Wing's aircraft. Coloured smoke was in short supply. The idea of using white smoke was scrapped. The line of the river and Highway 9, and the obviousness of the cities of Forli and Faenza pointed the way to the decision to employ no artificial landmarks.

Air Operation 'Harry', - Execution

Ibid.

On 21 November, 120 of the borrowed medium bombers carpeted the Mano area with fragmentation bombs, causing considerable demoralisation among the enemy gun crews and reserves there, according to prisoners-of-war. Some of Desert Air Force's Marauders and Baltimores were in time to operate and saturated the village of Santa Lucia and two defended areas south of Faenza with fragmentation bombs. Constant missions of fighter-bombers flew throughout the day both on pre-arranged and control targets, and went very thoroughly over everything

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- (1) A.H.Q./D.A.F./30/3/Air, 19 and 20 Nov. 1944. H.Q., D.A.F., O.R.B., Apps.B-C Ops 1944. V Corps O.O. No.34, 20 Nov. 1944 (A.H.B./IIJ11/58/16A-C, App.B-33). Operational Instruction No.15 M.A.T.A.F., 19 Nov. 1944. D.A.F. and T.A.F., O.R.Bs.
 - (2) Aircraft were, of course, eminently adapted to neutralising reverse slopes and other 'invisible' targets. Later, however, artillery, assisted by A.O.P. aircraft, began to engage such targets with success.
 - (3) Smoke launching artillery.

of a hostile appearance. Persistent efforts were made to put out the one serviceable road bridge into Faenza, but, although almost everything in the area was hit, the bridge seemed to bear a charmed life. There were many rocket and fire bomb missions: 'flame' bombs - the fuel tank incendiaries - came into use for the first time on V Corps' front.

From its new site at Cesena, Desert Air Force, after flying 490 close support sorties, made an almost equal effort on the 22nd. The Faenza areas and bridges were again attacked and two of the latter put out by Spitfire bombers in the forenoon. More guns and strongpoints ahead of the British divisions were destroyed. Again, the co-operating medium bombers worked over the Mano area, bombing the lateral road north of it, and Highway 9. Fighter-bombers were particularly successful in neutralising houses on the far bank of the Cosina in front of 46th Division. Desert Air Force Baltimores and Marauders assisted in the general effort over the front to 'draw the Army through', as the current phrase was, 'into the vacuum they had created'.(1)

With the river crossing still uncompleted, V Corps asked for a repetition of air support on a scale comparable with the 400 Desert Air Force sorties, with similar aid from the western medium bombers. This aid was organised, but largely frustrated by bad weather. Before cloud closed in, some six to ten enemy harassing bombers were reported at night in the Forli - Rimini area. They dropped a few bombs west of Rimini, but not, apparently, on Forli airfield as reported by Eighth Army. All but one Ju.87 escaped the Beaufighters scrambled to intercept.

The medium bombers were grounded, but several close support missions were flown ahead of the Army and the Faenza bridges kept in a state of unserviceability, to hinder enemy passage, by Kittyhawks.(2) Beaufighters patrolling at night reported very little road movement; but there must have been plenty of it, for when low cloud lifted on 24 November, Kittyhawks despatched to break the Faenza bridges found all three destroyed by the enemy. Most of his forces had withdrawn across the Lamone, but downstream he still needed transit. Spitfires(3) out a temporary bridge and the Kittyhawks bombed two others. The River Cosina was crossed by 23 November and the bridgehead held and extended. For the rest of the month, Desert Air Force was grounded by fierce weather, but its preparatory and supporting effort up to the 24th was acknowledged by many signals of appreciation from divisional and corps commanders.

Advance to the Lamone, 24 to 26 November

By the morning of 24 November, the enemy was in full retreat from the Cosina and from the west bank of the Montone; his right wing was falling back to positions along the Lamone, while his left wing pivoted to form a line running from north of Scaldino on the Lamone to a point on the Montone south of Casa Bettini, where stood a major bridge. The line of the Marzeno River at its confluence with the Lamone was pierced without a struggle, the disorganized enemy failing to prevent

V Corps and
I Canadian Corps
Operations -
Br. Hist. Section
A. F. H. Q., C. M. F.
(A. H. B./IIJ11/58/
16A-C)

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- (1) Close analysis suggests that this metaphor was far-fetched.
(2) Of No.50 Squadron.
(3) Of No.324 Wing.

consolidation of the bridgehead. In thick mist and against flank attack, he abandoned the struggle on 26 November; three battalions of Eighth Army moved down to the banks of the Lamone, but failed to cross. Heavy rain turned the approaches into muddy, treacherous tracks. Further north, others fought their way on to the upper bank.

Meanwhile the Indians were held up on the wrong side of the Montone by the fierce defence of the Casa Bettini bridge. On 28 November, rain brought operations to a standstill, with the sector and bridge still in enemy hands. The swollen Lamone and the soft ground made a crossing there out of the question. Similar reasons prevented air support.

The Casa Bettini and Lamone military Bridges

It needed heavy artillery preparations and six battalions of tanks to take the Casa Bettini bridge on 1 December and consolidate a bridgehead. Tanks reduced the defended houses and strongpoints in the absence of aircraft. The space between the two rivers was covered, but by 2 December, the troops still stood baffled on the east banks of the Lamone. The military bridges were demolished. What installations Allied air attacks had left functioning, the Germans had blown up. It was now clear that the combined December offensive would have to be launched without possession of Faenza.

Fifth Army Operations November 1944⁽¹⁾

At this point, after briefly reviewing Fifth Army operations in November, certain changes in Allied campaign strategy must be noted before the altering value of the Eighth Army's and Desert Air Force's advance to the Senio can be appreciated.

II Corps and XIII Corps suspended their attacks on 27 October. Although there was little activity on the front, the periods spent out of the line were very short. The discomforts of the mountainous terrain and the appalling weather were very great. The only important operational change was the recapture by the enemy on the night of 28 November of Monte Castellaro, (an outlying feature of the Monte Grande position), and Monte Belvedere in IV Corps' sector.

Field Marshal Alexander as Supreme Allied Commander

On 27 November 1944, General Sir Harold Alexander, Commander-in-Chief, Allied Armies in Italy, became Field Marshal.⁽²⁾ On 12 December, he assumed command of the Mediterranean theatre as Supreme Allied Commander in succession to Field Marshal Sir Henry Maitland Wilson. Command of Allied Armies in Italy was assumed by General Mark W. Clark and the name of his headquarters was changed once more to 15th Army Group. Lieutenant General Lucian K. Truscott returned to Italy from N.W. Europe to command Fifth Army. On 1 October, General McCreery had assumed command of Eighth Army in succession to General Leese.

(1) Allied Strategy Br.Hist.Section C.M. (A.H.B./IIJ11/58/14).
(2) 4 June 1944 was the day from which his seniority dated.

Planning for the December Offensive

The object of the Eighth Army December offensive was primarily the capture of Bologna, secondarily that of Ravenna. In November, the port of Ravenna(1) was not required as such; but interest in it was now rising again. No steps were taken to reverse the decision against opening the port. It was as winter quarters and administrative H.Q. that the Eighth Army needed Ravenna. The Army had to relieve pressure against the Fifth Army. The best way to do this in the Highway 9 area was to apply greater pressure, on a wider frontage, than the comparatively weak enemy forces could resist.

This attack would engender the interesting possibility of a third Corps axis from Ravenna, through Russi, Bagnacavallo and Lugo to Budrio. The Army was now within striking distance of Russi; here lay the only possible route for the axis. But all the terrain on either side could be easily flooded. Against this fact and the menacing weather were to be set the weakness of the enemy, the rapid fall of Ravenna which must follow a thrust and the fact that the leaf was off the vines. Tanks could now operate unimpeded and aircraft discern many of their smaller targets more clearly. A good road ran to Bastia and Argenta. Ferrara, a much-to-be desired target, lay beyond. Once it was captured, enemy communications between Bologna and their administrative installations northwards of the Po would be cut. It was decided that Canadian Corps was to capture Russi, cut Highway 16, isolate Ravenna, capture it and thrust towards Lugo and Massa Lombarda, persuading the enemy that its main objective was Ferrara.

Army Group Plans

The main attack was to open south of Faenza. The Indians and New Zealanders were to cross the Lamone, take Faenza and advance to the River Senio. The Poles on the left were to attack on the axis Brisighella - Riolo Dei Bagni on the banks of the Senio. The general task of both armies was to ensure, by a major offensive, that the enemy was afforded no opportunity of reinforcing his armies on either the North-western or Russian fronts.(2) Eighth Army was to capture Ravenna and both armies threaten Bologna: they were to join in the general area Budrio - Castenaso. XIII Corps in the mountains, was to facilitate Eighth Army's advance astride Highway 9. Fifth Army(3) was to attack in a northerly direction, astride Highway 65, with the object of capturing Bologna.(4)

Air Support for the Capture of Russi and Ravenna

The offensive opened, with a certain air of optimism, early on 2 December. Both divisions of Canadian Corps crossed

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- (1) Connected by canal with Porto Corsini on the Adriatic.
 - (2) Events seem to prove that the enemy had no thoughts at the time of withdrawing troops. On the contrary, he continued to reinforce Italy. Late in January he changed his mind: it has been seen how the Tactical Air Force slowed down their movements out of Italy.
 - (3) From 7 December.
 - (4) Eighth Army Operation Instruction No.1443, 20 Nov. 1944. (A.H.B./ILJ11/58/15A-B, App.A-B).

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the Montone and resumed the attack on the enemy's switch line between the Montone and the Lamone. Good progress was made in the first three days. On the left, after heavy fighting, the infantry encircled Russi on 3 December and on the following day reached the banks of the Lamone west of it.(1) This advance threw back the left wing of the German 356th Division and placed its neighbour, the 114th Jaeger, in an awkward position. Through the gap between them poured the armour to capture Godo, on the main Russi - Ravenna road, on the night 3/4 December. From Godo, one column cut Highway 16 at Mezzano, at the Lamone crossing; the other entered Ravenna, driving the enemy into the marshes north of it and, by the night of 4 December, had cleared it with the help of partisans. At this point, weather came to the enemy's aid. Bridge sections did not reach the Canadian armour in time for it to cross and support infantry already over the river. A heavy German counter-attack drove them back across the Lamone. The river rose and held them down on the banks.

Field Marshal Alexander had originally conceived the idea of a 'two-handed punch' aimed simultaneously at Bologna and Ravenna, so as to split the enemy defences. By the end of November, the attack on Ravenna was merely a task on the right flank of a larger operation - 'Excalibur' - wherein V Corps was to capture Faenza and continue to advance along Highway 9. The right and left flank advances were so planned as to allow the Air Forces to support firstly the move towards Russi and Ravenna - i.e. from early on 2 December to 3 December, - then the move from the Lamone towards Faenza - i.e. from 4 December onwards.

Desert Air Force flew more than two-thirds of its effort on 2 December(2) against targets in the battle area south of Russi, between the two rivers. Attacks on the usual front line targets were made by Spitfire bombers, assisted to a small extent by rocket-firing Thunderbolts. These low-flying aircraft demolished many buildings harbouring personnel and arms; our forward controls spoke highly of many missions. They were kept so busy over the front that they had no time to comb the road for traffic. Reconnaissance reported no sign of the enemy withdrawing from Ravenna; the ground forces captured Russi that evening.

The next day - 3 December - layers of heavy cloud hung over the front and the airfields; only a short spell of close support was possible and that was quickly abandoned. A few Desert Air Force Marauders bombed a stores depot north-west of Ravenna on 4 December, but by that time the full weight of Desert Air Force and medium bombers from Corsica had been switched to the support of the big drive on the left flank. The whole area surrounding Ravenna had been flooded by the Germans, but winter quarters were now assured.

Air Plan for the Support of the Advance to Faenza

The first phase of the December offensive was to end, it will be recalled, in the capture of Faenza. The Air Forces' commitments involved close support of the advance in maximum

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- (1) 'The Gothic Line and Romagna Battles' CME History of Br.Ind and Dominion Forces in Italy. (A.H.B./IIJ11/58/15A-B).
(2) 592 sorties.

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weight, and bombing in the area of Castel Bolognese, the next big town on the highway to Bologna. Considerable advances had been made in 1944 towards integrating air and ground operations and bringing the ground forces nearer to a rounded conception of exactly what air forces were co-operating with them and what their roles and intentions were. Timing and targets were shown in great detail and no chance was left of any confusion,(1)

Desert Air Force units available in support of Eighth Army at the end of November were two squadrons of Marauders, three squadrons of Baltimores, two squadrons of Bostons for night intruding, and, as fighter-bombers, three U.S. squadrons of Thunderbolts (two of them equipped for rocket firing), three squadrons of Mustangs, three of Kittyhawks and thirteen of Spitfires.(2) From Tactical Air Force there were two wings, each of three groups of medium bombers, available for specific requests. Rovers 'Paddy' and 'Frank' were to function in control of fighter bomber and artillery co-operation respectively. V Corps H.Q. itself laid down priorities for air support as between divisions. It could thus denude one or more divisional areas to concentrate on a main thrust. The decision as to types of bombs(3) and fuzes remained with the Air Forces. Pre-arranged targets now comprised the following:- hostile batteries, dumps, headquarters and communication targets, 'Timothy' targets (in so far as boundaries and smoke bomblines were concerned), 'Toby' targets, (i.e. preselected strongpoints to be called for through the Air Support network the following day), and, lastly, light and medium bomber targets, (i.e. gun and nebelwerfer areas, reserve and rest areas and centres of communications).

On D-Day, altered from 2 to 3 December, when the attack was to open across the Lamone(4), fighter-bombers in limited numbers were to bomb hostile batteries and certain defined localities on the entire V Corps' front in the morning, and selected batteries to the S.E. of Castel Bolognese in the afternoon. Medium bombers from the West were to attack mortar and nebelwerfer areas near Borgo San Andrea. That night, intruders were to attack gun areas S.E. of Castel Bolognese. On 4 December, at first flying light, fighter-bombers were to try to blow up a tunnel containing self-propelled guns and, between 0800 and 1000 hours, bomb and attack with rockets batteries and any signs of a counter-attack from 1000 hours onwards, one-third of their effort was to go against guns and two-thirds on road movement of troops. Cabranks would function. The borrowed medium bomber wings were to devote their attention to all forms of artillery and smoke weapons, and Desert Air Force medium and light bombers to attacks on Solarolo, if the headquarters of 26th Panzer

V Corps Signal O.725
1 Dec. 1944
A.A.H.B./IIJ11/58/
16A-C, App. B-42
(Footnote)

(1) V Corps Op. Inst. No. 17, Air Plan Op. 'Excalibur' Phase 1, 3 Dec. 1944. (A.A.H.B./IIJ11/58/16A-C, App. B-43).
V Corps Air Support Instruction, No. 1, 30 Nov. 1944. (A.A.H.B./IIJ11/58/16A-C, App. B-42, Annex III).

(2) But four squadrons of fighter bombers had not yet completed training.

(3) Normal bomb loads November 1944

Spitfires	500 lbs
Thunderbolts	1000 lbs or 6 rockets
Kittyhawks	up to 2000 lbs
Mustangs	up to 2000 lbs
Baltimores	up to 3000 lbs
Mitchells	4000 lbs
Marauders	4000 lbs

Loads varied according to type of target.

Types of Bombs Fragmentation, General Purposes, Demolition and Fire bombs (Flying Crocodiles or Fuel Tank Incendiaries).

(4) At 1700 hours.

Division was still there. On the night 4/5 December, intruders were again to cover the gun area S.E. of Castel Bolognese. On 5 December, if the ground troops had reached their objectives, fighter-bombers were to stage a 'Timothy' limited area 'blitz', in addition to normal support. Medium bombers were again to concentrate on artillery defences.

V Corps Advance South of Highway 9

Ravenna was secure and a promising start had been made by its capture and the throwing-back of the enemy to the Lamone. The main force now struck in the direction of the Pideura ridge. A mile upstream, Polish units pressed ahead against stiffening opposition, overwhelming the German resistance. They took Montecchio, Monte San Rinaldo and all the high ground to the south, securing V Corps' left flank. On 7 December, V Corps took Pideura village and extended the bridgehead over the Lamone, rendering the holding of Faenza, in the noose created, more and more precarious. The fall of Pideura was probably the spur to a sudden change in the enemy's strategy. To this point he had hoped to hold Eighth Army without drawing on his Fifth Army front or his reserves. Now, in view of his policy of giving no ground, he regarded the failure to hold us on the right and to prevent our crossing the Lamone as signs of ill omen. He saw that a full scale offensive was impending. By 8 December, he had decided to reinforce urgently while Fifth Army's front was quiet and sent in the 90th Panzer Grenadier Division from reserve. Wireless intercepts, indicating its arrival on the right of the new bridgehead, reached Corps just in time.

The Effect of bad Weather on planned Air Support

Bad weather threw the air plans execution out of joint from the outset. The first day's operations bore little relation to the intentions. No medium bombers were over the battle area. Many fighter-bomber missions were abortive. Those few missions flown failed to achieve any decisive results, for they were out of their true context. The ground troops advanced without appreciable air assistance, although they indirectly enjoyed the effects of previous air attacks in the area and steady unobtrusive air operations in the rear areas of the general front, on dumps, reserve areas, railway lines, bridges and depots.

On 4 December, the erratic weather cleared. By clipping the plan, the main objectives were broadly pursued. Before 1030 hours, 126 fighter-bombers had attacked gun and mortar positions. Thereafter, they turned to strongpoints.(1) A sharp attack by Thunderbolts with bombs and rockets on the 278th Division's H.Q. west of Cotignola left every building smoking or afire.(2) The plan for medium and light bombers came at last into play. 57th Bombardment Wing's Mitchells partially achieved their designs against defended areas at Bagnacavallo(3) and Faenza(4), where concentrations were

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- (1) On 46th Division's front.
 - (2) Ten 500 lb bombs and 174 rockets were employed.
 - (3) 24 Mitchells.
 - (4) 24 Mitchells. 27 others found the target completely obscured by cloud and returned to base. Another 22 under the same conditions, bombed Tortona instead.

reported as good and fair respectively. Desert Air Force Marauders(1) and Baltimores(2) joined in the anti-battery attack, with unobserved results. The ground forces were satisfied that these attacks were successful and reported that the German artillery fire dwindled almost at once when they began. Their only regret was that low cloud over the battle area on the following four days prevented their continuation.

No.1 Mobile Operations Room Unit reported the record effort to that date of 93 Desert Air Force missions involving 613 sorties that day, - 4 December - , with some 500 of them on close support. For a narrow front, this must be conceded to be substantial participation of tactical aircraft. It proves that in spite of the major air effort against North Italian communications continuing from its initial launching in early November, Tactical Air Force could still afford to be, and definitely was, unsparing in its support of an active front when appealed to. But its excellent intentions were then nullified by four days of rain, snow and low cloud, which literally brought all air operations over the front to a standstill. To make matters worse, the trend of German policy towards reinforcement continued and in the hands of the acting Supreme Commander - General von Vietinghoff - a more enterprising man than his chief Kesselring was willing later to concede - a general hardening and desperate aggressiveness became quickly apparent. To seize the full import of this change of face, it will be necessary to digress briefly and consider the drift of contemporary German thought.

But before recording its sudden and violent expression in action, the position late on 8 December must be summarised. Eighth Army had captured a bridgehead over the Lamone, bypassed Russi, and captured Ravenna. Deceived by feint attacks and confused by air assault, the enemy had failed to prevent the extension of the main bridgehead. The Allies had created an effective threat to Faenza, but were suffering from the handicaps of a tenuous supply line. To stiffen his front, the V Corps Commander began a series of moves. At this awkward moment the enemy reacted.

THE GERMAN COUNTER-OFFENSIVE AND AIR ATTACKS ON
THE EIGHTH ARMY FRONT

Changes in German Strategy

At the beginning of October, Field Marshal Kesselring was wounded in an Allied air attack on Highway 9 - the Via Emilia.(3) He was invalided back to Germany and did not return to Italy until January 1945. Army Group C was taken over in the interim by General von Vietinghoff, the Commander of Tenth Army.

In a reminiscent study written after the war, Kesselring paid a tribute to his higher commanders. All, he said, were men endowed with supreme qualities. He qualified this by a wish for more toughness in von Vietinghoff, more optimism in Mackensen and more enterprise in Lemelsen. In the case of

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- (1) 22 aircraft.
 - (2) 23 aircraft.
 - (3) Refer to Appendix ³⁴~~35~~ for list of roads to Rome.

the first, this was an odd judgement, for toughness was precisely the leading characteristic of von Vietinghoff's period of stewardship.(1)

From May to September 1944, Kesselring had lost to other fronts three of his original twenty-three German divisions and had disbanded one other; but he had received from outside Italy ten divisions(2) and three divisions' worth of extra replacements, as well as two Italian divisions and part of a third. Opposed to him there were, on 1 October, only 19 Allied divisions.

His intention through November had been to hold the Apennine position, with the Fourteenth Army on the right flank, and the Tenth Army on the left flank in the river country. With the balance of his forces unchanged, he expected to hold the Allies roughly on the positions then ruling and to offer battle, when it came in the Spring, south of the River Po. He was not neglecting his rearward defences, however. On the Po, the main crossings were fortified and expanded into a continuous system, allowing the defence of that river and the Ticino river, covering Milan. South of the Po, the Genghis Khan line along the line of the rivers Savena, Idice and Reno was under construction. This east - west line covered Bologna from the east. The extreme left was covered by the strong defences of the Argenta Gap(3) and the inundations round Lake Comacchio. It was hoped to hold this line as well as the Apennine positions in the west, where, apart from the heavily fortified hilly perimeter of Bologna, and local perimeter defence of Modena and Parma, there were no rear defences. This was a dangerous policy, for if the Genghis Khan position was pierced, it would be difficult for Fourteenth Army and Army Liguria to retreat behind the Po in time.

North of the Po, the Venetian or Adige line, the main line of defence, was already a formidable barrier. It ran from the sea at Chioggia to Lake Garda.(4) Almost everywhere the lie of the terrain gave it natural strength: from Borgoforte to Monselice, human ingenuity had overcome nature's indifference to German interests by constructing a system of tank obstacles, fire trenches and concrete works comparable with positions on the Western Front in the first world war. The general confident German handling of the situation may thus be seen to be based on concrete knowledge that forethought had provided for their forces if the worst happened and slow retreat was forced on them. The Higher Command could thus dictate fanatical defence of every inch of ground to the last drop of blood and Kesselring get the most out of his officers and men and still successfully maintain his status with his unpredictable Fuehrer.

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- (1) Campaign in Italy Pt. 1 (concluding remarks by F. M. Kesselring) Serial No. 2170 (Enemy Doc. Sec. Cabinet Hist. Branch. Rep. AL. 728). German Strategy Brit. Hist. Sec. C.M. (A.H.B./IIJ11/58/21).
 - (2) One was disbanded.
 - (3) A narrow defile between artificially flooded land and the lagoons of the Valli di Comacchio (Valli means lagoons).
 - (4) It was based on the Adige River, the Euganean and Berici hills and the Alpine foothills north of Verona.

Kesselring's Authority(1)

When von Vietinghoff had been Army Commander, it had been he who advocated short planned withdrawals to superior lines and Kesselring who feared the psychological effect of continuous retreat. On 14 September 1944, Kesselring and von Vietinghoff were discussing the day's misfortunes in the Gothic Line fighting. After pointing out the error of not disposing troops in depth, ridiculing stories of heavy losses and enjoining the moving of tanks forward in spite of crushing casualties, the Supreme Commander took up von Vietinghoff on his plan to shorten the line. This is how the conversation developed.

- K: 'I think the result ... would be to take your army out of its fortifications into open country to save 10 kilometres ... I think that would be twice as costly as to stay put.'
- V: 'I looked at it from the point of view that we could make a fighting withdrawal instead of having to defend our present positions.'
- K: 'I said defence, and I take the responsibility for it. If I give you preliminary orders for a withdrawal and you pass it on to the Corps, and they pass it on to the divisions, then you will see the divisions with three quarters of their men back before you can bat an eyelid. After all the work we put into this Green Line I don't value it as cheaply as that.'

No signs here of inflexible, misguided orders from the Higher Command. After the war, von Vietinghoff still maintained that Kesselring inclined increasingly to the concept of rigid defence, when an elastic defence would have been wiser. Kesselring himself, while admitting that any excessive demands for tanks and other equipment would have been curtailed, while broadcasting the few directives that came from Hitler without demur, takes on himself all onus for the direction of the campaign. He was too busy with the job to care much whether or no he was in the good books of the 'powers that be'. In seven years he had asked fifteen times to be relieved of his post. He told Hitler, Goering, Keitel or Jodl what had to be told. His own position, he said with truth, was too exalted for him to shelter behind O.K.W. (Supreme Command of the Armed Forces) or Hitler if he disagreed with their direction. In that case, he was not afraid of putting his opinions in writing to Hitler or paying special visits to H.Q. to put his case. He had saved the German armies from disaster after the Salerno landings. He had obtained reinforcements, so justifying his conduct of the campaign in the eyes of the German world. By persuading the reluctant Higher Command to agree to his delaying action at Lake Trasimene while the main forces withdrew, he had again saved the cream of his army from disaster. He made mistakes, which he usually admitted; he was often outmanoeuvred, but, as Alexander has declared, only with great difficulty outfought.

(1) Tenth Army War Diary Extracts Reports and conversations
Captured enemy documents. GMS.61437/12 - 16 Dawson
 Translation A.L. 608(2) and Kesselring's comments.(A.H.B.6.)

The Degree of Hitler's Interference in the Conduct of the
Italian Campaign

Against the evidence of the Commander-in-Chief himself it is instructive to place the statements of such men as General Siegfried Westphal, (1) suggesting that the field commanders fought with one hand tied, that interference from Hitler prevented the High Command from winning the war.

The German Supreme Command of the Armed Forces - the O.K.W. (Ober Kommando Wehrmacht) - was created in 1934 by Hitler, with the object of directing and co-ordinating in general terms, but to his orders, the efforts of the three services, and at the same time of controlling the strong-willed Army General Staff. In 1938, he installed himself as Supreme Commander of the Armed Forces. In spite of stresses, the organisation survived until the end of the war, although to some degree it failed in its original mission. All through the Italian campaign, Hitler dictated the higher strategy relating to Italy through Keitel or Jodl or personally. (2)

The Supreme Command in Italy differed from the Allied Supreme Command in that it was not unified or all-powerful. Kesselring could request assistance from the Navy and Air Force commanders, and in practice, often obtain it. But he could not, as Field Marshal Alexander could at that time, command it. In his book on 'The German Army in the West', (3) General Westphal, Chief of General Staff until May 1944, states that Kesselring was in perpetual leading-strings. He writes that Hitler had at first allowed his commanders in Italy a certain limited freedom of action. Kesselring's stock had risen after his successful handling of the Salerno landings and his establishment of a firm line south of Rome. Kesselring was a Luftwaffe man - although his youth had been spent in the Army - and hence, in Hitler's eyes, not so prejudiced as the Army leaders. Hitler's faith was somewhat shaken by the Anzio landings and he took a strong interest in the implementation of the reinforcement plan already devised to meet a landing of that nature further north as well as in the preparation and execution of the series of counter-attacks. From then on, continues Westphal, Hitler began to interfere more and more drastically and continually pestered the commanders with trivialities, concerning himself with numberless details, prescribing answers to all sorts of questions only properly assessable on the spot, wakefully suspicious that something was being hidden from him, that an order had not been carried out or that a favourable opportunity had not been exploited. It was only because of Kesselring that he did not express his open dissatisfaction towards the troop commanders in as brutal a fashion as he did in the East. O.K.W. intervened, wrote Westphal, in the daily conduct of affairs.

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- (1) 15 June 1943 - 20 Nov. 1943. Chief of General Staff to C.-in-C. South.
21 Nov. 1943 - 25 May 1944. Chief of General Staff to C.-in-C. South-west.
- (2) A study of the Supply Organisation of the German Air Force 1943 - 1945.
Air Div. Control Commission for Germany, British Element, June 1946. (A.H.B./VD/94).
- (3) London 1951 Cassell. (Published in Germany under the title 'Heer in Fesseln' 1950).

Westphal left Italy owing to illness on 26 May 1944 and did not return. From 9 September 1944 to May 1945 he was Chief of General Staff to Commander-in-Chief West. Kesselring, after his illness, returned to Italy in early 1945, and on 10 March 1945 replaced von Rundstedt as Commander-in-Chief West. In view of Kesselring's achievements, of Westphal's ignorance of Italian affairs for the last year of the war, the extracts from the German war diaries becoming progressively available, and an over-all view of the air and ground battles as recorded in the present narrative, it would appear that Westphal is over-generalising. It was not humanly possible for Hitler or the O.K.W., engulfed as they were in two major campaigns outside Italy, to take the meticulous interest in Italy he suggested. Nor does the conduct of the ground and air operations suggest any such confusion of tactics and strategy. There was usually an admirable cohesion about them that accords with the pattern of a well-integrated team in full possession of their senses making the best possible use of their material, manpower and terrain. They contained twenty or more experienced Allied divisions successfully for nearly two years. If evidence such as Westphal's is accepted unreservedly, the ground for a reasonable measure of the Allied achievement is cut away and nothing but a featureless medium left to consider. Contrary to his perhaps intentionally misleading thesis, the Allies found the German system to be characterised by cohesion and a strongly marked and rational organization. The enemy fought the campaign the terrain suited best - a defensive one.

Increasing Threat of Eighth Army Offensive

Von Vietinghoff withstood Fifth Army's October attacks by reinforcing his right flank⁽¹⁾ and, he halted the Allies nine miles short of Bologna. He knew that a comparatively small advance would put the Allies on Highway 9, split his front and create a threat of disaster. But he rightly adjudged the near-certainty of Allied exhaustion and in that hope held on as at Cassino, reinforcing the parallel by bringing across the defenders of Cassino, the 1st Parachute Division. The three best German divisions in Italy now barred the Allies' way to the plains.

On the left, their reluctant withdrawal never seriously worried the Germans until December, when Faenza was threatened. They had lost two German divisions to the Hungarian front in November; now, in spite of sound regroupings, and temporary successes such as the destruction of the Allied bridgehead north of Faenza on 5 December, the general situation was menacing. It was now high time to reverse the previous movement of reinforcements and weaken the Bologna front to strengthen the Romagna defences.

Enemy Reinforcement of the Romagna and Counter-Attack

In early December, the 90th Panzer Grenadier Division began to move from reserve. For several days, Allied aircraft reported troop movements south and east through Lugo.⁽²⁾ On 8 December, it launched a counter-attack against the southern bridgehead over the Lamone. It was believed that the next major Allied thrust was coming from here, not (as it

- (1) From the north and the Adriatic sector.
 (2) Opposite I Canadian Corps.

actually was) from northwards, the following evening. The attack of the 9th lasted all day. The luck ran against the air forces, for the weather was never quite good enough for precise fighter bomber work. At times, cloud base was down to 2,000 feet. It rained and it snowed. The bombers were grounded, but 231 fighter-bomber sorties were achieved in the latter part of the day when the weather lifted somewhat. Troops, tanks, strongpoints, guns and observation posts were bombed, some of them only 500 yards ahead of Allied troops.(1)

The German counter-attack followed one of the heaviest enemy artillery barrages of the winter and came in with great impetus, backed up with tanks, on the northern flank, with the intention of cutting through from Gelle on to the ridge above the east bank of the Lamone.(2) An official narrative compiled not long after the event makes it clear that the defeat of the 90th Panzer Grenadier Division by the end of the day was due, not to the air support, but to the constant overwhelming Allied artillery curtains put down whenever the Germans formed up to attack and to the firmness of small infantry units.

Good Performances by Air Observation Post Aircraft

During the next three days, the time of the crossing of the Lamone by the Canadians south-east of Bagnacavallo, a feature of the fighting was the engagement by Canadian artillery of a number of towers and steeples used by the enemy as artillery observation posts. On several occasions between 9 and 11 December, air observation post aircraft, as well as a forward observation post unit in the San Giacomo palace, enabled some very effective indirect shooting by artillery to be carried out. Also, between 10 and 12 December, similar effective co-operation was recorded in another sector.(3) On the morning of the 11th, a tank squadron troop, with the assistance of an air observation post, 'registered' two bridges and subsequently each tank harassed the bridges with high explosive. Tanks shelled enemy posts in steeples in Bagnacavallo on indications from spotting aircraft.

Air Support for the Crossing of the Naviglio Canal

It took the Canadians from 13 to 22 December to cross the fiercely defended Naviglio Canal, on the east flank between the Lamone and the Senio. The hinge on which enemy resistance swung was the town of Bagnacavallo: even after the Canadians had crossed the canal north-east of it, the Germans still clung desperately to their positions in front of the town. To carry out the next phase of the December offensive, it was first essential to get as much armour as possible across the Old Canal. At this point Desert Air Force put an unusual deception plan into operation. At 1500 hours on 12 December, while the divisional artillery put down a dense barrage of mixed smoke and high explosive on the southern side of Bagnacavallo to hide the tanks crossing, fighter-bombers flew low altitude attacks in the area to drown the noise of the tracks on the

Operations of
21st Tank
Brigade,
Br. Hist.
Sect. C.M.
(A.H.B./IIJ11/
58/18).
D.A.F., O.R.Bs.

- (1) V Corps Operations Brit.Hist.Sect. C.M. Pt.III, Sec.C. (A.H.B./IIJ11/58/16(A)).D.A.F. and No.1 M.O.R.U., O.R.Bs.
- (2) Behind the 169th Brigade's front facing Faenza.
- (3) That of the 12th and 48th Royal Tank Regiments.

metalled road,⁽¹⁾ as the tanks of 12th Royal Tank Regiment moved up. 21st Tank Brigade reported these operations as 'entirely successful'. The tanks joined other formations in an attack on the brickworks south of the town, which the infantry then occupied without much difficulty.

Revival of Enemy Air Activity, November and December

No.1 M.O.R.U.
and D.A.F./Ops
O.R.Bs

M.A.A.F. Weekly
Intelligence
Summaries.
(A.H.B./IIJ1/43)

No.600 Sqn.
O.R.Bs

Another manifestation of von Vietinghoff's 'new broom' was the renewed night air activity, of considerable nuisance value albeit on a small scale. The effort was sustained for five weeks, then, after withdrawal of the small unit of ten ground attack F.W.190s, petered out suddenly. It was followed by a series of Allied punitive air operations against their bases.

The revival of enemy night air effort began on the night of 22/23 November, at a time when the fighting in the northern sector of the Eighth Army front was increasing in intensity, and Allied troops, with air support, were moving up to the Lamone River. The Germans still had their ten F.W.190s for ground attack operations. Some six to ten unidentified aircraft flew over the Forli-Ravenna area just after dark and dropped a few bombs west of Ravenna without much effect. The operations came as a surprise and a few Beaufighters warned to intercept made no contacts. The following evening, up to a dozen aircraft, probably all Ju.87s, in small groups, passed quickly over the front lines from Ferrara to Rimini and as far south as Fano. A few bombs were reported west of Rimini. A Beaufighter⁽²⁾ intercepted two Ju.87s east of Lake Comacchio; the gunner destroyed one and damaged another. A spell of four days of bad weather nullified any hopes of developing the programme, but on the night 28/29 November, some six aircraft, believed to include a few F.W.190s, were operating between Forli and Ravenna. A Beaufighter⁽³⁾ brought down a Ju.87 and anti-aircraft fire accounted for another. On 1 December, when the weather revived again, nine enemy aircraft were reported in the Ferrara-Forli-Bologna area. A Beaufighter⁽⁴⁾ that ran into a formation of five Ju.87s was attacked with great aggressiveness by the antiquated Italian-manned Stukas. Twice they forced him into cloud and made him take violent evasive action in the middle of his own attack. He claimed one probably destroyed and one damaged.

A change of policy must not be read into such rare incidents. It had been long concluded by the Luftwaffe, since they lacked adequate aircrews, aircraft, fuel and replacements, that any combat must in its essence approach the suicidal. The only chances of success in combat had been enjoyed by northern-based fighter squadrons, employed in intercepting the heavy bomber streams going over into Germany, Austria and Hungary or the medium bomber formations cutting Alpine railway lines. They had been able to select small groups or individual stragglers for attention with fair prospects of some not-too-costly successes.

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- (1) A method first used in the Battle of the Somme 1916.
See 'The War in the Air' Vol.II p.372.
(2) Of No.600 Squadron.
(3) Of No.600 Squadron.
(4) Of No.600 Squadron.

Enemy Air Attack on Eighth Army Headquarters

Ibid and 'Eighth Army Operations' Brit. Hist. Sec. C.M. (A.H.B./IIJ11/58/15(A))

The small attack of 2 December in the area of Cesena, where Desert Air Force's Advanced H.Q. lay, caused some excitement, although the H.Q. escaped damage. After a quiet week, on the 10th, another attack, small again but dangerous, developed without warning on Eighth Army H.Q. and Forli airfield. A few Ju.87s - not more than a Staffel of six flew at dusk over the Forli-Cesena area. Forli airfield was machine-gunned - harmlessly. A few vehicles on Highway 9 were hit. To this point the operations had been futile. Then a bomb fell(1) on Eighth Army's Cesena H.Q. It hit the Army Signal Office, putting nearly all line and radio communications out of action. In view of an imminent Canadian attack, this was highly inconvenient. But within an hour, communications with the three Corps(2) were restored and by midnight all lines were operating normally. There may have been an ingredient of luck in the enemy operation, but the event does, however, illustrate that the enemy intelligence was not always comatose. The size of that mission was contemptible, but its results came very close to being really disturbing. There is little else to record except the destruction of two Ju.87s on 22 December, and a run of three nights - 24/25th, 25/26th and 26/27th, when the Stuka unit made its final burst of effort for a long time to come.

Allied Counter-Air Operations

During the period of increased enemy night air activity, enemy airfields were not exactly neglected by the Allied air forces, but the effort was diffuse and on a small scale. Between 1 and 21 December, only four day attacks by small missions of Thunderbolts or Mustangs and two night attacks by a few U.S. and R.A.F. Bostons were recorded. The only day mission that achieved anything worthwhile in the course of attacks covering Villafranca, Ghedi, Bergamo, Bondolove and(3) Aviano airfields was that of 21 December. A few Thunderbolts sweeping over Ghedi airfield were lucky in finding several aircraft on the ground and damaged three.(4)

The day that Eighth Army H.Q. was hit seems to have goaded the Allies into more significant action. Indeed, it is not difficult to recreate the righteous indignation with which the Army pressed for retaliatory action and the alacrity with which Tactical Air Force reacted.(5) Most of the active enemy airfields were at extreme range in the Lombardy and Venetian plains. It was logical, therefore, that XXII Tactical Air Command should divert Thunderbolts by day and Desert Air Force light bombers by night in an attempt to scotch this dangerous form of nuisance. The difficulties of crippling a small, cleverly dispersed air force on bases furnished with signals intelligence and radar warning of approaching aircraft have

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- (1) At about 1700 hours.
 - (2) V, Canadian and Polish.
 - (3) Base of one Ju.87 Staffel.
 - (4) 1 Ju.88, 1 Me.109 and 1 S.M.82.
 - (5) T.A.F. D.A.F. and No.1 M.O.R.U., O.R.Bs.

already been underlined. Yet much had been done in 1944 to offset the steady flow of enemy aircraft reinforcements and reduce his strength. (1)

The first part of the programme was carried out in daylight by Thunderbolts, and this was decidedly more effective than the second part, carried out at night by U.S. and R.A.F. Bostons. The Thunderbolt formations struck the right note on their very first day, 23 December. One mission destroyed 14 second line Italian aircraft on the ground at Milan/Bresso. On 24 December, a mission bombing Thiene reported destroying fifteen single-engined aircraft on the ground, damaging two and cratering the runway. On 26 December, Thunderbolts visited Vergiate (twice), Cascia, and Lonate. On the second call at Vergiate, two S.M.82s and one Mc.202 were reported damaged: at Cascia, two Ju.52 transport aircraft were damaged. Lonate was the day's real success. Twelve S.Ms and four Ju.88s were reported destroyed and five Mc.202s damaged there.

Six U.S. Bostons had been over Vicenza the previous night, reporting good coverage of the north dispersal area, but no aircraft hit. On the night 26/27th, forty-four U.S. Bostons bombed lights on Turin/Mirafiore airfield. They scored hits on something, but what it was they did not observe. There were several more Boston night attacks that month, (2) involving three on Villafranca, (3) one on Piacenza, and one on Ghedi. Buildings were seen to be hit and bombs were dropped in the wide dispersal areas, but no crews could state definitely that they had hit any aircraft.

Growing Crisis in the Axis Air Forces (4)

There are no Axis records yet available to check Allied claims, but it seems reasonable to assume that at least 50 aircraft of several categories on combat, transport and communication tasks were destroyed or damaged in all. When these results are added to other difficulties then confronting General Ritter von Pohl at his headquarters at Malcesine, the slump of activity that followed is easy to understand. Supplies were dwindling, (largely as an over-all result of air attacks); half of the aviation spirit in Italy had been ordered to be sent to the Reich in October said von Pohl; 24,000 German Air Force personnel, out of 89,000, had been drafted to the Army on front line duty in Italy and elsewhere between 1 September and 31 October.

(1) Allied estimates of enemy air losses from 1 Jan. to 22 Dec. 1944.

	Destroyed	Probably Destroyed	Damaged
<u>In air combat</u>	3,753	899	1,262
<u>On the ground</u>			
Transport aircraft	84		38
Bomber aircraft	212		85
Fighter aircraft	322		134
Type not reported	1,220		886
<u>Total enemy aircraft losses in the air and on the ground through 22 Dec. 44</u>	5,591	899	2,405

Consolidated enemy air losses lists have not been found.

- (2) Night 27/28th - 20 aircraft: night 28/29th - 19 aircraft: night 30/31st - number not recorded.
 (3) Base of two Ju.87 Staffeln.
 (4) Von Pohl Reports - C.S.D.1.C.(Air) C.M.F. No.A596/FN.93, 19 Oct. 1945 (A.H.B.6. Translations), M.F.A.F. Intelligence Bulletins. (A.H.B./11J1/43).

Von Pohl, however, was not without hopes. His continued requests for F.W.190s in a night fighting role had borne fruit. The first instalment of ten arrived in the last week of December.(1) The Ju.87s were to be fitted with the Egon system of radar control, which would enable them to occasionally turn the tables on the Beaufighters, as well as find their targets with greater precision. Lastly, and perhaps the best news of all, Oberkommando Luftwaffe had promised him a few jet-propelled fighters - Arado 234s. Forty Me.109 Italian-manned fighters for intercepting medium and heavy bombers arrived during the week ending 4 January, after a lengthy period of resigned impotence in the face of heavy destruction. But he did not misread the trend of events and foresaw a time in the late Spring of 1945 when he would no longer have the wherewithal to continue active air warfare on a scale which had any meaning.

AIR SUPPORT IN THE ADVANCE TO THE RIVER SENIO

Support for Canadians at Naviglio Canal(2)

14 December, the second day of the process of crossing the Naviglio Canal, brought bad weather again, but in spite of this, 20 missions of fighter-bombers supported the Canadians with low attacks on Bagnacavallo and trenches and troops along the canal. The Canadians signalled that this support was of great assistance. One Canadian regiment reported slit trenches along the canal full of dead. Light bombers could not operate. On the 13th, without air support, the Canadian Armoured Division had been thrown back by a savage counter-attack (one of a series by the newly arrived 356th Division). By the end of 14 December, the day of the valued air support, the Canadian Infantry Division had held its bridgehead north of Bagnacavallo and the armoured division had forced its way across the canal and joined up with the infantry.

Air Support for the Advance to the Senio

As the Canadians fought across the Naviglio Canal, British and Poles attacked south of Highway 9 and called for full close support. Air support for the Canadians, by then in control in their sector, dwindled. A full effort of 91 missions in 559 sorties was put out in the Celle-Faenza area. Some Spitfires(3) bombed and machine-gunned two tanks; one of these, sheltering by a house, was covered by debris when a direct hit demolished the house; the second was stopped in its tracks by bombs. Later they were found by Army troops to have been both destroyed by the air attacks. The bridges over the Senio, the next river to be crossed, came in for attention by Kittyhawks and Mustangs.(4) The Kittyhawks damaged one of them with several near misses; the Mustangs dropped all their bombs on it and reported it demolished. There were three small, successful attacks on gun

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- (1) The 10 aircraft sent him only stayed one week. The balance of Axis air strength was:-
 15 Me.109s Tactical reconnaissance.
 20 Ju.188/Me.410/Ju.88 Long range reconnaissance.
 30 Ju.87s Night harassing bombers.
 40 Me.109 fighters.
- (2) D.A.F. and No.1 M.O.R.U., O.R.Bs. I Canadian Corps operations Br.Hist.Sec.C.M.F. (A.H.B./IIJ11/58/18).
- (3) Of No.244 Wing.
- (4) Of No.239 Wing.

V Corps
 operations
 Br. Hist.
 Sec. C.M.
 (A.H.B./IIJ11/
 58/16A-C).

areas near Faenza and Castel Bolognese by Baltimores.⁽¹⁾ This was the period of night-flying Stuka attacks: Spitfires⁽²⁾ patrolled at dusk, but sighted no enemy aircraft.

The Army made slight, important gains. The New Zealanders took Celle after a very bitter struggle. The Indians met minefields on the approaches to Pergola and were pinned down by fire. On the 16th, Pergola fell to the Indians, while 2nd New Zealand Division closed up to the line of the Senio. The Poles drew level. At dawn on the 17th, the Indians had established two small bridgeheads across the Senio, but these could not yet be exploited.

Close Air Support in the latter Half of December⁽³⁾

Air support on these two days of major fighting was by no means all that had been hoped for. The fierce weather was a major handicap. On the 16th, 13 of the 35 missions attempted had to be abandoned, but the efforts of the rest in support of the advance were appreciable. It was too rough and cloudy for light-bombers to operate. Faenza was entered this day. On the 17th, weather improved for a short spell and the close support was brought to bear to the southwest and north of Faenza. A German headquarters suffered two air attacks which must have dislocated tactical command temporarily.

It was hoped at this time to cross the Senio. In accordance with long established procedure, fighter-bombers concentrated on three of its vital bridges to prevent enemy withdrawal. They destroyed one at the first attempt and, in four attacks, destroyed the second and damaged the third. On 18 and 19 December, the weather inhibited all flying. The next day, in spite of cloud cover, a small effort was put out in bad conditions to assist the Canadians hard put to in the area of the Naviglio Canal to the north. In particular, 24 Spitfires carried out some spectacular deck-level strafing immediately ahead of troops and destroyed two troublesome strongpoints. On 21 December, dense fog enveloped the battle area, but better conditions northward enabled Desert Air Force to switch some aircraft to the cutting of railway lines and bombing of movements north of the Po.

It was reported that the Senio defences were very strong, although it was not yet fully realised how strong. Profiting by a lift in the weather on the 22nd, Spitfires and Kittyhawks attacked guns and strongpoints along the banks. Thunderbolts⁽⁴⁾ achieved impressive destruction on a headquarters and occupied buildings. They were followed by Mustangs⁽⁵⁾ who dropped fire bombs (fuel tank incendiaries) on the same target, the combined effort resulting in the burning out of many of the buildings.

Up to and including Christmas Day, the rapidly deteriorating weather ruined the pattern of close support. Snowfalls increased and very low temperatures were recorded. The only consolation the ground staff found was that conditions were a little better than at windy and exposed Penna Point a year before.

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- (1) Of No.253 Wing.
 - (2) Of No.7 S.A.A.F. Wing.
 - (3) No.1 M.O.R.U. and D.A.F., O.R.Bs.
 - (4) Of No.85 Squadron.
 - (5) Of No.5 Squadron.

They were still very rough. Forty missions were flown on Christmas Day, a large proportion of them on close support, but these were greatly surpassed on Boxing Day, when the light bombers were at last airborne. (1) Escorted Baltimores and Marauders attacked battle area positions, fuel dumps and the marshalling yards up at Castelfranco and Conegliano. The Senio defences were again targets for the fighter bombers, of whom 104 separate missions concentrated on guns, strongpoints and entrenched areas in the floodbanks. (2) Again, on the 27th, a cold clear sunlit day came to the aid of Desert Air Force and the two desperately engaged divisions; of 553 sorties, about one-half continued the softening of the Senio defences. The weather record for the next three days was a black one. The year closed in favourable conditions, however, and a full day of close support by some 50 missions suggested what might have been done in a friendly run of flying weather. Spitfires put out of action a big enemy motor repair unit near Castel Guilfo, adding to the German's many supply problems. But it was too late. The whole situation was hardening to a stalemate.

Role of XIII Corps (3)

On the right flank of Fifth Army, XIII Corps, to assist Eighth Army, had undertaken an attack towards Highway 9 from astride the Santerno to facilitate the crossing of the Senio. They were held up by the Vena Del Gesso, a large, wide escarpment. The request for a turning movement by the Polish Corps was rejected; Eighth Army needed the Poles for its own attack on the Senio. It was conceded that the two corps might attack simultaneously: but four months were to pass before this plan could be put into action.

Operations to secure the East Bank of the Senio: 19 to 31 December

Ground operations by Eighth Army forming the background to the record of close air support just described consisted in a forward move up to the east bank of the Senio.

On the night 19/20 December, the Canadian Corps broke out of its bridgehead over the Naviglio canal and, after bloody engagements, drove the enemy back behind the Senio. On the 21st, Bagnacavallo was occupied. But for a mile south of Alfonsine and in the Cotignola area, the enemy still remained east of the river on the flanks. (4)

On V Corps front, slow progress was made. By the end of December, it had advanced to the Senio. The Poles took over some of the territory of XIII Corps, whose troops were weary and who had lost 8th Indian Division to the western forces meeting an enemy threat in the Serchio valley.

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- (1) They flew 114 sorties in 10 missions.
 - (2) These entrenched floodbanks were a new development and were to prove extremely difficult to overcome, even with all available arms and aircraft, in the Spring of 1945.
 - (3) The Campaign in the Northern Apennines, Pt. III, Sec. B. Br. Hist. Sec. C. M. (A. H. B. /ILJ11/58/15A).
 - (4) Referred to as the Alfonsine Pocket.

Final Plans at Army Group Headquarters

The Eighth Army had borne the brunt of the ground fighting in November and December and achieved its objectives in drawing off three divisions employed or employable on the Fifth Army front. With the enemy round Bologna thus weakened, hopes of its early capture revived. The change in command of the 15th Army Group involved no fundamental change in strategy. The new commander - General Mark Clark - redefined the object of the operation as being the destruction of the enemy forces in Italy⁽¹⁾ so as to prevent the withdrawal of large parts of them to other and more vital theatres. Bologna and the consolidation of the general line Bologna-Ravenna remained first objectives.

The Fifth Army now stood ready to thrust against Bologna, while XIII Corps was simultaneously to make thrusts down the Santerno and Sillaro valleys, to assist the Eighth Army. The Eighth Army was to continue closing up to the Senio and be prepared to attack across it in conjunction with the Fifth Army's attack, as soon as there was a reasonable chance of good flying weather. Its main effort was then to be directed westward across the Santerno and towards Bologna; a secondary attack was to be made through the Argenta Gap.

Abandonment of the Offensive

The winter offensive was abandoned at the close of the year.⁽²⁾ Adverse winter conditions on the eastern front had denied Eighth Army its advantages of superiority in armour and air support. Bologna, defended in great depth, was still too strong to take. The enemy had a reserve of four divisions; Alexander could not both equal this figure of reserves and fight an offensive battle simultaneously. There was only enough ammunition in the theatre for a full-scale offensive for 15 days; it would be fatal to expend it. The armies needed re-organising - in other words they were worn out. They must build up their strength, pass temporarily to the offensive-defensive and organise a winter line.

Mediterranean
Air Strategy
A.F.H.Q.
Directive,
1 Jan. 1945.
(Cabinet Hist.
Archives)

Restatement of Allied Air Policy

Included in the general reformulation of theatre strategy, inevitable at this point, was a restatement of the air forces policy. It contained very little that was new, but it enlarged and clarified ideas relating to tactical air operations in Italy. Disputes were bound to arise in the mental climate of frustration and weariness then prevalent. It was therefore stated reassuringly at the outset that the primary object of the tactical air operations was to be the support of the 15th Army Group.

It was always important to hamper the enemy's ability to move and supply his forces and, in particular, to hinder the movement of reserves into, or out of, Italy. When offensive operations were imminent (and they were not) it might be necessary to afford priority to close battlefield support.

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- (1) Theatre Operational Directive. H.Q. 15th Army letter 48/9 - P/251 (Final), 20 Dec. 1944. (A.H.B./IIJ1/90/40(E), Encl.2a.)
 (2) Signal MEDCOS 225, 8 Jan. 1945. (A.H.B./IIJ1/90/40(E), Encl.14a.)

During periods of inactivity on the battle front, the requirements of tactical air support were to be reduced to the essential minimum, and the effort of the Tactical Air Force must to some extent be conserved against the time when the maximum intensity of operations again became necessary; subject to this, however, some proportion of that effort might be made available for other tasks of temporary major importance and for increasing the weight and continuity of air attack against the German withdrawal in Yugoslavia.

Four other commitments had to be met - the air supply of resistance movements in Northern Italy, co-operation with guerilla activities and airborne and resupply operations. Apart from all this, there remained the vital and major tasks, not always appreciated by those who preferred to see their aircraft rather than read about them, of the interdiction of enemy land and sea communications and the destruction of his stores and equipment. This was the largest single item on the air programme from November to March and was to be stepped up with improving weather conditions. Direct or indirect, it was all in support of the Army Group.

A timely survey of the current position of Coastal Air Force was made. Drastic cuts in Allied anti-aircraft and anti-submarine defences had arisen out of the proved inferiority of enemy air and sea forces. Subject to periodical review, it was now accepted as a general principle that specific air defence arrangements were unnecessary outside Italy and the Adriatic coast, or in Italy south of Naples. Tentative plans were afoot to move the medium bomber wing then in Corsica to the mainland in Desert Air Force territory. With their departure, air defence of Corsica would cease. Although air defence, convoy protection, anti-shipping and anti-submarine(1) activities remained primary Coastal roles, their aircraft had been, and might still be, profitably employed in tactical land operations in areas concerned,(2) on co-ordination with local tactical air commanders. Air/Sea rescue remained under the control of that air force.

AIR SUPPORT OF FIFTH ARMY IN LATE 1944

The Value of reduced Air Support

Bad weather, a shortage of ammunition, and solid, stoutly-manned German defences made any major offensive operations by Fifth Army in December impossible. What close air support could be afforded was highly appreciated by Fifth Army, who defined its aid as a compensation for the shortage of artillery ammunition and saw its own prospects of gains increasing with any rise in the programme for air attacks on guns, mortars, troop concentrations and assembly areas.(3)

In spite of the heavy air commitments in other spheres, Fifth Army enjoyed several improvements that autumn in the way of tactical support by XXII Tactical Air Command. In October, U.S. Thunderbolts had proved their superior fire

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- (1) The only active submarines were one man craft, employed in landing enemy agents.
 - (2) Such as, for example, the western sector of the Fifth Army front.
 - (3) C.G.S. 5th Army Appreciation, 19 Nov. 1944.

power, range and strength over the Spitfire and the Kittyhawk. The new rockets and fuel tank incendiary bombs proved more successful even than hoped in the temporary demoralisation of gun crews.(1)

During November, direct close support was on a modest scale, most of it in the II U.S. Corps sector at the south and south-east approaches to Bologna. The Rover 'Joe' control organisation was withdrawn temporarily from operations, but routine tactical, artillery and photographic reconnaissance missions continued to be flown. Pre-arranged direct support in response to requests from corps was severely rationed; for example, some four missions only were allotted daily to the British XIII Corps and these were flown against hostile batteries or forward installations.

Plan for Close Support of XIII Corps in December

In December, the British XIII Corps attacked towards Imola in aid of Eighth Army's left flank and during its hard going enjoyed full direct air support. This period lasted from 4 to 23 December and the operations illustrate well the joint difficulties shared by ground troops and aircrews in a critical offensive, where an unfavourable terrain and stout enemy, even without an air force, frustrated a sound plan which might have turned the scales on the Eighth Army front. The difficulties of terrain, in particular, called for special co-operation between air forces and artillery.

The ground plan was, briefly, for a thrust, either towards Imola or Castel San Pietro, depending on Eighth Army's progress. Three British divisions were to capture Roncosola, Monte Taverna, the Vena Del Gesso escarpment, Monte Penzola, Parrocchia di Monte Maggiore, Scaglia, Frassineto and Vedriano(2)

Thunderbolts and Spitfires covered the thrust. Rover Joe supported 78th Division and 6th British Armoured Division initially, then 1st British Infantry Division: the control operated from first light on 4 December.

Artillery Smoke as Target Indicator

The data of target indications included an item rarely seen - namely, the code letter of artillery smoke combination to be used if required. Apart from winter haze, landmarks were frequently rare and the terrain generally awkward from a visual aimer's point of view. The enemy defences, like the Allied, were in depth. Rover 'Joe' called for the smoke and gave the time. The enemy was known often to retaliate with similar smoke; so for the guidance of aircrews they were given a table showing the code letter, the firing round system, with the colour and the pattern of smoke.(3)

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- (1) Confirmed by P/W reports. Notes on XIII Corps air support (A.H.B./IIJ11/58/20(B)).
 - (2) XIII Corps Air Support Instruction No.1, 1 Dec. 1944 (A.H.B./IIJ11/58/20(B), App.A-3, Annex L). Operation Instruction No.24, 27 Nov. 1944. (A.H.B./IIJ11/58/20(B), App.D-18).
 - (3) Bracket, split bracket or box. Interval between rounds 15 seconds; distance between bursts 100 yards.

The Fight for Tossignano and the Vena Del Gesso

The first phase went well and ended with the capture of Monte Penzola on the night of 8/9 December. At dawn on the 12th, a vigorous enemy counter-attack, in the vital Monte Grande sector, was defeated. The Armoured Division turned to the capture of Tossignano on the Vena Del Gesso and Parrocchia Di Monte Maggiore.⁽¹⁾ The village of Tossignano stood at the point where the Santerno valley cut through the sheer face of the Vena Del Gesso. The capture of Tossignano would not only threaten all the enemy's positions on the Vena itself,⁽²⁾ but would force the second side of the Santerno gap and open the road towards Imola. The advantages of capturing Imola were obvious. Bologna itself might thus be outflanked.

The attack started promisingly when XIII Corps entered the adjacent hamlet of Borgo Tossignano on the night 12/13 December. All attempts to take the village itself failed with considerable loss. Three separate attacks were made,⁽³⁾ but each was repelled; the operation was abandoned.

Air Attacks on the Tossignano Area

Both aircrews and artillery provided one another with target information and the smoke plan worked. Observable ground movement was on a small scale and because of the very difficult terrain provided no targets of value for either armed reconnaissance missions or for fighter-bombers. Throughout the period, fighter-bombers attacked targets close to forward troops. Although these attacks bore no direct relation to the tempo and pattern of the ground advance, as a 'Timothy' would have done, Corps made itself clear that the effect on morale was beneficial; and this, at a time of admitted fluctuating morale,⁽⁴⁾ was an important fact.

It is not intended to elaborate the day-to-day operations beginning on 9 December. Apart from the intermittent use of smoke, they were not distinctive; but mention must be made of the three days' effort against Tossignano and the adjacent areas on the 14, 15 and 16 December. The effort was sizeable,⁽⁵⁾ Thunderbolts, some rocket-firing, predominating. The sortie totals on 15 December were the largest, owing to fine weather, and over the three days absorbed the major part of XXII Tactical Air Command's close support effort over the whole Fifth Army front.

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- (1) By 78th Div. (Parrocchia = parish).
 - (2) 'XIII Corps in the Mountains' Br.Hist.Sec. C.M. (A.H.B./IIJ11/58/20A-B).
 - (3) By 10th Rifle Brigade.
 - (4) Refer to 'Notes on Welfare, Morale and Family Issues - Eighth Army Chaplains' Centre, Aug. - Sept. 1944' given in (A.H.B./IIJ11/58/24(A), App.A).
 - (5) In the absence of U.S. operations record books, the exact figures cannot be quoted. The higher level records, such as T.A.F. and the daily bulletins do not specify the size of missions and of the daily Tables of Operations for late 1943, only a handful have survived. Those for the period 30/31 Oct. - 6 Nov. 1943 were the last compiled. (Refer to App.A to O.R.B. of Ops. Record Sec., M.A.A.F. dated 14 Dec. 1943).

M.A.A.F. Op/int
Summaries H.Q.,
M.A.A.F., O.R.B.
Apps. T.A.F.
O.R.B.

It was not only a question of the air formations blasting a way for the ground forces. It was that, but in particular one of blunting the edge of a series of sometimes simultaneous counter-attacks in which the Allied units were, as has been noted, occasionally out-maneuvred. In this latter task, results certainly justified the air effort. The German counter-attacks were stopped. No decisive advance leading out of the air formations' systematic destruction of buildings, strongpoints, lines, guns and tanks materialised.

It was not favourable terrain. The manifold changes in contours and the broken pattern of the ground lent themselves to an infinite series of surprises. Much had to be left to chance; and chance favoured the Germans. Tossignano held out. So here, as in the eastern sector, the too-buoyant but understandable hopes of success died and the troops settled down, not to another winter campaign, but to a so-called passive period. It proved anything but passive, for enemy artillery, in greater strength than the previous winter, was usually active and enterprising; vicious patrols were always operating.

Resumption of the Attack on Bologna

It will now be necessary to fill in the record of the main Fifth Army operations towards the close of the year 1944. The numerous difficulties of air warfare in mountainous Italian terrain have been clearly shown in the narratives of operations at Cassino,⁽¹⁾ in the Brenner Pass, the northeastern frontier zone and elsewhere. With the depth of the defences on both sides of the front line and the picture of a multitude of small, partly or wholly invisible targets held in mind, the handicaps of the bomb aimer of the period in the usual poor visibility may well be conceived.

Monte la Battaglia had been captured on 27 September. General Clark decided to concentrate II Corps on to the axis of Highway 65, the direct road to Bologna. The defences of the Gothic Line were receding fast in the sector⁽²⁾ and the new drive held the last hopes of a break out of the mountains before the early worsening of the weather heralded in winter.

II Corps' Autumn Drive

Ibid

II Corps' new drive opened on 1 October. By the 4th, points as near as 22 miles from Bologna - had been reached. Thereafter, the daily gains fell. The enemy reinforced rapidly. A personal order from Hitler was read out to them on 6 October; the Apennine position was to be held at all costs. Von Vietinghoff switched a division from the Eighth Army front.⁽³⁾ The American forces found themselves faced by one of the most formidable natural lines of defence north of the Gothic Line and south of the Alps - the Livergnano escarpment.

This was a sheer high rock wall three miles long. From its rim the enemy held every southerly approach within his gun sights and above it commanded the plateau. Here, as everywhere else, the advance on Bologna met fanatical opposition.

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- (1) See this Narrative, Vol. I.
 - (2) Although in the Massa area, near the west coast, the Germans were to hold it for some months to come.
 - (3) 29th Panzer Grenadier Div.

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On 12 October, Monte Delle Formiche, (1) (only 12 miles from Bologna) and, on 15 October, Livergnano town fell. The climax of the attack was reached between 20 and 23 October, with the capture of Monte Belmonte, (2) nine miles from the centre of Bologna. This was their last and finest effort. At this point von Vietinghoff brought over the 90th Panzer Grenadiers and the 1st Parachute Division from the Eighth Army front. The exhausted Americans could make no further headway. On 27 October, Fifth Army went over to the defensive.

Air Support(3)

Whereas in the first half of October the greater part of XXII Tactical Command's effort was on battle area targets, in the second half the gradual slowing-down of ground operations led to a division of their effort into 50 per cent battle area target and 50 per cent rear area target attacks. 16, 19, 20, 24 and 31 October were the busiest days for the Air Command; their attacks were concentrated round Faenza, Imola and Bologna. But the terrain was unfavourable and the forces available insufficient to turn the scales. What impromptu local support was called for came from the II U.S. Corps to the Rover 'Joe' control, which had followed the Corps up the Highway 65 axis of advance. British XIII Corps was satisfied with the support and information afforded by tactical and artillery reconnaissance.

During November, as more lucrative targets in the form of communications and dumps were available whenever the bad weather lifted, there was no direct support of a nature or volume worth recording.

Last Operations in the Coastal Sector

In the western coastal sector, the enemy still held that part of the Gothic Line hinging on the mountainous Massa area. The final American effort to break through in October ended with the winning of Monte Caula, one of the guardian heights, on the 18th. In the Serchio Valley zone, on 9 October, the advance was slowed down. The danger was that if the Serchio Valley thrust acquired too great a momentum, the enemy would counter-attack. This would be undesirable, as Fifth Army had no reserves. Re-grouping for a new attack, Fifth Army left the coastal sector and the Serchio Valley to the 92nd Negro Division.

THE SERCHIO VALLEY COUNTER-OFFENSIVE

First Day of Enemy Counter-Offensive(4)

Early on the morning of 26 December, the Germans, after a short artillery bombardment, opened an attack on the Allied lines in the Serchio Valley, a little north of Barga. Infantry advanced along the high ground on both sides of the Serchio. Their attack succeeded beyond all expectations.

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- (1) 2,000 feet high.
 - (2) About 10 miles E. of Highway 65.
 - (3) T.A.F. O.R.B. XIII Corps Operations. Br.Hist.Sec. C.M.F. (A.H.B./IIJ11/58/20(A-B)).
 - (4) G Battle log and war diary 2nd Div.; 'From Salerno to the Alps' (Fifth Army History); M.A.A.F., Int./Ops daily bulletins, Dec. 1944. O.R.B. Apps.

The first successes fell to the Italian battalion, which captured in quick succession the villages of Sommacolonia, Tiglio and Bibbio. The German battalion spread steadily over the country north of Galliciano and westwards towards Monte Sumbra. By noon there was a big gap in the Allied lines and the 92nd Division was no longer capable of offering organised resistance. Their second line of defence was pierced in the afternoon.

Allied Air Reaction to the Threat

On 22 December, Thunderbolt patrols of XXII Air Command reported an enemy build-up in the Poggio - Piazza - Camporgiano - Castelnuovo sector. On 23 December, the Fifth Army Rover Joe control, attached to II Corps, was ordered to withdraw from support of British XIII Corps in the mountains and transfer to the IV Corps area.

G Battle Log
8th Ind. Div.
(Cabinet Hist.
Archives)

It will be remembered that Fifth Army's policy was to call for the maximum close support of the main sector of operations: at the time this was held by the XIII British Corps in the mountains. This policy was workable in a defensive or defensive-offensive phase, but in such an emergency ponderous, to say the least, and it meant in the event that during the initial two days of crisis air support was to be more or less ad hoc.

Allied Air Operations on the first Day⁽¹⁾

Int/Ops
Summaries H.Q.,
M.A.A.F.,
O.R.B., Apps.

Soon after the first blow was struck, XXII Tactical Air Command despatched several small Thunderbolt missions to attack the root of the enterprise as known to them, namely, the build-up area observed by their aircrews on 22 December. Three missions bombed the road and railway bridges at and near Castelnuovo and Camporgiano and missed them all. Another small mission sent to attack the railway bridge at Pievefosciana (just north of Castelnuovo) scored two hits on the eastern approaches. Other missions set on fire or destroyed ten buildings between Piazza and Castelnuovo. A few Spitbombers did some slight damage in the latter town. The whole situation was very fluid still and our Intelligence not clear as to what exactly was happening. One thing the air operations achieved was to give the enemy the first intimations that the Allies were on the alert and that whatever element of surprise had existed, no longer existed.

Enemy Operations on the second Day

G Battle Log
8th Ind. Div.
(Cabinet Hist.
Archives).

After a quiet night, with very slight shelling of our lines, the enemy advanced a little during the morning along both banks and pushed the 92nd's troops off their rough line Molazzana - Calomini - Vergemoli - Coreglia - south of Barga; they dug in at Rivola, occupied Barga, Fonte, Tiglio, Vergemoli and sent patrols out to Teraglia. By 2015 hours, the Mahratta Regiment had reached a line round Trassilico. The night was quiet and no movement was reported anywhere south of Castelnuovo. Very large numbers of refugees had poured all day into Bagni di Lucca.

(1) The records of XXII Tactical Air Command, including the Air Support Control Section, are not in this country. It is presumed that these, together with all Tables of Operations, are in the archives of the U.S. Air Force.

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Allied Ground Operations on the second Day

Ibid and War
Diary

By the end of 27 December, the whole of 19th Indian Infantry Division was holding a new defensive position astride the Serchio Valley. 21st Indian Brigade arrived at Bagni di Lucca. The 19th Brigade reported slight shelling and small arms fire in its sector. They made no contact with the enemy, although patrols reported Italians well to the east of the river.

Allied Air Operations on the second Day

Int/Ops
Summaries
H.Q., M.A.A.F.,
O.R.B., Apps.

The air effort on 27 December followed the now clarifying pattern of enemy progress. Only a dozen small Thunderbolt missions were available. One scored 14 hits on a road bridge at the key town of Castelnuovo and another claimed to have blocked the west end of a tunnel on the line to Camporgiano. Occupied areas and troop concentrations at Castel Vecchio, Vergemoli, Pievefosciana, Sommacolonia, Barga, Galliciano and Gragnonella(1) were attacked and many reported destroyed and damaged. One of the dumps at Castelnuovo was set on fire.(2) Three missions of Spitfire bombers(3) scored a number of hits on occupied areas at Piazza and Castiglione and on the railway viaduct at Camporgiano, and believed they cut the tracks and western approaches to a railway bridge north of Piazza.

That night, light bombers were switched to the Serchio front. Forty-four U.S. Bostons searched for M/T and hit and damaged a fair number on the road at Fiallone, Barga and Molazzana and attacked lights whenever seen. The enemy was still progressing on the ground, but over the front the Allied Air Forces held the initiative.

Enemy Contact with Indians on the third Day(4)

28 December saw the turning point in the enemy attack. Italian patrols east of the river had foraged as far as Alpe tre Potenze and Vico Pandellorum; but the danger points were along the river country. At 0756 hours an enemy patrol attacked forward Indian units and was dispersed. At this point the enemy recoiled discouraged. Exploring forward along the whole line, the Indians received many reports indicating a withdrawal. At 1530 it was reported that Italian partisans had occupied Galliciano; a little later, that that town and Seggio were clear of the enemy; that there were no enemy troops in Barga, only a few between it and Sommacolonia, and none in Coreglia. By evening Verni was clear. The enemy along the west bank were in the northern outskirts of Galliciano and firing at the forward Indian units. Our forces moved into Trassilico. The night was quiet.

Air Operations on the third Day

No sign of the enemy air force expected had been observed during the whole of the operations. At 1715 hours on 27 December, G Branch of 8th Indian Division reported that a few bombs had been dropped on their positions, causing slight

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- (1) For all locations refer to Figure 19.
 - (2) P-47s of 350th and 86th Fighter Groups.
 - (3) Of No.8 S.A.A.F. Wing.
 - (4) 8th Ind. Div. G Battle Log. (Cabinet Hist. Archives).

damage and casualties. In the absence of any other reports of enemy air activity it is probable that this was an error of judgment on the part of an Allied aircrew.

At 0830 hours, the Rover 'Joe' control switched from support of XIII British Corps arrived at Brigade H.Q., too late. At 1045 hours, Fifth Army H.Q. signalled that their air tentacle was on a listening watch, but would open up air support control as soon as desired. At 1120 hours, 19th Brigade was told to pass bomb lines and forward troop positions to Rover 'Joe'. At 1550 Rover 'Joe' reported the recapture of Gallicano. By this time the danger had already passed.

The Allied air effort on 28 December rose to 145 sorties by Thunderbolts,⁽¹⁾ and a handful by Spitfire bombers. The main effort was on occupied buildings in Vergemoli, Sommacolonia and Barga, in a word, on all the points of concentration. Motor transport and roads involved were also bombed to some effect, hindering the withdrawal and creating confusion at many points.⁽²⁾

Operations from 29 to 31 December

The record of the last three days of 1944 in the Serchia Valley is one of steady withdrawals by an enemy harassed along both sides of the river by Indian artillery and XXII Tactical Air Command's Thunderbolts.

All through 29 December, the entire Indian front moved steadily forward. Progress was impeded, as usual, by a liberal sowing of minefields. Controlled by Rover 'Joe', Thunderbolt formations concentrated on the gun areas and road junctions in the Castelnuovo bottleneck, hoping thus to pile up fruitful targets. But the enemy units melted away.

In turn, the Indians occupied Colle, Tiglio, Loppia and Bolognana. Just south of the Gallicano - Barga latitude, they decided to halt for the night. Barga was reported clear, but had still to be reconnoitred for mines and its blown bridge repaired. Patrols into Gallicano found it clear. During the day, several small Thunderbolt missions attacked guns and buildings all the way from the Castelnuovo area to those villages on both sides of the river still in enemy hands.

By the afternoon of 30 December, Gallicano, Barga and Sommacolonia (the first place captured) were re-occupied, but there was enemy shelling along the whole front. The only point the enemy seemed inclined to cling to was Molazzana. This was explained by air reconnaissance in their reports of troop movements westwards back into the Gothic Line round Massa. It was undoubtedly a covering action at a transport hub. Thunderbolts created some havoc there and claimed to have destroyed 13 buildings. Elsewhere the pattern of air attacks was again on the guns and troops round Castelnuovo and up the road to Piazza.

On 31 December, the Allied troops carried out their final cleaning-up operations and retook Molazzana. The situation was now regarded as restored and there was no support by Thunderbolts that day.

(1) 60 by 350 F.G., 75 by 86 F.G., 10 by 1st Brazilian Sqdn.

(2) Int/Ops. Summaries M.A.A.F. 8th Ind. Div. G. Battle Log.

SECRET

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Precautionary Moves by Allied Armies and Air Forces

Soon after the opening of the counter-offensive, General Mark Clark ordered the 85th Division to pass to IV Corps and stand in reserve north of Lucca, and he ordered 1st U.S. Armoured Division to the same area in reserve. Both moves proved unnecessary, but at the time the menace was taken very seriously. During 27 December, air photographs revealed no serious build-up or concentrations of artillery; and on 28 December, although at least three German divisions in reserve were handy and available, there were no signs of the appearance of any outside mobile force.

On 29 December, although the enemy was withdrawing, Tactical Air Force issued instructions to XXII Tactical Air Command⁽¹⁾ to prepare a preliminary plan for the emergency withdrawal of air force units from the Arno Valley, on the assumption that an enemy counter-offensive toward that area might render certain airfields untenable. If the enemy, even though only temporarily successful, succeeded in penetrating the Arno Valley at some point west of Florence, Pisa and Pontedera airfields might have to be evacuated. If an emergency arose, fifty or more transport aircraft were to be used to establish units on Tarquinia, Rosignano, Malignano and Viterbo. Nothing came of this plan, for the front reverted to its normal quiet status. There was little action until the Spring, only the usual arrivals of Italian deserters.

Abandonment of the Allied Ground Offensive

The pith of the situation now confronting the Allies is contained in the signal sent by the Supreme Allied Commander to the British and U.S. Chiefs of Staff on 8 January.⁽²⁾ A halt was called to the Eighth Army offensive after Christmas. Fifth Army's attack was at that time due to start at some date after 7 January. But on 30 December Field Marshal Alexander decided to abandon the offensive altogether until the Spring.

There were three main features in the situation. Firstly, on the right, bad weather and difficult terrain on the Eighth Army front had slowed down their advance disappointingly and adversely affected air support. Secondly, in the central Bologna sector, the defences were too strong to overcome in winter with the available forces. Thirdly, the enemy had built up a reserve of four divisions, and could, at his leisure, launch a counter-offensive, as had just been demonstrated. Fifteenth Army Group could not both attack and build up a reserve.

AIR SUPPORT POLICY AND OPERATIONS IN THE DEFENSIVE-
OFFENSIVE PHASE

Eighth Army and Desert Air Force Discussions

In the Fifth Army sector, there had been only limited operations for some months past and the Army had accommodated itself to its ration of direct tactical support. The winter brought no difference of opinion on this topic. Matters on the Eighth Army front were very different. On 12 January,

(1) Planning Directive M.A.T.A.F., 29 Dec. 1944.
Appx. G/SASO/86 to O.R.B.

(2) MEDCOS 228, 8 Jan. 1945. (A.H.B./IIJ1/90/40(E), Encl. 14a).

Eighth Army was ordered to hold its line and prepare to resume the offensive. The policy was to be one of active defence with limited offensives, the whole defensive system being based on immediate counter-attack.⁽¹⁾ In preliminary discussions, the Army, while admitting the case for less close support, pointed to the role of the Desert Air Force in the prevention of the building-up of counter-attack forces and the engagement of hostile batteries which, owing to shortage of ammunition and to the factor of range, could be engaged by no other means. The Army suggested 75 per cent of the air effort on communications and dumps, and 25 per cent on close support targets, these to include hostile batteries and forward reserve areas.

The Army Commander and the Air Officer Commanding met and the policy was concluded by 10 January. Only a small portion of the available air effort was to be allotted for employment against batteries, strongpoints and observation posts which could not be successfully engaged by other means. Rovers Paddy and David and all tentacles other than those with divisions and corps were to be withdrawn,⁽²⁾ but a small pool of tentacles and one Rover were to be kept on short notice at Army H.Q. ready for deployment in case of a sudden change in the ground situation. The Air Force was to be asked to provide adequate close support for the various local offensive operations contemplated.

Protest from V Corps

The drastic retrenchment in the close support effort thus implied evoked immediate objections from V Corps, who felt a far greater close support effort was necessary; it must be made so costly for the enemy to hold strong positions near the river Senio banks that he would either have to withdraw and surrender close domination of the river, or accept considerable casualties and hardships; it was also necessary to dominate hostile batteries. V Corps had been haunted by river defences for the past year and had spent many lives storming the positions on the far sides: it is not difficult to follow their line of reasoning. The following programme was suggested. Firstly, over a period of three days, as soon as possible, all buildings known to be enemy-occupied and within 1000 yards of the Senio should be destroyed by Desert Air Force. Secondly, that during the defensive period, on four days of each month, Desert Air Force should engage all known hostile batteries opposite the Corps front. Thirdly, that apart from assistance already mentioned, twelve missions should be allotted to V Corps daily⁽³⁾ and that when any division carried out an offensive operation, all the air support available should be given it.

These proposals were not acceptable to the Desert Air Force. It was, however, agreed that, if a list of houses being used as enemy observation posts on the front was

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- (1) After the salutary lesson of the Serchio Valley, a counter-offensive slant may be observed intruding into Allied plans. G - (Air) 8th Army History Aug. 1944 to May 1945. (Cabinet Hist. Sec. 1002/40/202.
 - (2) 8th Army Operation Instruction No. 1447, 12 Jan. 1945. M.A.A.F. and M.A.T.A.F/S.A.S.O., O.R.Bs. (A.H.B./ILJ11/58/15A-B, App. A-10).
 - (3) That was roughly the existing position.

submitted, their destruction would be examined as a programme to be carried out by Desert Air Force on days when weather precluded flying north of the Po or in the Balkans, but was suitable for battle area operations.

The Army case was vigorously pressed again by V Corps. The GSO II (Air) (1) at Army Group H.Q. was asked by the Chief of Staff to set out the case for the air force's change of policy and its practical implications in terms of sortie figures, and types of targets. He did so on 21 January in the form of a memorandum, which foreshadowed the reduction two days later of the daily effort on all tasks to 300 sorties. It tabulated the reasons for the air forces' change of policy. Tactical Air Force had received a new directive, in line with other theatre directives which stemmed from the Supreme Commander. This put the anti-communications programme in the North up to highest priority. Aircraft serviceability was falling seriously. In the past two months, aircraft casualties from various sources had been greater than during the peak period of mid-summer. The aircraft replacement flow was giving cause for concern and many types were becoming obsolescent. If Desert Air Force was to build up adequately for a Spring offensive, it must conserve. The Army was at present only getting 80 daily sorties. (2)

The argument continued, not without some heat. An order of 23 January confirmed that the only targets to be engaged in close support were to be heavy guns out of range of Allied artillery, and that other targets were to be engaged only when ground forces proposed to take immediate advantage of the air attacks. GSO I (Air) pressed for a fixed daily allotment of effort, small though it might be. They wanted to know exactly where they stood. They needed air support for the cover plan for the Spring offensive, and for the reduction of the enemy rate of artillery and mortar fire on the immediate front. (3) They needed it as long range artillery and to maintain the morale of their troops. In view of the strength of the army's belief in the justice of these points, it is hardly surprising that the refusal of the Air Force to alter its decision led to a period of estrangement. Few in the Air Force were in a position to appreciate the high degree of risk and hardship in a so called 'static' phase of ground warfare (4) in the winter against Germans and few in the Army appreciated the nicer points of the air war against invisible communications. These differences were, however, by no means dangerous. Recognising their origins in circumstances beyond their control, both services continued their close co-operation towards a common end.

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- (1) In the absence on duty of the GSO I.
 - (2) 28 for Canadian Corps, 36 for V Corps and 16 for XIII Corps.
 - (3) For the Army, faced by a dangerous shortage of ammunition and an enemy not so drastically reduced in proportion, this was admittedly a serious consideration.
 - (4) During the 3 months that ensued before the operations preliminary to the opening of the final offensive began, no significant change took place in the Eighth Army line and no major actions took place. Yet 582 officers and men lost their lives, 3,072 were wounded and 331 reported missing, representing more than one-tenth of the total casualties for the whole period from 9 Aug. 1944 to 31 Mar. 1945.

The Attack on the Senio Pocket on 4 January 1945

V Corps
Operations
(A.H.B./IIJ11/
58/16(A))
D.A.F. and No. 1
M.O.R.U.,
O.R.Bs
January 1945.

The steady advance had compressed the German forces east of the Senio into a roughly square box near Alfonsine.⁽¹⁾ The prospect of dislodging them was a dreary one. Fortunately the ground hardened to frost, so that tanks could now operate clear of the mine-sown roads. On this hard ground a weapon new to the theatre was tried out, and with success; this was the Kangaroo.⁽²⁾

Preceded by a night attack on the Granarolo area, the main force was to sweep north to take San Severo, then advance from the Canale Naviglio to mop up. Flame-throwing tanks were to co-operate. The air support plan included 92 fighter-bomber sorties against gun and mortar batteries and 24 fighter-bomber sorties against roads in front of the armoured attack, behind a bomblines of coloured artillery smoke.

The whole plan worked smoothly. At 0715 hours on 4 January, the attack opened with a combined assault on La Palazza. By 0810 hours, tanks had reached the Borgo San Andrea - Felisio road. They waited for the end of the air attacks on the roads immediately ahead, then advanced again. With aircraft and artillery engaging each enemy strongpoint as approached, tanks and infantry crowned the whole surprise operation by establishing themselves, at the cost of only light casualties, on the road from San Severo eastwards. Air and artillery attacks jointly had almost completely silenced the enemy guns. The causeway east of the Comacchio Lagoon was attacked by Spitfires. It was at this period that the causeway began to figure in reports. It provided easy transit north and south for troops and stores for much of the country surrounding the lagoon was either waterlogged or artificially flooded.

This success disposed of the last considerable enemy force east of the Senio. They had now gained a strong position along the river, and covering Ravenna. Since 20 October, Eighth Army had, with intermittent aid when weather allowed from Desert Air Force, crossed six major river obstacles and driven the enemy out of Forli and Faenza with heavy losses. Only once in this period, had there been a spell of fine, dry weather with reasonably long hours of daylight. Rain and flooding of rivers had blunted the advance. The enemy, however, had been forced to deploy eight divisions. Not only had he failed to release a single division for the battle on Germany's frontiers, but had been forced to send reinforcements to Italy from his dwindling manpower reserves at the rate of 10,000 a month. Desert Air Force shared in the credit for this achievement.

The rest of January was quiet, except for a fight round Peschiara, in which fighter-bombers softened up the defences of a farmhouse in dispute.

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- (1) With sides about 4,000 yards long.
(2) A turretless tank, modified to carry infantry who could thus travel in company with tanks to a common objective across country swept by enemy fire.

Air Attacks on the Comacchio Lagoon Area⁽¹⁾

Ibid.

Desert Air Force was quick to appreciate the strategic importance of the causeway between the great lagoon⁽²⁾ and the sea, and continued to attack it after the ground forces had consolidated. They cut it on 5 January, hoping to isolate the enemy in the Alfonsine pocket, but rightly assumed its speedy repair. That night, as well as the night of the 3rd, Bostons patrolled north of the Lagoon, reporting movement and starting fires. On 9 January, an effort of up to 100 sorties by Spitfires and Thunderbolts was exerted against the two small road bridges in the Spit, as the causeway came to be known. Both were very badly damaged and this escape and supply route rendered temporarily impassable. Mustangs, Kittyhawks and Thunderbolts destroyed the Alfonsine road bridge, breaking up a counter-attack supported by tanks. North of the Lagoon, there was a build-up area; barracks therein were hit by a mission of Baltimores.

Desert Air Force's curiosity in the whole Comacchio Lagoon area was now whetted. It was a more vital area strategically than Intelligence had realised. Reconnaissance and Army reports confirmed it as a key sector. On the night of 11/12 January, a mission of Bostons⁽³⁾ attempted, vainly, to hit a pontoon ferry site near the north-east corner of the Lagoon. It evidently was an area of waterborne, as well as road traffic. On 15 January, through 10/10ths cloud, Marauders, under radar control, bombed one of the barracks on the northern shore. A few air attacks were made during January on Porto Garibaldi, just north of the Spit and on barge traffic in the Lagoon; but the cut in air support at the close of the month prevented any serious attempt to neutralise this important area.

First Attempt to occupy the Senio Floodbank - 31 January

At the end of January, the Allies planned to attempt seizure of the Senio floodbank in the New Zealand sector⁽⁴⁾ and a raid by the Indians in the still disputed sector east of the Senio immediately to the south. The main attack met with bitter opposition. They were counter-attacked and troops still on the west bank forced to surrender. The Indian attack was more successful and cleared the bank. There was no air support.

Plans to disrupt an Enemy Withdrawal

Eighth Army's main concern, during February, was to convey to the enemy the broad picture that no offensive would be launched before 1 May. Eighth Army was afraid of an enemy withdrawal, for it was not yet prepared to follow one up to its logical conclusion. Mock attacks, screened movements, political warfare pamphlet dropping, false reports and so forth exercised the ingenuity of Eighth Army. In this cold warfare, the Air Force had little part: it had chosen what it considered the best course. It did carry the major part of the actual combat operations until the opening of the spring offensive.

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- (1) D.A.F., O.R.Bs.
 - (2) The great Lagoon contained within it a number of smaller lagoons.
 - (3) Of No. 232 Wing.
 - (4) Immediately N. of Highway 9.

Air Support for the Attack on the Senio Floodbank
23 February to 3 March 1945

Ibid

During February, the situation on the front underwent little change and air support operations were inconspicuous. The Army had no serious intentions, hence the modest air support could not be in any sense decisive. As the third week opened, the Germans were still in possession of the Senio floodbank. The centre of the front now became the point of gravity and to strengthen this area a fresh Allied attack was necessary.

There is no record of the preliminary attack planned to be executed by 120 fighter-bombers to neutralise the enemy gun and mortar positions and occupied buildings during daylight on 23 February. The attack went in without it towards the line of the river in the westward bend south of Cotignola and a wide stretch of the east floodbank was secured.

Air support was provided on the critical day of 24 February, when the battle swung to and fro north and south of Cotignola and north of San Severo. Aircrews made an early start, but visibility dwindled from mediocre to prohibitive. Close on 200 sorties were flown before aircraft were recalled in the late afternoon. A Rover 'Joe' was set up specially for the occasion and directed many of the attacks on guns, mortars and strongpoints, while reconnaissance aircraft patrolled roads leading to the front. At night Baltimores continued their practice flights under radar control.

But the attack was abandoned after some progress had been made. The Germans came back to counter-attack on the night 26/27 February. Ding-dong duels continued for the river bank until 3 May, when a flame thrower attack supported by 40 fighter-bombers, swept the defenders from the weir north-east of San Severo and from nearly half a mile of floodbank. The battle ended at this point. Domination, if not absolute control, of the floodbank, a prerequisite of the eventual crossing of the Senio, had been achieved.

The Attack on the Comacchio Spit on 2 and 3 March

Ibid

On 2 and 3 March, attacks were carried out by units of the Italian Cremona Group, (1) partisans (2) and British tank crews (3) on German positions guarding the Spit, aimed at securing a hold on the narrow tongue which runs between the River Reno and the sea. It was a noteworthy example of co-operation between British and Italian units, pilots and gun crews and is particularly worthy of attention as the first experiment in air support controlled from specially fitted Sherman tanks.

The operation was fortunate in effecting complete surprise and success and securing a good jumping-off base for the preliminary Spring operations in the Lagoons and Spit. In three days, Casa Filippone was captured, the River Reno crossed where it skirts the southern shore of the Lagoons, then two heights along the tongue of land in the Spit complex were taken.

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- (1) 21st and 22nd Regiments.
 - (2) 28th Garibaldi Brigade.
 - (3) North Irish Horse.

The Forward Air Control Post in Sherman Tanks⁽¹⁾

Air operations on 2 March were planned in support of an attack on houses in the Torre di Primaro area, with a diversion against Chiavica Pedone (later evacuated). H hour was 1200 hours. The air plan provided for four prearranged targets; at 1145 hours, an observation post and mortar area; at 1200 hours, two field guns and the north bank of the River Reno; and at 1230 hours, a mortar area. There were also five cabrank missions to call in on Rover David at half-hourly intervals from 1230 to 1430 hours.

The attacks on the pre-arranged targets went in as planned. Air reports, owing to the haze, were not of much use, but the Army recorded its satisfaction. Two of the five cabranks received no targets, so attacked alternatives. The other three cabranks were directed on to guns holding up the advance by the GSO II (Air) in the control tank, who vetted the forward information passing over the signals network. On the whole, it was a promising beginning for the Rover 'Tank'.

GERMAN STRATEGY AND PEACE OVERTURES IN EARLY 1945

Army Reactions in the Senio - Comacchio Area

The first Eighth Army attack on 4 January on the Senio pocket caused considerable alarm in Army Group C. They lost many prisoners, and were driven almost everywhere back behind the river. The Allies were right up to the southern shores of the Comacchio Lagoons (or Lake Comacchio as it is sometimes styled). Kesselring, just returned to Italy after convalescence, expected an Eighth Army drive in strength up the axis of Highway 9, which would end in the capture of Bologna from the east. In addition to the two divisions already brought across from the Fifth Army front during his absence in December,⁽²⁾ he now transferred two more divisions⁽³⁾ to the new danger area. The expected major attack never developed.

When the Russian offensive of 12 January made rapid progress, first a division in January and then another in February were withdrawn and despatched to Russia. Their painful passage under Allied air attack⁽⁴⁾ proved that a three to four weeks journey from front to front prohibited any urgent major reinforcement of fronts outside Italy. During February, the Germans built up a powerful reserve in Italy.

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- (1) The Rover 'David' which operated for the first time from Sherman tanks, was set up on the following lines. Two tanks, one a 'Control' tank and the other a 'Tentacle' tank, were transported from base to Ravenna and from thence proceeded on tracks to Tactical Regiment Headquarters. Owing to the risk of observation, a site was chosen 1,000 yards to the west of this H.Q. Both tanks operated from a static position 50 to 100 yards apart, but were connected with the H.Q. by landline. They were not on this occasion required to operate on the move. G-(Air) 8th Army History (Cab. Hist. Sec. 1002/40/202).
- (2) 16th S.S. and 29th Panzer Grenadier Divisions.
- (3) 42nd Jaeger and 362nd Infantry Divisions.
- (4) Refer to Chapter 4 of this volume.

Certain of the Allied adoption of a defensive policy, they thinned out and adjusted the front line to a point when only one division held up the Eighth Army.(1)

The Fifth Army Front

On the Fifth Army front on 19 February, an attack by the U.S. 10th Mountain Division came as a surprise. Strong positions on Monte Delvedere, and four other major peaks were lost by the enemy. Violent attacks were made to retain the ground, but Fifth Army held them. It now had more elbow room for a Spring offensive. March passed quietly on this front.

Kesselring appointed Commander-in-Chief West

Early in February, General von Vietinghoff(2) was appointed to command Army Group Courland out off in Latvia. On 23 March, he took over again from Kesselring, who had been appointed Commander-in-Chief West. Tenth Army was now commanded by General von Schwerin.(3) General Lemelsen was again in command of Fourteenth Army. General von Pohl remained in command of the Luftwaffe. General Gall, former commander of Elba, held the coast between Venice Lido and Caorle.(4)

The German Position in late March(5)

Von Vietinghoff assumed command in late March of an unbroken force which had not been engaged in any large-scale operations for about three months. His position was serious enough, but less serious than on any other enemy front. His divisions were generally up to strength, well trained, and as a body undoubtedly of higher fighting value than any other comparable body of troops still remaining in Germany. His reserves - two good mobile divisions - were the same as Kesselring held in the West: his armoured strength was almost exactly equal to that available in Germany. Four divisions - not the best - had left Italy, but so had the whole Canadian Corps from 15th Army Group.

His communications were suffering from the attrition of months of air attack but were by no means at a standstill. If the Allies had destroyed all the permanent crossings of the Po, his engineers had built an even greater number of temporary ones. The interdiction of the Brenner, Northeastern and Venetian Plain routes would help him indirectly, for it was not now a feasible proposition to take divisions out of Italy: they were more likely to be left there at his disposal. What the Allied Air Forces had done was to deny him strategical mobility and, by reducing his fuel stocks, to hamper seriously his tactical mobility, were he allowed to make line withdrawals. This was unlikely. The current mood at Oberkommando Wehrmacht Headquarters was that no withdrawal was to be considered. He was to stand

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- (1) German Strategy Br.Hist.Sec., C.M.F. (A.H.B.II J11/58/21).
 - (2) Col.Gen von Vietinghoff-Scheel.
 - (3) Who later handed over to General Herr and reverted to G.O.C. LXXVI Panzer Corps.
 - (4) A.H.B/ILJ11/58/21.
 - (5) A.H.B/ILJ11/58/21.

and defend his present line. Yet he knew that to give battle south of the Po would probably lead to disaster.

Early German Peace Overtures (1)

General Oberst Heinrich von Vietinghoff, a non-political regular soldier, awaited the future with stoicism and prepared for the inevitable defeat in the field. But others were not of his opinions. They saw the possibility of insurance for themselves, a great saving of life and perhaps a surrender with honour as worthy objects of negotiation.

The Plenipotentiary - General of the Wehrmacht in (2) Italy and Senior S.S. Officer and Police Commander (3) at that period was S.S. Obergruppenfuehrer Karl Wolff. He controlled the rear areas northwards of the Po, including the Brenner and Innsbruck areas and disposed of some 225,000 troops. He was a disillusioned man who knew the war was lost. On 2 March, he sent two officers to a meeting with representatives of the U.S. Office of Strategic Services in Switzerland (4) and followed up the primary contact on 8 March. He said he was anxious to come to an agreement under which hostilities in Italy be brought to an end, in such a way as to set an example which would be followed elsewhere. During the period immediately following, the efforts of the Allied representatives were directed solely to arranging a meeting at Caserta where capitulation on their terms might be signed. They did not negotiate themselves.

Wolff, on good terms which Kesselring, decided to obtain his support and instructions for Von Vietinghoff. Kesselring apparently agreed to the idea in principle and said he would tell Von Vietinghoff so, but could not actively participate as he was surrounded by untrustworthy personnel. On the night 1/2 April, Wolff met Von Vietinghoff and his Chief of Staff, who, he said, were in complete agreement with his project.

Discussions broken off

If Von Vietinghoff agreed in principle with the project, he was not prepared to send parlementaires to Caserta to discuss unconditional surrender. He wanted to march his armies out of Italy with military honours and retain a strong armed force for the maintenance of order inside Germany. The British and U.S. Governments thereupon ordered the Supreme Commander, through the Combined Chiefs of Staff, to break with the German agents. This was done, but the contacts were retained. (5)

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- (1) A good factual account of the full negotiations for the German capitulation is given at Appendix E of Field Marshal Alexander's despatch, as S.A.C. MED, on The Italian Campaign - 12 Dec. 1944 to 2 May 1945. 1951 H.M.S.O. The parleys were given the code name of 'Crossword'.
- (2) Bevollmaechtigtster General Der Deutschen Wehrmacht.
- (3) Hoehster S.S. Und Polizei Fuehrer.
- (4) The first approach came through Baron Luigi Parrilli, a prominent Italian industrialist.
- (5) NAF 916 12 Apr. 1945 and FAN 527, 20 Apr. 1945. (A.H.B./IIJ1/168/29/4).

THE AIR RESUPPLY OF THE PARTISANS IN NORTHERN ITALYCall by Allied Armies for increased Air Supply to Partisans

When General Alexander recommended the December offensive by both armies, he told the Supreme Commander how important he considered it to increase the dropping of supplies forthwith to partisans in Italy, to enable them to make a major contributory effort to that offensive. The task was urgent enough, he felt, for it to be given priority over certain bombing missions, if necessary.(1) The Air Forces acted on the idea immediately. The air supply of the partisans continued on a heavy scale to the end of the campaign. It must be realised what this meant in terms of effort, success and failure, for it was still another of the proofs, of which the Italian campaign had proved so fertile, of how a hardly-won air superiority correctly exploited was able to maintain the Allied initiative during a period of stalemate on the ground and create favourable conditions for the next combined assault.

Italian Combatant Ground Forces(2)

There were three categories of Italian combatants fighting with the Allies, namely the Combat Groups, the irregulars(3) and the partisans. There were five Combat Groups in formation at the end of 1944.(4) The Cremona Group was in control of the Comacchio area. The others came progressively into the general picture and all gave a good account of themselves, according to the records.

During 1944, they were taken increasingly seriously by the Allied command.(5) General Alexander's request put the matter beyond doubt. Unlike the great 'amalgam' in France, when General de Lattre embodied the bulk of the F.F.I. in the First French Army in one move, the Italian partisans could only be converted and trained as regulars as their territory was overrun by Allied troops. One band of these(6) was fighting as infantry on the northern flank and another(7) was being employed in the XIII Corps sector; the air and effort against unfavourable odds there will be recalled.

Behind the enemy lines,(8) organized bands were fed by Army and other intelligence agencies with radio transmitting sets, arms, ammunition for sabotage and combat, and with liaison officers. They had to contend with increasingly savage reprisals and harassing activities by Italian and German formations. The Allied agencies themselves were unable to give the partisans anything like the supplies they

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- (1) Comments on JIC(AF)33/34 by Gen. Alexander 'Future Operations' A.H.Q. A.A.I. 13 Nov. 1944.
 - (2) Allied Strategy - Br. Hist. Sec. C.M.F. Pt.III Sec. A. (A.H.B./ILJ11/58/14).
 - (3) 'F' Reconnaissance Squadron (raised by XIII Corps) and the Banda Patriota Maiella (raised by 78th Division on the Sangro).
 - (4) The Cremona, Friuli, Folgore and Legnano Groups were due for attachment to Eighth Army.
 - (5) Refer to Appendix 15.
 - (6) 28th Garibaldi Brigade.
 - (7) 36th Garibaldi Brigade.
 - (8) Especially in the Po Estuary and the Tagliamento, Ferrara and Belluno areas.

needed to continue organised operations. The Air Forces could and did; and the case is one of special operations assuming major dimensions and merging into the general tactical offensive operations by our aircrews.

Operations by 51st Troop Carrier Wing

The major change in air circles brought about by the need for bigger deliveries was the entry of 51st Troop Carrier Wing into the strength, setting the seal on the wholesale Americanisation of this branch of operations.

The task allotted the 51st Wing was the resupply of the areas south and west of the Po Valley. From 22 November, 62nd Troop Carrier Group, based at Siena/Malignano airfield, handled preparations with the meagre trained teams available. Airfield and packing station were too small. Until 9 January, 62nd Group delivered supplies and carried personnel in and out in steadily increasing quantities. On 9 January, 64th Troop Carrier Group took over the task and continued it until the surrender of enemy forces in May. All operations were for dropping supplies until 2 April, when for the first time a Troop Carrier aircraft landed on enemy territory to bring in supplies and evacuate wounded.(1)

Successes and Failures of Air Resupply

Close on 5,000,000 pounds weight of supplies, freight, personnel and propaganda leaflets were handled between 22 November 1944 and 8 May 1945.(2) To realise the full use the supplies were turned to, one would have to study the Italian partisan histories. But it will be possible in the last chapter to touch on one or two operations co-ordinated with those of the regular forces which were valuable and meritorious. Until the last stages the partisans were denied the privileges of uniformed combatants and subject to merciless treatment by the Axis forces. There was a further advantage in supplying the partisans, of especial interest to aircrews. Whereas troops of the front line, when captured, usually spent the rest of the war in captivity, many of the numerous Allied aircrews who baled out when shot down by flak had a chance of escape. The supplies dropped to the partisans helped the creation of more safe havens and strengthened the organization of evasion. Many highly trained aircrews were thus enabled to rejoin their units and fight again.

In the operations during the five and one-half months under review, 71.75 per cent of the 51st Wing's sorties were successful and 28.25 per cent unsuccessful. When the unsuccessful percentage is analysed, a clear and steady improvement in methods and elimination of errors is revealed. Of all reasons for failure, that of unfavourable weather will be the most readily understood. One point, of particular interest, is that the weather, bad as it was, was better on the whole in Italy than in the Balkans, even in the winter months.

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- (1) Aerial Resupply of N. Italy by 51st Troop Carrier Wing M.A.T.A.F. Monthly Air Intelligence & Operations Bulletin - May 1945. (A.H.B./ILJ11/18).
 - (2) Of this total, over 4,700,000 lbs. were supplies, delivered in 1,252 successful sorties. See Figure 29.

Recognition failures⁽¹⁾ totalled 41.04 per cent. A fact inhibiting the showing of bright lights from the ground during the winter was the concerted drive carried out by the enemy against the partisan-held areas. In spite of every handicap, however, practice tended towards perfection. The percentage of failures due to no signals or no reception from the ground was halved during March and further cut in April.

The Lazzarone Air Force

When a member of an Allied aircrew baled out in enemy territory, he might be lucky enough to fall in with friendly inhabitants or one of the clandestine groups. He carried a little money in his escape purse but was bound to come before long to the end of it. To meet this problem, the Escape and Evasion Section of A-2, Headquarters, Twelfth Air Force, working in conjunction with the clandestine organisations, accepted the responsibility of supplying such distressed air personnel in enemy territory with food, clothing, supplies and money. On 10 October, one fully armed Mitchell aircraft and crew from the 57th Bombardment Wing was assigned to the section for the resupply task. This aircraft came to be known as 'The Lazzarone Air Force'.

It flew at low altitude during daylight hours. Droppings were most carefully co-ordinated and pinpointed. From its first flight in October until the end of the campaign 64 resupply missions to Northern Italy and Jugoslavia were organised. In addition, 35 escapes were exfiltrated by this aircraft from secret landing strips.

'A' Force and the Air Crew Rescue Units

'A' Force, the chief of the clandestine Allied rescue organisations working behind the enemy lines in the first years of the war, was formed in 1940. It became in the course of time a permanent Middle East organisation and was expanded into an underground plain clothes unit for Sicily and Italy.⁽²⁾ On 14 July 1944, General Eaker obtained from General Maitland Wilson authority to set up the first Air Crew Rescue Unit⁽³⁾ to supplement and surpass the work of 'A' Force and the other co-operating agencies. From that beginning, others were formed. In October 1944, Supreme Headquarters Allied Expeditionary Force took over responsibility for the planning of large-scale recovery operations in Austria, Hungary and Germany. By the end of the war, of all the aircrew personnel recovered for the two U.S. Air Forces, there were picked up 241 on Italian soil of the Fifteenth Air Force and 495 on Italian Soil of the Twelfth Air Force. The balance of surviving escapes were picked up in many countries where they had baled out or to which they had wandered.⁽⁴⁾

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- (1) That is, no signal or wrong signal from the ground party at an assigned drop zone.
 - (2) In June 1944 'A' Force had 80 officers. Their biggest task had been the handling of 75,000 Allied prisoners-of-war at large in Italy after the Armistice of September 1943.
 - (3) Known as A.C.R.U.1.
 - (4) History of M.A.A.F. Narrative. Vol. II. (A.H.B./ILJ1/176/69).

THE WITHDRAWAL OF FORCES FROM THE MEDITERRANEAN THEATREThe 'Argonaut' Series of Conferences at Malta and in the Crimea

Discussions affecting the strength and policy of the Mediterranean Air Forces and Fifteenth Army Group were conducted at the 'Argonaut' series of conferences held at Malta and in the Crimea between 29 January and 11 February 1945. The decisions arrived at re-defined the function of the Italian theatre in the strategic whole and visualised radical changes in the strength of the air forces and armies there. The Combined Chiefs of Staff confirmed the course recommended by the Supreme Commander that he should pass from the offensive to the defensive - offensive, expressing neither hope for, nor interest in, the plans for a large-scale Spring offensive in Italy.

The British Chiefs of Staff held four meetings in Malta and five in the Crimea. The Combined British and American Chiefs of Staff held four meetings in Malta, (1) and three in the Crimea. (2) In addition to tripartite consultative military meetings, the President, the Prime Minister and Marshal Stalin met in an attempt to co-ordinate their global strategy. The British, U.S. and Russian Air experts present, with their advisers, were Marshal of the R.A.F. Sir Charles Portal, (Chief of Air Staff), (3) Major General L.S. Kuter, (on the staff of the Commanding General, U.S. Army Air Forces) and Marshal of Aviation Kdudyakow respectively.

In the light of subsequent events, some of the participants in that tripartite conference and several of the decisions made have been subjected to searching criticism and many grave post-war problems traced to the men who sat round the tables at the Chateau Vorontsov, the Livadia Palace and the Soviet H.Q. at Yalta. Those problems are not the concern of this narrative. What it is concerned with is the series of decisions relegating the campaign to a role with apparently little future, stripping the Air Forces and Armies of seasoned personnel, and with the attempts to remove both the Twelfth Tactical and the Fifteenth Strategic Air Forces from Italy, the effect of all this on the situation in Italy and the high level view of the capabilities of the air forces there.

First Warnings of major Changes.

In late January, it was learned both in Air Ministry and at Mediterranean Air Forces Headquarters that far-reaching changes in the structure and location of the Twelfth and Fifteenth Air Force were under consideration by the U.S. Joint Chiefs of Staff and that at the imminent conference at Malta major decisions affecting the air and ground forces were likely to be made.

General Spaatz, the Commanding General of the Strategic Air Forces in Europe, who had the authority, on paper, to move heavy bomber forces and escorts in the interests of the Combined Bomber Offensive, was considering the possibility of moving the Fifteenth Air Force, either in part or as a whole,

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- (1) The 182nd to 185th. } 'Argonaut' Report War Cabinet C.O.S.
 (2) The 186th to 188th. } Committee C.O.S. (45)114(0),
 22 Feb. 1945. (A.H.B.ID7/457B).
 (3) General Cabell, the Head of the Operations and Intelligence Section at M.A.A.F. was there to advise Field Marshal Alexander on air matters affecting the Mediterranean.

Ltr. C.A.S.
 to A.M.S.O.,
 22 Jan. 1945
 (A.H.B./ID3/2110B)

Signal Cricket
 30
 31 Jan. 1945.
 (A.H.B./1131/90/40
 (E), Ensl.34a).

C.C.S. 400/2
 (Cabinet Hist.
 Archives).

Ltr. A.M.S.O/
142/3
23 Jan. 1945.
(A.H.B./ID3/2110B)

from Italy to Western Europe and/or the United Kingdom. In the latter half of January, the Air Ministry was considering a series of mass moves of units and estimated it would be April before the whole heavy bomber force could be found accommodation in the U.K., even if it could be cleared from Italy at a corresponding tempo.

The Commanding General of Mediterranean Air Forces - General Eaker - was aware of this idea, as well as of one involving major reductions in the Twelfth Air Force, if not its entire loss. The Supreme Commanders of the Mediterranean and Northwest European forces had both been invited to attend the Malta meetings to present their strategic theatre positions. Field Marshal Alexander had agreed to go in person, with his Air Operations and Intelligence Chief to advise on air matters. Before departure, he called on General Eaker for an aide-memoire.

General Eaker's Aide-memoire

This interesting document,⁽¹⁾ the joint effort of General Ira Eaker and Air Marshal Sir John Slessor, dealt roughly with the idea of moving the Fifteenth Air Force. General Eaker, when stationed in the United Kingdom, had been dubious as to the wisdom of its creation in Italy. Now, after a year of local experience, he admitted and pressed the wisdom of that move. It had taken two divisions of troops some months to bring the young air force in. It was bigger now. It would be several months before it could be expected to reach its actual operational efficiency in another theatre. All of the reasons in locating it in Italy still held. They were mostly eminently sound ones. Reasons of weather cycles, maintenance and close support of the tactical land battle were all against its withdrawal.

As for the Twelfth Air Force, that stayed or went with the Fifth Army. The British air forces in Italy were not designed to support both Fifth and Eighth Armies, for the simple reason that they were not balanced as to type for modern warfare. They did not possess nearly enough of the heavier types of aircraft, such as the medium and light bombers essential for successful anti-communication operations or those against strong defences. As for fighter bombers, the stronger, faster, longer range aircraft - the Thunderbolts - were all American and most of them in XXII Tactical Air Command. It was fallacious to argue that because the land front was semi-static, less air strength was necessary. It was just at this kind of juncture that the air forces could apply constant attrition on the enemy. They could do most to prevent his withdrawal.⁽²⁾

Background to the Malta Conference

It cannot be clear how the Combined Chiefs of Staff could possibly have considered such laborious, long term changes unless the chronological military background is understood.

C.O.S. (45) 114(0)
'Argonaut'
(A.H.B./ID7/457B)

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- (1) Relevant extracts are given in extenso at Appendix 35.
(2) Memorandum Gen. Eaker to F.M. Alexander, 28 Jan. 1945.
(A.H.B./ID3/2110 B).
Sig. M.A.A.F. Alexander & Cabell (Cricket) 1 Feb. 1945.
(File J.S.2046 Pt. V., A.H.B./IIJ1/90/40(E)).

As presented at the meetings, held in Malta, (1) it was, very briefly, this. At the basis of all strategic planning lay an imponderable, namely the date of the end of the war against Germany. The British Chiefs of Staff suggested 30 June as the earliest, and 1 November 1945 as the latest date. The American Joint Chiefs of Staff agreed with the early estimate, but placed the latest at 31 December. At Yalta, the Russians thought 1 July reasonable, if all efforts were applied, but placed the latest date vaguely at some time in the Winter. With the best part of a year to finish the war against Germany, there was, then, some justification in discussing large-scale long term moves. The point then arising was how and where to finish that war.

Memo. by C.O.S.
C.C.S. 772
(Argonaut)
30 Jan. 1945.
(A.H.B./ID7/457B).

In view of the Allied success in Northwest Europe and the need for concentration of forces, the Combined Chiefs of Staff decided that it was in that theatre that a decision should be sought and that that front should be reinforced with troops and air forces at the expense of the Mediterranean. The campaign in Italy (confirming Field Marshal Alexander's recommendation) should revert to the offensive-defensive. There was now no question of operations aimed at the Ljubljana Gap - the advance of the Russian left wing had rendered it unnecessary, they said. The Combined Chiefs of Staff did not consider the possibility of a major Spring offensive in Italy, although Spring was only a few weeks ahead.

C.C.S. 183rd Mtg.
31 Jan. 1945.
(A.H.B./ID7/457B).

Decisions on the Move of Ground Forces

The discussions on the moves of both ground and air forces were protracted. The decisions reached as they affected Italy were on the following lines. The enemy was at liberty to withdraw voluntarily at any time. (2) They therefore recommended building up the maximum possible strength on the Western Front, seeking a decision in Germany, and reorientating forces from the Mediterranean to that end. The tasks of the Mediterranean theatre were re-defined in a directive (3).

C.C.S. 776/3
(Argonaut)
Report to the
President and
Prime Minister,
9 Feb. 1945.
(A.H.B./ID7/457B).

Two Canadian divisions were to be transferred from Italy, and three British infantry divisions from Greece and the Middle East, all to Northwest Europe. The Canadians were chosen to strengthen Canadian contingents on the Western Front. Their move could be compensated for to some extent by reshuffling. The British withdrawal was more difficult and must to a great extent depend on the speed with which order was restored in Greece and a stable Government established. The idea of moving Fifth Army died a natural death.

Decisions on the Move of Air Forces

Two fighter groups of the Twelfth Air Force were to be moved to France at once. The French forces in the south were short of air support, which was urgently required for the reduction of the Colmar pocket. General Kuter wanted the whole of the Twelfth Air Force transferred to France. Field Marshal Alexander contested this, and would not part with its Headquarters. If they needed a new headquarters in Southern France, he could spare them a number of capable

C.C.S. 185th Mtd.
Malta 2 Feb. 1945.
(A.H.B./ID7/457B).

Sigs Cricket 63
and FAN. 501,
2 Feb. 1945.
(A.H.B./IIJ1/90/
40(E), Encls. 39a
and 40 a)

- Adige/
- (1) Between 30 January and 2 February at Montgomery House.
 - (2) SACMED. stated his belief that he would withdraw to his ~~ADICE~~ defences.
 - (3) FAN 501. (A.H.B./IIJ1/90/40(E), Encl.40a).

officers. The directive was modified to cover the transfer only of as much of the Twelfth Air Force as could be spared without jeopardising the Italian mission. The exact terms of the transfer were to be worked out between the staffs of General Eisenhower and Field Marshal Alexander.

Generals Mark Clark, McNarney and Eaker and Air Marshal Slessor were unanimous that General Cannon - an American - should remain in command of their Tactical Air Force.

General Spaatz had changed his mind about the Fifteenth Air Force. The idea of its transfer to Northwest Europe or the U.K. was dropped. But General Eaker and his staff were looking forward to establishing elements of it on the Hungarian Plain, if the Russians would assist in making it possible.

The actual Moves of Air Forces. (1)

General Marshall of the U.S. Joint Chiefs of Staff and General Spaatz in the United Kingdom visualised the eventual removal of the entire Twelfth Air Force, but negotiation led to compromise. At a conference in early February between Mediterranean and European Theatres of Operation, representatives of the former objected to the transfer of its main tactical air striking power. They would send the two fighter-bomber groups, but wanted, and obtained, agreement to a postponement of further moves, especially of the headquarters of Twelfth Air Force and XXII Tactical Air Command, pending future developments. E.T.O., (2) however, extracted the promise of service units for the reinforcement of First Tactical Air Force (Provisional) in Southern France, in addition to the two fighter-bomber groups. In mid-February, the 27th(3) and 86th(4) Fighter Bomber Groups and Headquarters 319th Air Service Groups left for France.

At the beginning of January, the numerical strength of Tactical Air Force(5) still exceeded the 1,460 mark. By March, owing to the above and sundry small changes, it had been reduced by over 130 aircraft.

The comparative front line strengths in the two theatres of operations at the time of the Malta meetings may be quoted here. The tactical air forces on the Western Front numbered 4,300; those in the Mediterranean as a whole 1,950. Including strategic air forces, there were 9,000 aircraft on the Western Front, as opposed to 3,580 in the Mediterranean.(6)

The question arises as to whether the reduction of air forces was in any way prejudicial in the event to the execution of the tasks assigned to them in Italy. Study of

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- (1) The Army Air Forces in World War II, Vol. III - pp. 481/82 1951. University of Chicago Press. (full references)
 - (2) European Theatre of Operations.
 - (3) 3 Squadrons - Nos. 522, 523 and 524 each of 25 aircraft, based at Pontedera.
 - (4) 3 Squadrons - Nos. 525, 526 and 527 each of 25 aircraft, based at Pisa.
 - (5) Excluding transport and supply - dropping aircraft.
 - (6) C.A.S. at C.C.S. 105th Mtd., 2 Feb. 1945. (A.H.B./ID7/457(B)).

Chapter 4 of this narrative should lead to the conviction that those forces were adequate for the virtual isolation of Italy from the Reich, the neutralisation of coastal shipping and offensive naval operations and of the enemy substitute fuel sources. Study of the earlier sections of this Chapter - 5 - will reveal a reasonable nice balance of force allotted to tactical support of the Armies, with results satisfactory, on the whole, to those forces.

The three groups were not the only contemporary loss. On about 12 January, the 319th Bombardment medium bomber Group had been relieved of its assignment to 57th Wing and the H.Q. and Base Services Squadron of 514th Air Service Group had been relieved of assignment to Air Service Command. Both groups had returned to the U.S. On the other hand, if the plans to move the 57th medium bomber Wing from Corsica to Eastern Italy matured, the striking power in Italy would improve by that measure.(1)

Withdrawal of Ground Forces - Operation 'Goldflake'(2)

The Canadian Forces began to leave the line in the second week in February. By the end of the month, one Division was clear. They and the balance that followed were passed through Leghorn and Naples and escorted to Marseilles. The last of the Canadian Corps disembarked on 21 April. 5th British Infantry Division passed through Italy from the Middle East and on to France during February.

As a result of the Supreme Commander's representations to the Combined Chiefs of Staff, after an effort to extract another division from Italy, a respite was granted him. On 28 March, he was informed that they would not need any more divisions for the West. 46th British Infantry Division, then preparing to leave Greece, was, therefore, to move to Italy.(3)

The net numerical result was not, in the event, fatal. The enemy chose the period to withdraw two divisions from Italy. Eighth Army, by reshuffling, found itself only one division short. Fifth Army was unaffected.

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- (1) Twelfth Air Force Administrative History, Pt. I. (A.H.B./ILJ1/136(a)).
 - (2) 'Goldflake' was the code name selected for the outward move of the ground forces.
 - (3) The Campaign in Lombardy, Part IV, Sect. B. Br. Hist. Sect., C.M.F. (A.H.B./ILJ1/58/24(A)).
C.A.S. File 2110C. (A.H.B./ID3/2110C).
FAN. 504, 9 Feb. 1945. (A.H.B./ILJ1/90/40(E), Encl. 47a).
Sig. P.P.W. 734, 21 April 1945. (A.H.B./ID3/2110C).
MEDCOS 242. (A.H.B./ILJ1/90/40(E), Encl. 63a).
COSMED 212, 29 March 1945 and COSMED 214, 31 March 1945. (A.H.B./ILJ1/90/40(E), Encl. 68a and 72a).

CHAPTER 6

THE SPRING OFFENSIVE 1945 AND AIR PARTICIPATION IN
THE VICTORY IN THE PO VALLEYTHE STRATEGIC SITUATION IN EARLY 1945The Twilight of German Strategy

With the passing of winter and the promise of finer weather, the general situation was closely evaluated with a view to a final plan for the destruction of the enemy. In view of the silence of the combined Chiefs of Staff at the 'Argonaut' conferences, the justification of the decision to make the final offensive in Italy can only be found in the view of the general situation taken by the Mediterranean command. This proved, in the event, to be founded on sound intelligence and its correct evaluation. The general situation will now be given, followed by the deductions made therefrom on which the 'set-piece' ground and air offensive was planned.

The Reich had by now lost all its conquered territories. Its political strategy was meaningless, its military strategy nearly bankrupt for lack of the physical means to prolong the fight indefinitely. Allied troops were advancing deeper into Germany. Allied air forces exploited their numerical, tactical and strategical superiority in every sector. Nevertheless, Hitler forbade the armies, which he held firmly in his grasp, to consider surrender. They were obliged to continue planning and fighting as if the future held a hope of relief and as an example to coming generations. Out of this background, the desperate German High Command turned to the concept of a National Redoubt as a last hope. If they had to abandon the defence of the open country of North Germany, they could hold on in a fortress area in the mountains of the South.

The Role of the German Armies in Italy in the Plan for a National Redoubt

It may be accepted that there was such a plan.⁽¹⁾ The idea continued up to a late date to excite the imagination of the German High Command. When Bradley's armies' sweeping advance in Southern Germany cut the enemy's forces in two, it was still a possibility for those left in the South. But the Allied Air Forces from both the U.K. and Italy had so ruined the road and railway communications, equipment and fuel supplies that it was no longer a feasible proposition. In February and March the idea was, however, still provocative to both sides.

The Allies' information on it accumulated over months. The general area the Germans selected for their last stand had a perimeter of about 400 miles, roughly a quarter of which lay along the Swiss frontier. The area covered Salzburg - the High Taunus mountains - the Swiss frontier - Bolzano - Lake Constance. Berchtesgaden was the nerve centre.

The Germans foresaw an important role for their Italian Army Group C (and, to a lesser extent, Army Group E in the Balkans) in the occupation of the Redoubt. Army Group C was a mass of divisions still relatively fresh and certainly more experienced and better trained and equipped than any on other fronts. They were in a position to withdraw straight into

(1) For confirmation, refer to the German document dated 27 Apr. 1945 given in Appendix 46 and to German Strategy Brit. Hist. Section C.M. Blue Book Histories (A.H.B./ILJ11/53/29).

the southern face of the Redoubt, retaining, at any rate for a time, the food-producing and industrial area of Northern Italy.

That the Supreme Command was thinking on these lines was proved by the extension in the beginning of April of Von Vietinghoff's command to include the Austrian provinces of Voralberg, Tyrol, Salzburg and the western half of Styria and Carinthia, in fact the whole general area of the Redoubt. (1)

Appreciation on
the National
Redoubt G-2 H.Q.
15th Army Gp.,
18 Apl. 1945.
(A.H.B./IIJ11/
58/29).
Operation
Instruction No. 3
H.Q. 15th Army
Gp., 12 Feb.
1945.
(A.H.B./IIJ11/
58/24(A),
App. C-3).

In mid-February, 15th Army Group was considering the idea of an enemy withdrawal to the line of the Alps, with Verona covering his line of retreat, as a last resort or if the need for reinforcements on other fronts became pressing and urgent. Although all their efforts were about to be directed to bringing him to battle south of the River Po, it was always possible that he might execute a successful tactical withdrawal first to the Adige Venetian Line, then to the foothills of the Alps and eventually into the Redoubt. By early April, the idea assumed the proportion of a serious doubt. They could retire, even though seriously delayed by Allied air attacks, and would have sufficient forces left to offer resistance for some time on a continuous line until supplies ran out. Experience had proved the difficulties of air operations in such terrain and that they were unlikely to be decisive on their own account. The ground forces had found mountain warfare expensive, exhausting and unprofitable. There was every reason for preventing the Germans ever reaching the Redoubt. It was to the men of the time, on both sides, an important factor in their calculations.

The German Defence Plan in Italy

Ibid

The immediate German plan was to stand and fight on their actual line. This line, on which the Allies had been halted, began in the Romagna with Lake Comacchio and the Senio River and ran to the Gesso escarpment; in the central Apennines it ran across the last northern ridge of the mountains south of Bologna; in the west it ran over the central heights of the chain and ended in front of Massa with the last remaining elements of the Gothic Line. The defences were strongest where there had been least action, namely in the west and centre. In the Romagna, three main river lines, defended in depth, faced the Eighth Army. These were the Laura Line on the Santerno, the Paula Line on the Sillaro (with a switch position on the Sellustra), and the Genghis Khan Line based on the River Idice and anchored in the flooded country west of Lake Comacchio. (2) The River Po, as such, was not considered as a defensible line in itself (3), but it was fortified and so was the area beyond it as far as the Ticino country.

The three defence lines south of the Po were, as their northern extremities, all linked in to a line of defences facing south based on the River Reno. Operation 'Divorce', the air attack on the Reno bridges, was still held in abeyance. The course of the Reno gave depth to a defence of the Po. The essential element of the whole defence system was that the eastern flank must hold firm to allow the western to swing back

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- (1) Later, when the armies to the north collapsed, the Redoubt area fell more naturally within the sphere of Army Group G and the Nineteenth Army, who were being driven back southeastwards into it. Consequently Army Group C was relieved of its responsibility. But an Army Tyrol was formed, to which elements of the beaten armies in Italy endeavoured later to make their way.
- (2) Refer to Appendix 33 for details of German defence lines.
- (3) Naturally, the main crossings were covered by batteries.

towards the northeastern passes into Germany and the line of the Adige. Lake Comacchio and the flooded area between it and the Argenta Gap, was the key sector of the eastern flank and, the Germans believed, unassailable by any known means.

The Rift in German Strategy

In anticipation of an Allied thrust south of the Po, all major dumps had been transferred north of the river and crossing places and withdrawal routes selected. In the autumn of 1944, a plan of withdrawal with the code name 'Herbstnebel' had been evolved, but O.K.W. - the Supreme Command of the Armed Forces - had consistently refused to approve it. It has been suggested in the previous chapter that their day-to-day interference in routine affairs was relatively unimportant. But it will be seen now that O.K.W. still had a disastrous habit of interfering unwisely with local tactics at highly critical junctures.

In spite of the official veto on any step backward, the enemy commanders in Italy pressed on with realistic plans for tactical withdrawals. Work on the Adige Line, pursued throughout the winter with great vigour, was now far advanced. Positions on the Po were strengthened and continued along the Ticino River to cover the withdrawal of Army Liguria. The Prealpine Defence Position was being developed.(1)

It seems to be true that the Germans had a fairly accurate knowledge of Allied dispositions and divined when the main blow would fall. General Herr, commanding the Tenth Army, submitted a plan for a 'false front' manoeuvre to fall back from the Senio to the stronger line of the Santerno 24 hours before the estimated time of the Eighth Army attack, covered by a heavy artillery barrage known as Operation 'Leonidas Eins'. It was an impeccable solution; Von Vietinghoff supported it; if agreed to, it would have upset the elaborate Allied plans for air and artillery support and forced a postponement of the offensive with perhaps grave consequences. General von Schwerin, commanding LXXVI Panzer Corps, stated after his capture that OKW flatly forbade the operation. Von Vietinghoff was in favour of staged withdrawals while there was still time.

Allied Strategic Views

As early as 12 February, 15th Army Group correctly assumed that the enemy's policy was to remain on his actual line and, when forced, withdraw to successive positions, retaining the whole or some part of Northern Italy in his hands.(2) He could shorten his left to the line Valli di Comacchio - Medicina - Monte Grande, releasing up to three or four divisions. It was decided to bring him to battle and destroy him in the area of the Po, with, of course, the assistance of

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- (1) General Jordan's special fortress staff 'Voralpen' Command, at Vittorio Veneto, was probably included in the 5,340 German engineer specialists and construction troops controlled by the Inspector of Land Fortification Southwest - General Buelowius. Assistance was given by the impressed foreign labour in the Organisation Todt under General Michelles.
 - (2) Operation Instruction, No. 2 T.O., 15th Army Gp., 12 Feb. 1945. (A.H.B./LT: 11/58/24(A), App. C-3).

the Air Forces. The course of operations would be on something resembling the following lines. A bridgehead around a captured Bologna; development of a Po River position; the crossing of the Po and the capture of Verona, so sealing the main outlet from Italy; the development of the Adige River position; the capture of Padua and Venice. They did not foresee a hold-up at the Po, but did think the Germans would stand on the Adige, even though the Alpine Line would serve them better. They could not foresee whether any more divisions would be withdrawn from Italy. However slow troop movement had been rendered by the attentions of the Allied Air Forces, it could still be executed.

Lake Comacchio

The left enemy flank would hold firm, anchored on the flooded and waterlogged land, round Lake Comacchio. This, then, was the supra-sensitive sector. Here the opening gambit must be made. The Germans placed great faith in their extensive and prolonged flooding operations. An operation across the lake towards Argenta, they believed, was impracticable with any known equipment.

Close study of Lake Comacchio⁽¹⁾ ensued. Information from ground agents was very hard to come by, owing to the repressive enemy activities in the area, the alertness of the coast watchers and a long run of weather unfavourable to exact air reconnaissance over an area studded with anti-aircraft defences. It would be important to find out to exactly what degree air formations could support the quite distinctive series of jumps which would clear the base of the Spit, the Spit itself and the strong defences before Porto Garibaldi, the Tongue, (which ran up parallel to the Spit for one-half of its length), the islands in the lagoons and Menate on the west shore of the lake. A head-on attack on the Bastia-Argenta road, widely flooded for miles on both sides, was unlikely to succeed, even after concentrated air attack, unless threats to Argenta from the east and northeast were created simultaneously. Any hope of encircling the Germans south of the Po implied the early seizure of the Argenta Gap. Yet too great an early air effort in the Lake area would disclose Allied intentions prematurely and too small an effort lead perhaps, to the defeat of the ground units there.

Not only was the Lake extensive and of varying and only vaguely known depths, but all the country round it was either naturally waterlogged or artificially flooded. The problem was discussed in the first half of January by the Commanders of Eighth Army and I Canadian Corps.⁽²⁾ In the previous September, General Foulkes had carried out a successful operation in the Scheldt Estuary in Holland in L.V.Ts - Landing Vehicles Tracked - or 'Buffaloes'.⁽³⁾ He pressed his belief in their capacity of progress through muddy, difficult country. The idea was adopted and 400 'Fantails' ('Buffaloes') allotted to the theatre. It was essential first to dominate the Spit from which the cross-lake operation was to be launched, holding back the 'Fantails' long as possible to preserve surprise before the major thrust

(1) Refer to Figure 28.

(2) General Foulkes.

(3) First developed in operations in the Pacific. Used with success in the Normandy coast landings, in the Scheldt estuary and the inundated Kleve area: driven through water and over land by the action of its tracks.

Appreciation:
'Operations across
Lake Comacchio'
Main P.Q. 8th
Army 14 Jan. 1945,
(A.H.B./
IIJ11/58/24(A)
App.D-2).

at Argenta - Operation 'Impact' - also to be supported from the air. A large number of storm and assault boats were to convey troops. Desert Air Force began a plan to mount a Rover air control post on a 'Fantail'. Air photographs were collected of the lake, of the reclaimed land just south of it, and enough intelligence to add to the reports of local partisan fishermen on lake depths, dykes and defences. It was dangerously shallow for over 1,000 yards from the shore.

The Rivers Po and Reno as Air Targets

Most of the worst problems were topographical ones, like Lake Comacchio. No less important was the question of the role of the Rivers Reno and Po and exactly to what extent the Air Forces were capable of dealing with them. A retreating enemy would have first to cross the Reno, then the Po. There was no question of isolating the battle area in the first few days, for the enemy had no serious reserve to reinforce with. In a broad way, of course, the whole country was being isolated by the Air Forces, but the essential coup de grace must be delivered quickly and on the spot. Once safely across the Po in force, there was every chance of him reforming on the formidable Adige Line.

On 31 January, the Eighth Army Commander discussed with Desert Air Force the role the air might play in preventing the enemy moving at the critical juncture. (1) Previous attempts to isolate the battlefield such as in Normandy, at Anzio and Cassino had, he said, failed. Had any new air force technique or tactics been devised, or could they be devised, whereby for a limited period the enemy might find it impossible to withdraw or reinforce across the Reno and Po? Perhaps large quantities of small delayed action or booby traps could be dropped on the approaches to known crossings on a basis of timing carefully co-ordinated with the ground plan.

There was, however, no spectacular new technique. It was beyond the capacity of the available fighter-bombers in the theatre to destroy simultaneously the 28 vehicle bridges over the Reno and the 92 Po ferry crossings. Desert Air Force plus XXII Tactical Air Command between them could perhaps knock out up to 15 bridges and crossings a day, which at its best meant a week's non-stop attack, too long to meet the Army's needs. Battered crossings would merely annoy, but not deter, an enemy determined to cross. (2) In spite of this discouraging reply, the Army came back late in March with a call for detailed examination of the interdiction of the Reno and Po when the army commander considered the ground operations had reached the right stage.

While Desert Air Force's February reply was accurate, in point of fact it was an understatement. The question of the Po had never ceased to haunt the Air Forces, and a few days earlier, Intelligence had placed the problem in its right perspective. (3) They had given up the idea of putting out

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- (1) Ltr GA/POL/21 8th Army to D.A.F., 31 Jan. 1945. (Cabinet Hist. Archives).
 - (2) Letter D.A.F. to 8th Army, 9 Feb. 1945 in reply to GA/Pol/2, 31 Jan. 1945. Reference not established. (Cabinet Hist. Archives)
 - (3) Paper by Chief Intelligence Officer, Adv. H.Q., D.A.F., 2 Feb. 1945. D.A.F., O.R.B. Apps.

the whole river crossing system, but they did visualise treating the ferry, its two jetties and the neighbouring marshalling area as a unit, with whose component parts one could so juggle by air attack that a breakdown in the enemy administration system might well be brought about, especially if aggravated by continuous night attacks. The Air Forces were trying to forecast what sectors of the river were to be used by the enemy if and when he did cross the Po, but this could be no more at the best than shrewd speculation at a time when the battle had not yet been joined.

Bologna

Fifth Army, weakened by the loss of forces to Southern⁽¹⁾ France and of XIII Corps to Eighth Army,⁽²⁾ would only be able to develop a limited concentrated effort along its very extensive front. Bologna was the key point, but had proved surprisingly resistant to frontal assault and its defences were being strengthened. The axis of attack was therefore of the utmost importance, so that tanks could be used to the best advantage.

It was thought in January that after Eighth Army had dislodged the enemy from his Santerno positions and threatened the Argenta Gap, Fifth Army should attack north of Highway 64 and break through west of Bologna to Ostiglia on the Po and eventually on Mantua. By February, General Mark Clark saw Verona as a main objective, the capture of which would seal the main outlet from Italy - the Brenner Pass - and lead to the development of the Adige position, and, if there was no defence of it, the capture of Padua and Venice. This drive north ought to cause enemy resistance in western Italy to fall of its own weight, for unless Army Liguria retreated northeastward towards the Brenner line before Fifth Army reached Verona, it would be cut off.

By 24 March, it was decided that Fifth Army was to debouch from its mountain bases into the Po Valley and capture or isolate Bologna, then break through in an effort to encircle cojointly with Eighth Army, German forces south of the Po, the Allied armies meeting at Ferrara or Bondeno. Fifth Army was to make a secondary effort between the Panaro and Secchia Rivers.

The terrain on the Bologna front was markedly different from that opposite Eighth Army. Fifth Army had still some 15 miles of strongly defended mountains to clear. Its early drive could hardly be anything else but a slogging match unless it could count on air support of an extremely heavy and sustained nature. The first and toughest task was to break out of the few miles of hilly country remaining and envelop Bologna, which could be seen on clear days: then to switch over without a pause to fighting over flat country suitable for armour.

Difference in Air Co-operation Needs on the two Fronts

Two essentials of a good start here were to deceive the enemy into spreading his forces, away from the point of main assault, and to break the power of his artillery defence system round Bologna by air attack.

(1) In August 1944.
(2) On 18 Jan. 1945.

H.Q. 15th Army
Group Sig. 05085,
17 Jan. 1945.
(A.H.B./IIJ11/
58/24(A),
App. C-1).
Appreciation and
Outline Plan
15th A.G. Operations
G(Plans) 8th Army,
16 Jan. 1945.
(A.H.B./IIJ11/58/
24(A), App. D-3)

Ibid and 'Salerno
to the Alps'
5th Army History,
Chapt. XI.

Ibid

Fifth Army thought progressed towards the idea of a diversionary attack on D minus 4 Day along the west coast to capture Massa and exploit towards La Spezia, an operation which would call for air bombing of the heavy naval guns dangerously covering Allied movements. This would tie up at least two enemy divisions(1) and, with any luck, draw in a part of his two-divisional strategic reserve.(2)

The emphasis had shifted from Highway 65 to Highway 64. The main effort,(3) astride Highway 64, was to gain Praduro, the road junction north of Vergato. There the main force would concentrate west of the highway, ready to break out into the Po Valley. Once clear of the Panaro line, the Americans to the west would be pointing at Modena; the South Africans to the east were to encircle Bologna and link up with Eighth Army at Bondeno. There was no joint air/ground plan for the Fifth Army attack. Further, to enhance the difference in outlook in the two spheres, whereas the air attacks on Eighth Army's front were a pre-requisite, in Fifth Army's plans, if weather prevented the massive air support, the ground attack was still to go in, although the result was problematical to say the least of it. Later, however, D-Day was postponed for 48 hours on account of low-lying cloud over the mountains, prejudicial to air operations.

The Role of Air Interdiction in Theatre Strategy

The isolation of Italy from the Reich H.Q., M.A.T.A.F. (A.H.B./IIJ11/13).

While the ground strategy in Italy was slowly developing from the notional to the concrete, air strategy had been following a steadily expanding course in isolating, as far as possible, Italy from the Reich.

On D-Day - 9 April - the situation in the northern area was on the following lines. The Brenner Line was blocked certainly in 12 places from Parona at the foot all the way up to near to the Brenner Pass. On the lateral line joining the Brenner Route with Villach, Perca in Italy remained impassable with a severely damaged abutment, while at Ober Drauberg in Austria repairs had not yet begun on the 200-foot gap in the fill approach. One span of Muhldorf bridge (north of Spittal) was destroyed. On the Tarvisio Line, Dogna, Chiusaforte and Resiutta bridges were all three still cut. All the spans of Canale d'Isonzo on the Piedicolle Line were down. On the Postumia Line, the Borovnica viaduct had been abandoned and the diversion there only three-quarters completed. There was grave damage across the frontier, both in Austria and Jugoslavia. In the Venetian Plain, the four inner belts of interdiction were complete with every crossing on the three lateral lines impassable. The Dolomite Line was cut at Longarone and its extensions southward blocked. The Cittadella - Trento loop line was impassable at Cison.(4)

The strategic Role of Alpine Front Command(5)

Ever since the First Airborne Task Force had landed in September 1944 in Southern France,(6) Allied Forces had

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- (1) The 148th Grenadier and Italia Bersaglieri Divisions.
 - (2) The 29th and 90th Panzer Grenadier Divisions.
 - (3) By II and IV Corps abreast.
 - (4) For the general position refer to Figure 18.
 - (5) A brief chronological statement of the development of Alpine Front Command is given at Appendix 37.
 - (6) Refer to the R.A.F. Narrative of the Campaign in Southern France (A.H.B.).

occupied the Franco-Italian frontier. It suited both sides engaged that this front should remain static in the hands of roughly a couple of divisions. A few squadrons of aircraft and light naval forces supported the Franco-American units. The enemy employed light harassing naval forces, too. With the advent of finer weather, enemy patrol activity increased, but there were no signs of any serious offensive operations.(1)

As 15th Army Group studied the terrain and the forces existing in March, it was asking what role, if any, the Alpine Front Command might have in its Spring offensive, whether it could not successfully hold down enemy divisions at a critical juncture on the two main army fronts.(2) It is well, therefore, at this point, to consider very briefly the general position in that sector.

In December 1944, the French decided that the security of the frontier was ethically and militarily their charge and made arrangements for a newly-forming division(3) to take over from the F.F.I. resistance bands and the remnants of the U.S. Airborne Task Force. On 26 February 1945, the status of the sector was officially recognized in the creation, effective 1 March, of the Alpine Front Command. Its commander was General Doyen, responsible to 6th Army Group, through the First French Army. The American units were withdrawn.(4)

During the winter months, snow blocked all the passes except those along the Mediterranean coast. Operations were literally at a standstill. The French, now two divisions in strength, carried out their brief of defending the border.(5)

On 23 March Field Marshal Alexander put forward his plan - 'Jessica' - for the employment of Alpine Front Command. He wanted both deception and offensive operations, with the object of holding down two enemy divisions in Northwest Italy as part of his Spring offensive.(6)

Problematic Limits of Alpine Front Operations

These raids, aimed at creating a threat, were launched on 10th and from 18 to 20 April.. General Devers, Commanding General of 6th Army Group, in deference to American apprehensions at Allied Forces H.Q., defined the geographical limits of those operations(7) as a line running from the Franco-Italian frontier at its northern point to Pré St. Didier - Gran Paradiso Mountain - Ceres - Bussoleno - Fenestrelle - Crissolo - Cuneo - Imperia. He reassured Allied Forces H.Q. that the small French forces were under his command and foresaw no ultimate difficulties. Both H.Q.s agreed that their period of usefulness might rapidly pass once the main offensive had succeeded in defeating the main Axis armies and that, in the interests of harmony, all French troops were at that still uncertain future date to be withdrawn.(8)

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- (1) Sig. BX. 24986 6 A.G. to SHAEF. Fd. 15 March, 1945. (Cabinet Hist. Archives).
 - (2) 6th Army Group, too, was actively interested, but from a different angle.
 - (3) The 27th Alpine.
 - (4) File HS/SHAEF/163/11, 6th Army Gp. records. (Cabinet Hist. Archives).
 - (5) File HS/SHAEF/739/3 - G-3 Records - GCT/375 - 5/Ops A. No.1 'Control of Frontiers - Alpine Front Command' (Cabinet Hist. Archives)
 - (6) Sig. Alexander to SHAEF. Fd. FX. 48461, 23 March 1945. (Cabinet Hist. Archives).
 - (7) Sig. BAX 25572 6 A.G. to A.F.H.Q., 4 Apl. 1945. (Cabinet Hist. Archives).
 - (8) File HS/SHAEF/739/3 G-3, 'Control of Frontiers Alpine Front Command'.

Two French squadrons of the Coastal Air Force⁽¹⁾ supported their own national troops with bombing and machine-gunning attacks in April and later carried out comprehensive reconnaissance west of a line Milan - Alessandria - Genoa.⁽²⁾

THE OPPOSING FORCES

Allied Ground Forces

At the commencement of the offensive, 15th Army Group controlled seventeen divisions,⁽³⁾ four Italian Combat Groups,⁽⁴⁾ the Jewish Brigade and three more infantry and six armoured brigades, and some odd special formations such as Popski's Private Army. The total Allied infantry numbered 82,100, roughly 7,000 more than the Germans possessed in a larger number of divisions. The artillery strength was some 2,000 guns.⁽⁵⁾ The tank strength was just over three thousand.⁽⁶⁾

Enemy Ground Forces

The enemy's Army Group 'C' and Army Liguria controlled between them twenty-three German and four Italian Fascist Republican divisions and numerous auxiliary units. Most of these were available for front line duties, but some were needed for the Alpine Front, police duties, railway repair and anti-aircraft duties.

In Tenth Army, facing Eighth Army, there was a Panzer Corps,⁽⁷⁾ a Parachute Corps⁽⁸⁾ and two divisions in reserve.⁽⁹⁾ The Venice defence zone was controlled by LXXIII Corps. In Fourteenth Army facing Fifth Army, there was one Panzer⁽¹⁰⁾ and one Mountain Corps⁽¹¹⁾ and a division in reserve.⁽¹²⁾ In Northwest Italy, Army Liguria, under Graziani's command, comprised two corps⁽¹³⁾. The Supreme S.S. and Police Commander controlled German Police Regiments, foreign levies, the Waffen S.S. Grenadier Division, the 10th M.A.S. Italian Infantry Division, the National Republican Guard, Black Brigades and an assortment of Italian units, totalling in all to some 126,000 armed men; the majority were used solely in anti-partisan operations, a fair indication of the strength of the Italian underground co-operation with the Allies.

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- (1) II/6 and II/9.
 (2) M.A.C.A.F. Ops. O.R.Bs.
 (3) Fifth Army:- 92nd Div. IV Corps - 10 Mountain, 1 Armoured and 1 Brazilian Divs. II Corps - 34, 35, 88 and 91 Infantry, 6 South African Armoured Divs. Eighth Army:- V Corps - 6 Br. Armoured, 56, 78, 2 New Zealand and 8 Indian Infantry Divs. XIII Corps - 10 Indian Divs. II Polish Corps - 3 Carpathian and 5 Kresowa Infantry Divs.
 (4) The Legnano, Cremona, Friuli and Folgore Groups.
 (5) 134 heavy, 492 medium and 1424 field pieces.
 (6) 2426 medium and 612 light as against 200 enemy medium tanks. These and other figures relating to the Armies are taken from the narrative and appendices of (A.H.B./IIJ11/58/24A-B, Pt. IV, Sect.B) and the History of the Fifth Army.
 (7) LXXVI Corps - 162nd, 362nd and 98th Inf Divs, and 42nd Jaeger Div.
 (8) I Parachute Corps - 1st & 4th Para, 26th Pz, 278th and 305th Inf Divs.
 (9) 29th Pz Gren and 155th Inf Divs.
 (10) XIV Panzer Corps - 65th and 94th Inf and 8th Mtn Div.
 (11) LI Mountain Corps - 114th Jaeger, 334th Inf., 232nd Inf., Italia Inf., 148th Inf. Divs and 3rd Liaison Detachments.
 (12) 90th Pz Grenadier Div.
 (13) LXXV Corps - 5th Mtn, 34th Inf., 'Littorio' Inf. Div., M. Rosa Mtn. Div. Corps Lombardy - 135th Fortress Bde, San Marco Inf. Div.

8th Army Operations
 Pt. IV Sect. 13.
 Appendices
 Br. Hist. Sec. C.M.F.
 (A.H.B./IIJ11/
 58/24A-B).

The total of fighting troops facing the two Allied Armies was 286,000, backed up by a balance of 152,000 other troops, including 28,000 flak troops. On Eighth Army's front, where the attack was to be most concentrated, the Allies outnumbered the Germans in men and artillery pieces by close on two to one and in armour by nearly three to one. All the advantages in terrain were on the side of the Germans.

The Strength and Disposition of the Allied Air Forces in Italy

On 1 April, the combined strength in operational front-line aircraft of the Tactical and Strategic Air Forces was listed at 4,393⁽¹⁾ out of a total theatre strength of 12,482 aircraft of all categories.⁽²⁾ When the offensive opened in early April, little change had taken place in the order of battle of Mediterranean Allied Air Forces since the changes in command in mid-March. On 16 March, it will be recalled, the Commander-in-Chief of the R.A.F. Mediterranean Middle East, Air Marshal Sir John Slessor, who also filled the post of Deputy C.-in-C., was appointed to the post of Air Member for Personnel in the U.K. His successor was Air Marshal Sir Guy Garrod, previously Acting C.-in-C., Air Command South East Asia. Although a new Air Commander-in-Chief was appointed to Mediterranean Air Forces - Major General J. K. Cannon⁽³⁾ - the command pattern underwent no change. As Deputy C.-in-C., Air Marshal Garrod exercised such responsibilities in regard to the Allied Air Forces⁽⁴⁾ as might be delegated to him by the Air C.-in-C., Mediterranean Allied Air Forces. As Air C.-in-C. R.A.F. Mediterranean Middle East he was responsible for all R.A.F. operations in the Mediterranean Middle East theatre; responsible to the Air C.-in-C., M.A.A.F. for those in that part of the theatre within his province, and to the Chief of the Air Staff for those in the remainder of the theatre.

Practically all the squadrons were based in Italy. Under operational command were a total of 258 squadrons,⁽⁵⁾ manned and maintained by some 164,000 U.S. and 79,000 British personnel in addition to other Allied units. There were still variations in

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- (1) History of M.A.A.F. Lt.Col. Parton, U.S.A.A.F. Narrative - Vol. II. (A.H.B./ILJ1/176/69).
 - (2) It will be seen by comparing these figures with those for 1 Sept. 1944 of 14,631: 5,237 that there had been a drop of close on 1,000 aircraft.
 - (3) On 24 March. On 2 April, Brig. Gen. B. W. Chidlaw assumed command of the Twelfth Air Force and shortly thereafter of M.A.T.A.F. On 6 April, Brig. Gen. T. C. D'arcy was appointed C.G., XXII Tactical Air Command.
 - (4) All operational units in the Mediterranean theatre (including Turkey, the Balkans, Greece, Central and South western Europe, but excluding Middle East).
 - (5) 155 U.S., 77 R.A.F. and Dominions (including 23½ S.A.A.F) 13 Italian, 5 French, 2 Yugoslav, 2 Polish, 3 Greek and 1 Brazilian.

the establishment of the initial squadron according to its role and nationality and these had changed since 1943.(1)

The Strategic and Tactical Air Forces were to be involved almost in their entirety in the opening phases of the coming offensive. The closest possible day-to-day liaison between them and Fifteenth Army Group and Fifth and Eighth Armies had already been established. All the Strategic Air Force(2) heavy bomber squadrons were based in South-east Italy,(3) mainly at Foggia. One hundred and nine U.S. day squadrons constituted the Fifteenth U.S. Air Force.(4) Eight others formed the No. 205 R.A.F. Group(5) of night bomber units, under command of Brigadier J. T. Durrant, S.A.A.F. There were seven groups of Lightning and Mustang fighters(6) based at fields ranging from the Foggia area to Rimini. They were to cover not merely escort duties for their own heavy bombers but for some of Tactical Air Force's bombers and to carry out armed reconnaissance, all by day. The whole constituted a very powerful force. Its great defect was that it was too heavily weighted on the day operational side. If the offensive succeeded, continuity with strong night forces would be important, but unattainable for lack of aircraft.

The order of battle of the Tactical Air Force(7) had undergone little change since the withdrawal of forces in February. The order of battle and locations of its tactical units is given for close study at Appendix 38. The major accession to its striking power was to be the 57th medium bomber wing, about to move from Corsica to the Fano area.

(1) Initial Squadron Establishment in April 1945:-

Role	Nationality	I.E.
Fighter TEF(N)	Br. & Dominion	14, 16
" "	U.S.	12
" TEF(D)	Br. & Dominion	16
" "	U.S.	25
" "	French	25
" SEF	U.S.	25
" F/Recee	Br. & Dominion	16
" Fighter Bomber	U.S.	25
" "	Brazilian	31
" Ground attack	Br. & Dominion	16
Medium Bomber	Br. & Dominion	16
" "	U.S.	16
Light Bomber	Br. & Dominion	16
" "	U.S.	16
Heavy Bomber (D)	U.S.	12
" " (H)	Br. & Dominion	18
Air Observation Post	Br.	16
Maritime & General reconnaissance	Br.	18
Troop carrier	U.S.	25
Air sea rescue	Br.	5, 10
Photo reconnaissance	U.S.	16
Minesweeping	Br.	12
Minespotting	French	10, 12.

These and parallel statistics for the period were taken from the records of the Administration and Organization Section of M.A.A.F., O.R.B.

- (2) C.G. - Maj. Gen. N.F. Twining.
 (3) Refer to Appendix 39 for Order of Battle and locations.
 (4) H.Q. Bari
 (5) H.Q. Foggia.
 (6) XV Fighter Command H.Q. Torre Maggiore.
 (7) C.G. Maj. Gen. J. K. Cannon to 4 April 1945.

The advent of the heavier fighter-bombers of XXII Tactical Air Command⁽¹⁾ and the medium bombers were to compensate for the inequalities in aircraft category in Desert Air Force.⁽²⁾ The longer experience of Desert Air Force and its superiority in the field of light day and night tactical bombers and close battlefield supporting fighters were taken into account. It was true that there had been some interchange of elements in the interests of greater balance. Desert Air Force controlled three squadrons of U.S. long range fighter-bombers:⁽³⁾ XXII Tactical Air Command controlled two R.A.F. tactical reconnaissance squadrons,⁽⁴⁾ and four R.A.F. and Dominion short range fighter and fighter-bomber (or ground attack fighter) squadrons.⁽⁵⁾ But as individual air forces, complete balance was not yet attained in the day operational sense. As for the principle of concentration of force, this was to be to a large extent, although never ideally, achieved in the fusion of Tactical, Strategic and Coastal Air Forces in the interests of the tactical battle and to the exclusion of all outside strategic commitments.

As regards the composition of the Tactical Air Force as a whole, it is of interest to note that it disposed of forty-two U.S.A.A.F., forty-four R.A.F. and Dominion, one Brazilian and two Polish squadrons.

Another important component in Tactical Air Force was the 57th U.S. Bombardment Wing, which controlled 12 squadrons of Mitchells.

Still another element which was to come into the foreground of planning was the U.S. 51st Troop Carrier Wing, controlling 12 squadrons of Dakota transport aircraft. It was considered likely to operate in a major role of airborne assault and would certainly carry out extensive air ambulance work and probably drop supplies.

The Coastal Air Force,⁽⁶⁾ with reduced forces, within a perimeter stretching to North-west Africa, covered the air defence of Allied shipping, attacks on enemy shipping along the Italian Riviera and in the Ligurian and Adriatic Seas, the air defence of the Italian peninsula (except the forward areas where Tactical Air Force was responsible) and operated the Air-Sea Rescue services in the Adriatic and the Western Mediterranean as far as the area of responsibility of Air Headquarters Malta. Almost all the ultimate responsibility was by that time British. The entire strength totalled to 17 squadrons.⁽⁷⁾

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- (1) C.G. Brig. Gen. Chidlaw to 4 April 1945.
 - (2) A.O.C.-in-C., A.V.M. R.M. Foster.
 - (3) 79th Group - Sqns. Nos. 85, 86, 87 flying Thunderbolts.
 - (4) Nos. 208 & 225, flying Spitfires.
 - (5) Nos. 3 and 11 S.A.A.F. Squadrons flying Spitfires and Kittyhawks respectively and Nos. 87 and 185 R.A.F. Squadrons flying Spitfires.
 - (6) A.O.C., A.V.M. J. Whitford.
 - (7) 7 R.A.F. and Dominion, 4 Italian, 4 French and 2 U.S. squadrons.

Axis Fighter Operations in March and early April (1)

In spite of the catastrophic cuts in fuel allocations, the aircrews of the German and Italian Fascist Air Forces, a good proportion of whom were seasoned veterans, were active during March and early April in several fields. They still showed a spirit of enterprise in fighter interception by day and night and in reconnaissance. Their night harassing effort was negligible.

Appreciable day fighter reaction was reported from various sources on roughly one-half the days of the month and in early April. Apart from frequent isolated sightings which did not develop, there were at least 10 encounters in March, mostly by heavy and medium bomber formations operating over Northern Italy, Austria or Southern Germany. To quote a few examples, on 2 March 15 enemy fighters were met in the Brescia area, and about the same number near Udine by Spitfires. (2) On 3 March, at Conegliano, 10 to 15 Me.109s and F.W.190s attacked a formation of Marauders and their Spitfire escort destroying one Spitfire for the loss of one Me.109 shot down and several damaged. On 4 March, three Me.109s followed Allied bombers east of Lake Garda, but made no attack. On 10 March, 20 Me.109s were sighted by Thunderbolts, but no encounter followed as the enemy turned away. On 14 March, 16 Me.109s tried to intercept Mitchells near Lake Garda, but were driven off and lost two aircraft to the Thunderbolt escort. On 23 March, the enemy, in southern Germany and Austria, (3) showed something of the old aggressiveness. Over Pordenone, 20 F.W.190s and Me.109s, having waited until they saw the escort break away to return for fuel, then attacked the Mitchell formations with great determination. The Mitchells shot down two Me.109s and reported damage to two others, for the loss of one Mitchell and damage to two others. Earlier the same day, two Me.109s had shot down a Thunderbolt near Gorizia.

As April opened, the effort grew more uneven. The weather was improving from an operational viewpoint, but the Italian-piloted Me.109s were only seen on a few occasions, never very far from their bases. At night, all through this period, specially trained F.W.190 crews were seen in small numbers, but there were no sensational encounters. A few were shot down. The night harassing bombing was only occasional and inconspicuous. There were less Ju.87s and a few more F.W.190s engaged on this task.

First Reports of the Arado 234 Jet propelled Reconnaissance Aircraft (4)

Although, as the heavy bombers of the Fifteenth Air Force knew to their cost, there were upwards of 50 Me.262 jet propelled aircraft in the Nuremberg-Frankfurt-Munich area and there were occasional sightings of Me.262s in Northern Italy, there was no primary evidence that there were any of the new

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- (1) No.1 M.O.R.U., D.A.F. and T.A.F., O.R.Bs: M.A.A.F. Intelligence Section Weekly Summaries (A.H.B./IIJ1/43). M.A.T.A.F. Monthly Air Intelligence and Operations Bulletins. (A.H.B./IIJ11/18).
 (2) Outcome not recorded.
 (3) Controlled by Jagdivisionen 7 and 8.
 (4) M.A.T.A.F., D.A.F., No.1 M.O.R.U. O.R.Bs: M.A.T.A.F. (A.H.B./IIJ11/18) and M.A.S.A.F. Monthly Air Intelligence Bulletins: M.A.T.A.F. Weekly Air Intelligence Summaries: Von Pohl Interrogation Reports.

types actually based in Italy. The Arado 234 had been in operation on the Western Front. The first of them to be captured intact had been forced down on 25 February at the village of Selgersdorf. The Mediterranean theatre was quickly supplied with photographs and information to aid them in recognition. As has been already noted, General Von Pohl had been allotted a small unit of three. On the Western Front the Arado 234 had functioned as both bomber and reconnaissance aircraft. Von Pohl and Von Vietinghoff needed reconnaissance most and the three Arados were given urgent priority tasks which had proved fatal to so many of their predecessors. Their superior performance put them at once beyond the class of the best Allied fighters and they continued to function to good effect in relative immunity to the end of the campaign.(1) Unfortunately for German Intelligence, there were too few of them.(2)

On 1 April, a reconnaissance in the Corsican area was reported suggesting a long-range aircraft. The same day, an anti-aircraft unit in the Pisa area reported a visual sighting of a twin-unit jet-propelled aircraft flying at an estimated speed of 500 miles an hour. On 2 April, another was seen on a probable reconnaissance mission from south of Bologna along the forward area to the Adriatic coast, flying, it was estimated, at over 400 miles an hour. In both cases, the aircraft's height was in the region of 30,000 feet. German units were warned not to fire on the new aircraft.(3) On 5 April, Spitfires in the Venice area sighted an aircraft which they thought was probably an Me.262, flying northwards. In the Lake Comacchio area, a Mosquito sighted an aircraft, probably the same, which turned in to attack it at very great speed. It was driven off by anti-aircraft fire. Meanwhile an Arado 234 had been photographed on several occasions on Udine airfield and on 9 April one was photographed on Lonate Pozzolo airfield. On the night 10/11 April, it was recorded that three long-range aircraft were airborne and that photographic flash bombs were noted over Bari, Taranto and Brindisi(4) On the following night, photographic flash bombs were dropped before midnight over Naples by an aircraft which was tracked north and out over the Adriatic in the Ancona area. On 11 April, an Arado 234 was shot down near Bologna by fighters of the Fifteenth Air Force.

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- (1) One was shot down.
 - (2) The appearance of a few in Italy was linked with a general stepping-up of distribution of this type. Others had been seen at Lechfeld in Austria.
 - (3) Source - a prisoner-of-war from 13 Company 25 Regiment, 42 Jaeger Division (TNM/124 13 April. 1945).
 - (4) This night's effort may well have been the final German check on Allied intentions regarding an amphibious landing at the head of the Adriatic.

Axis Air Strength on 1 April 1945⁽¹⁾

On 1 April, the Axis had a front-line strength of 182 operational aircraft, of which 147 were serviceable. It had, in addition, on various bases, a reserve of 26 aircraft. The front-line units consisted of thirty-six Me.109s for close range reconnaissance, 18 mixed Ju.88s, Ju.188s and Arado 234s for long range reconnaissance, 38 mixed Ju.87s and F.W.190s for night ground attack and 90 Me.109 fighters. An Italian torpedo bomber gruppo and an Italian fighter gruppo were in course of assembly. The only unfamiliar unit was the Kommando Sommer with the jet-propelled Arado 234s.

The Axis losses in aircraft continued to be steady and serious but reinforcements continued to flow in and plans for expansion, albeit modest ones, were still being formulated. The small, experienced body of aircrews made the most of their hopelessly inadequate material with the reduced rations of fuel.

THE PLANSResponsibility for Operation 'Wowser'

Operation 'Grapeshot'⁽²⁾ was the code name for the 15th Army Group offensive designed to destroy the enemy forces in Northern Italy. Air Operation 'Wowser'⁽³⁾ was

(1) THE LUFTWAFFE IN ITALY -- 1 APRIL 1945

	Unit	A/c Type	Strength	Serviceable
CLOSE RECCE	Stab NAGr 11	Me.109	3	2
	1/11	Me.109	14	12
	2/11	Me.109	19	12
			<u>36</u>	<u>26</u>
LONG RANGE RECCE	4(F) 122	(Ju.88	2	1
		(Ju.188	6	5
	6(F) 122	Ju.188	7	7
	Kdo. Sommer	Ar.234	3	2
		<u>18</u>	<u>15</u>	
NIGHT GROUND ATTACK	Stab NSGr 9	Ju.87	1	0
	1/9	Fw.190	11	10 x
	2/9	Ju.87	10	10
	3/9	Ju.87	16	15
		<u>38</u>	<u>35</u>	
FIGHTERS	x (Note: refitting whilst remaining operational)			
	Stab (Italian) JG1	Me.109)	45	34
	I (Italian) JG1	Me.109)		
	II (Italian) JG1	Me.109)	45	37
			<u>90</u>	<u>71</u>
<u>Units being set up</u>	Italian Torpedo Bomber Gruppe	SM.79	13	7
	III (Italian) JG1	Me.109	21	10
<u>AIRCRAFT IN RESERVE</u>	20 Me.109 fighters			
	2 Me.109 photo reconnaissance			
	2 Fw.190 ground attack			
	2 Ju.87 dive bombers			

(A. H. B. 6 Air Ministry)

(2) A. F. H. Q. GBI - 389 505/6 25 March, 1945. (Cabinet Hist. Archives).

(3) M. A. T. A. F. Operation Instructions No. 17 30 March 1945 and 17A. 7 April 1945. (A. H. B. /IIJ1/122/83/10A-B, Encls. 8a & 6a).

designed for the employment of maximum air effort in co-ordination with the Army Group during the initial stages of 'Grapeshot'. At a late stage in the planning, Mediterranean Allied Air Forces issued a brief order officially approving the Tactical Air Force's plan. The Historian of M.A.A.F. has recorded that it was virtually the only influence it exerted on the battle. The air planning for support of the offensive was the responsibility of Tactical Air Force and its components.

The Machinery of Planning

Two air forces under M.A.T.A.F. and two armies under 15th Army Group were engaged. At the top level of command, the opposite numbers to the Plans Section of Tactical Air Force was the G - 3 Air Branch at H.Q. 15th Army Group. (1) This G Air Branch prepared a series of possible air support plans for the two Armies to assist in their preliminary planning. G - 3 Air effected the co-ordination of plans for airborne operations - 'Earlsdon' - in support of Eighth Army and, in conjunction with Allied Forces Headquarters, prepared plans for aerial re-supply. It carried out the detailed planning for Operation 'Herring', which involved the dropping of Italian parachutists on the Army Group front. It issued a weekly bulletin of information known as 'Background' to all Air Liaison Officers, so that they were enabled to give pilots and aircrews a fair idea of the general war situation. It was the adviser on all Army/Air matters to the Army Group Commander and a general clearing house for Army/Air problems.

The next stage of co-ordination was on the Army/Air Force level. XXII Tactical Air Command Plans gave to the G-3 (Air) Section at Fifth Army H.Q. a forecast of the weight of air effort available from its own resources and an indication of supplementary aid through Tactical Air Force. Directed by the Chief of Staff, G-3 (Air), in consultation with other sections of Fifth Army H.Q. and Corps and Divisional staffs involved, then prepared a programme of the air support they wanted. This was put up to XXII Air Command, who decided which targets they would attack and on what scale. The air plan was then agreed on. There was no joint air/ground plan published. The ground attack would open with or without air preparations. (2)

(1) Division of duties in G-3 Air.

(a) Air (1) Sub-section

- (i) Co-ordination of air operations in support of the two Armies.
- (ii) Dissemination of operational and intelligence information from ground and air sources.
- (iii) Liaison with M.A.T.A.F. re operations.
- (iv) Control of the Main Army/Air Support Signals net.
- (v) Supervision of some Air Liaison Officer Administration.
- (vi) Production of Operation & Intelligence Summaries for distribution to A.L.Os and Army/Air staffs.
- (vii) Inter-communication Flight arrangements.

(b) Air(2) Sub-section

- (i) Co-ordination of Airborne Operations in the theatre.
- (ii) Co-ordination of Aerial Re-supply operations.
- (iii) Co-ordination of special Airborne operations in support of clandestine forces.
- (iv) Liaison with M.A.T.A.F. and the Psychological Warfare Branch in regard to the dropping of propaganda leaflets.

(2) Notes on the combined army/air operations in the Italian theatre Apr/May 1945. D.M.T., A.F.H.Q. (A.H.B./IIJ1/90/246).

The procedure between Eighth Army and Desert Air Force was more complex because of the more elaborate task ahead of them. Passing over all consideration of the lengthy preliminaries, the first big step forward was marked by the statement of air support requirements for Operation 'Buckland' - the combined offensive on the Eighth Army front - of 4 March.⁽¹⁾ This condensed the strategy as seen at that point into five phases, namely the month before D-Day, the period between D-Day Buckland and Y-Day (D-Day of Operation Impact),⁽²⁾ Y-Day, and finally the Po and Reno crossings. This phasing should be borne in mind, for, in the event, operations did fall into these rough early groupings.

From D minus 30 Day to D minus 1, Eighth Army desired three things, namely the destruction of the enemy's main dumps of ammunition, petrol and stores from south of Padua to the battle area, close support of the three operations in the Lake Comacchio area on D minus 21,⁽³⁾ D minus 7 and D minus 3 Days, and bombing of bridges and defences in the area due north of the Lake as part of the cover plan designed to deceive the enemy into believing the intentions were to exploit north of the Spit. For D-Day they wanted maximum close support, including a 'large outside day and night effort' from both Strategic and Tactical Air Forces. Close support should continue over and beyond the launching of 'Impact', then switch to whichever force exploited north to Ferrara. At some date after D-Day, dependent on the course of ground operations, they wanted an all-out air effort to destroy and harass selected crossings over, and block approach points to, first the River Reno, then the River Po, for 48 hours at a stretch.

At the first joint army/air conference of Eighth Army and Desert Air Force on 14 March, D-Day was provisionally fixed as 10 April. Desert Air Force was willing to carry the weight of preparatory operations alone, but for the first two days at least of 'Buckland' the assistance of the whole of the Strategic Air Force, the whole day medium bomber effort of Tactical Air Force and the maximum number of XXII Tactical Air Command's fighter bombers was required. At this point the Air Force was asked to study the idea of the complete interdiction of the Rivers Reno and Po.

On 23 March, Desert Air Force sent full proposals to Tactical Air Force for action and approval.⁽⁴⁾ They went into the vital question of heavy bomber support and affirmed that fullest co-operation was assured where safety and navigational aids were concerned, as well as for any preliminary practice runs over the target area by navigators or formation leaders. It was not yet decided whether V Corps and Polish Corps were to attack simultaneously and there was naturally some competition for the heavy bomber support. While it was being pointed out to Polish Corps that only one major heavy bomber attack was possible in the time available, the whole plan went forward to Allied Force Headquarters, so

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- (1) Reference GA/POI/2, 6 (Air) Main H.Q., 8th Army, 4 Mar. 1945.
 - (2) An Eighth Army amphibious operation across Lake Comacchio developing into a thrust at Argenta.
 - (3) The Cremona Group attacks of 2 and 3 March 1945 on the Comacchio Spit, supported by aircraft controlled from Sherman tanks, was described in Chapter 5.
 - (4) A.H.Q., D.A.F./30/9/Air, 23 March, 1945. (A.H.B./IIJ1/122/83/10(A), Encl.4a).

that when Tactical Air Force passed the bid for the heavy bombers to Mediterranean Allied Air Forces for formal sanction, the Army's case would be familiar to those taking the decision.

On 28 March, it was still undecided exactly in what order the two corps were to attack. The Army Commander and Air Officer Commanding therefore approved two alternative air support plans. Many changes took place until the final decision of 3 April that V Corps and Polish Corps were to attack simultaneously at approximately 1930 hours on 9 April. The choice of H Hour was based on the latest time that fighter bombers could operate in daylight over the Senio River. On 5 April, a detailed army/air plan was issued to Corps. On 7 April, a tactical reconnaissance trace was issued, giving code names for roads and river crossings. On 8 April, the detailed fighter bomber programme for D-Day was passed to Desert Air Force. The final Tactical Air Force operation instruction for Operation 'Wowser', covering the offensive on both fronts, was issued on 7 April. (1)

Representatives of Fifteenth Air Force visited Eighth Army and Desert Air Forces H.Qs. for the purpose of considering final details for the heavy bomber attack on their sector. They later visited Fifth Army and XXII Tactical Air Command H.Qs. for parallel discussions.

The main factor influencing the decision that both Eighth Army Corps were to attack simultaneously was that if Polish Corps attacked, as suggested, on D plus 1 Day they would not enjoy the benefit of the heavy bombers: on D-Day the effort was to be concentrated on V Corps front, whereas on D plus 1 Day it was to be confined to the River Santerno area (next to be crossed) rather than the River Senio, in order to ensure the safety of V Corps' forward troops. Polish Corps had farther to travel to reach the Senio and with few good night landmarks, they were, lacking the necessary experience, at a disadvantage: this was considered outweighed by the support of the heavy bombers in neutralising the enemy defence system.

With this picture of the planning pattern in progress completed, the plans themselves and the preparations for their execution may now be considered.

The Variety of Plans and their Code Names

It is proposed to depict clearly at the outset with the utmost brevity the various plans on the table before D-Day, together with their code names. The ground plans will be dealt with first, followed by the airborne plans and lastly the air plans and the naval plan. While never losing sight of the combined, fused character of the whole offensive, a clear notion of its component parts cannot be dispensed with.

Epitome of Ground Plans

Operation 'Grapeshot' was the 15th Army Group offensive, in which (2) the assaults of both armies were regarded as being of equal importance. Dealing chronologically with operations,

(1) No. 17A.

(2) According to the C.O.S. 15th Army Group.
(A.H.B./IIJ11/58/24A-B, Pt. IV, Sect.B).

the Eighth Army front plans will be first enumerated. There was a cover plan for the threat of a seaborne assault on the Istrian coast, and another domestic one to conceal the date and area of attack and the real purpose of the preliminary operations on Lake Comacchio (securing launching sites for the operation towards the Bastia - Argenta area). The operations on the northern flank will be dealt with first. 'Roast' was the attack on the Spit, 'Fry' the attack on the islands in the Lagoons (or Lake), 'Lever' the attack on the Wedge, (1) 'Coke' and 'Cinder' the two arms of the thrust towards Argenta. The whole series of operations beginning on Lake Comacchio and ending at Argenta was known as Operation 'Impact': it was subdivided into three. 'Impact Plain' was a combination of a landing across the Lake at Menate and a drive towards Argenta in conjunction with a westward drive by 'Lever' forces. 'Impact Royal' and 'Impact Slam' (2) were alternative operations, by the same combination of forces, to follow 'Impact Plain' towards Argenta or Portomaggiore respectively. Operation 'Buckland' was the main opening Eighth Army attack, the intention of which was to establish a bridge-head over the River Santerno, exploit north towards Ferrara and, in conjunction with operations of Fifth Army, westwards towards Bologna. Operation 'Bridgeton' followed 'Buckland'. Its task followed the encircling of the enemy still south of the River Reno by both Armies. It was to cross the Po rapidly and be prepared to exploit in any direction.

Operation 'Flipper' was the Fifth Army advance to, and build-up on, the Po River line. Operation 'Squireen' was the Fifth Army operation to establish a bridgehead over the River Po and capture Verona.

Epitome of Airborne Plans

There were no less than 33 separate operations planned between 4 March and 3 May for the employment of the 2nd Independent Parachute Brigade Group. (3) The first five were rejected before D-Day for various reasons. Operation 'Earlsdon' was an integral part of Desert Air Force's support plans and as such must be considered in its context of assistance to 'Impact' forces. 'Earlsdon' (4) was the seizing of bridges over canals in the area of the western and north-western shores of Lake Comacchio, acting as a guard to forces advancing on Argenta from the east. (5)

From the end of March through April, various other plans, all feasible operations of war, were devised, to assist the ground forces at tactical points. Preparations for these operations and covering air protection were made, but all were abandoned in turn, usually because the speed of the advance rendered them unnecessary or the local defences were

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- (1) The area bounded N. and N.E. by Lake Comacchio, S. by River Reno and W. by the Canaletta Umana.
 - (2) Ruled out when the floods were found suitable for Fantails in Operation Lever on 6 April.
 - (3) For full details of these refer to the table at Appendix 42
 - Adv. (4) Adv. H.Q., D.A.F. Operation Directive No. 25 to O.C. No. 1 M.O.R.U. D.A.F., O.R.B., App. F., Apl. 1945.
 - (5) 'Earlsdon Mary' in conjunction with 'Impact Royal'; 'Earlsdon Jane' with 'Impact Slam'; 'Earlsdon Daphne' with 'Impact Cinder'; 'Earlsdon Helen' a drop on the canal near Ostellato.

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too dangerous. Operation 'Herring' was an airborne drop of an Italian force behind the enemy lines.

Epitome of Air Plans

Operation 'Wowser'(1) was the air support by both air forces of the initial stages of 15th Army Group's offensive. Tactical Air Force was responsible. Operation 'Buckland' (within 'Wowser'), for which an army/air plan was produced, was the united heavy, medium and fighter bomber support of Eighth Army on D and D plus 1 Days. In 'Wowser' and 'Buckland', the Strategic Air Force was to bomb 'Apple' and 'Apricot' areas on D-Day and 'Baker' and 'Charlie' areas on D plus 1 Day. 'Pig' and 'Whistle' were the areas to be bombed by the Strategic Air Force on the nights of D/D plus 1 Day, 'Tom', 'Dick' and 'Harry' the medium bomber target areas on D-Day. Operation 'Divorce'(2) was the revised plan for air attacks on the Reno and Samoggio river road bridges. Operation 'Corncob'(3) was the air attack, mainly on road bridges over the Adige and Brenta Rivers, designed to disrupt the movement of enemy forces attempting to withdraw into Northeastern Italy, after they had crossed the Po. There was no plan to force a decision on the Po River.

Epitome of Cover Plans

There was an elaborate Eighth Army cover plan to indicate to the enemy that Eighth Army was neither ready nor prepared to attack and that when it did attack, it would do so astride Highway 9 and couple this with a seaborne hook on Porto Garibaldi. It appears to have had no codename. 'Impact Blue' was that part of the cover plan threatening Port Garibaldi, and consisted of 'Impact Harrow' (operations on the Spit and Lake), and 'Impact Eton' (naval and air operations directed against Porto Garibaldi). The plan for a seaborne invasion of Istria faded out.

The Fifth Army cover and deception plan was to give a false impression of the balance of strength, capture Massa and exploit towards La Spezia so as to draw in the enemy reserves.

The Mediterranean Naval Forces were to create a mock build-up of landing craft near Ravenna, combined with a dummy assault and shore bombardment at Porto Garibaldi.

The Plans in Detail

Method of Exposition

The strategy of the campaign in Lombardy was one of indirect approach. Everything depended on the obliqueness of the preliminary moves aimed at throwing the enemy off balance. Hence the multiplicity of plans. The methods of the main opening attacks in great concentration of air and ground force on relatively small fronts succeeded and their plans must accordingly be viewed in outline. The culmination of these opening moves created a crisis for the enemy of which both air

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- (1) H.Q. M.A.T.A.F. Operation Instruction 17A, 7 Apl. 1945. (A.H.B./ILJ1/122/83/10(B), Encl. 6a).
 - (2) H.Q. M.A.T.A.F. Operation Instruction 18, 3 Apl. 1945. (A.H.B./ILJ1/122/83/23(A), Encl. 9b).
 - (3) H.Q. M.A.T.A.F. Operation Instruction 19, 17 Apl. 1945. (A.H.B./ILJ1/122/21(C), Encl. 14a).

and ground forces were quick to take advantage. The plans were wisely left flexible. The main pattern of the offensive follows in the order of the preliminary operations on Lake Comacchio and towards Massa, the D-Days on the Eighth and Fifth Army fronts in succession and the decisive blow south of the River Po.

The main ground plans are given in outline in the following pages, with the supporting air plans immediately following each. The accompanying maps are presented for parallel use.

Operation 'Roast' - Ground Plan

The general intention of the series of operations 'Roast', 'Fry' and 'Lever' was to secure, by surprise, a firm launching ground from which forces supported by armour could take up secure positions and threaten the enemy defending the approaches to Ferrara. This implied the threat to the Bastia - Argenta road, the only possible route north for Allied armour. Preparations were on a prodigious scale. The Germans were justified in believing the difficulties too great to overcome.

Operation 'Roast', (1) the attack on the Spit and the Tongue, was timed for the night of 1/2 April. Navigation parties were to mark the course. Commandos (2) were to cross the Reno and launch boats, which had been dragged by man power through a thousand yards of mud to a camouflaged harbour. One brigade was to cross in 'Fantails', towing stormboats and assault boats. The other brigade was to cross in stormboats. Commandos were to land (3) on the west shore of the Spit north of the argina, (4) on the same shore south of the canal, (5) along the Tongue and westwards on to the Spit; they were to clear the northern river bank at the base of the Spit, and secure the south bank of the Canale Di Valetta. There was a heavy programme of artillery support designed to cover and support each move.

Operation 'Roast' - Air Plan

'Fantails' and the assault craft had to be concealed with smoke and the enemy was to be accustomed to hearing loud noises during the hours of darkness. At night tanks were to rumble up and down, artillery lay down harassing fire and loudspeakers play the music of Wagner with hypnotic intent.

Desert Air Force had a special role in this deception. For several nights before the assault, Bostons were to orbit over the boat assembly areas to help cloak the noise there. On the night of the assault (R minus 1/R) a large force of Bostons was to again orbit over the assembly areas and afterwards to intrude and bomb in the Porto Garibaldi area.

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- (1) Refer to Figure 28
 - (2) 2nd and 9th
 - (3) At 0300 hours.
 - (4) A dyke of mud and stakes standing about 3 feet 6 inches above the level of the water and 8 feet wide. Argine were incidental to the land reclamation scheme.
 - (5) First, at 2359 hours.

On D-Day, in daylight, direct support was planned. At 1100 hours, the entire Desert Air Force medium bomber force was to attack Porto Garibaldi. A continuous cabrank of fighter bombers was to await opportunity targets: up to 20 pre-arranged targets - centres of resistance - were due for attack: there was to be continuous tactical, armed and artillery⁽¹⁾ reconnaissance. That night, Bostons were again to intrude north of Porto Garibaldi. On the second day, mediums and fighter-bombers were to be available for support.⁽²⁾

Operation 'Fry' against the Islands - Ground and air plans

The second of the primary tasks was the seizure of a group of four small islands in Lake Comacchio,⁽³⁾ so as to protect V Corp's right flank along the southern shores of the Lake. Raids therefrom on to the northern shore of the Lake, as a sequel to the seizure of the Spit, should do something to tie down any of the enemy reinforcing the Argenta Gap. Again, the Lake had to be crossed. A combined force of the Special Boat Service and a few partisans,⁽⁴⁾ in light boats, were to make the assault. The Special Boat Service were to carry their boats over a peninsula and be met by the partisans, all in silence at night. The date selected was the night 4/5 April and launching was to begin at 1930 hours.

Shortly before last light, fighter-bombers were to attack buildings on all four islands with bombs and rockets, to weaken the small garrison,⁽⁵⁾ an operation unlikely to enhance surprise.

Operation 'Lever' against the Wedge - Ground Plan

When the main offensive was across the Santerno River, if, as was probable, the new axis lay northwards towards Argenta, it was to be supported by a series of operations⁽⁶⁾ along the southwestern shores of Lake Comacchio, designed to outflank Bastia and Argenta. In order to launch them at all, a firm footing north of the River Reno was a pre-requisite. Operation 'Lever' was designed to secure this springboard, known as the Wedge, beyond the Reno and bounded on the north by the Lake. There were canals to cross and few roads. The enemy placed great reliance on the inundations. His guns were dug in floodbanks and he was thinly spread. Clearly this was not fruitful ground for fighter bomber or ground attack operations. Hence the absence of close support.

The infantry was to cross the Reno and the Canaletta Umana, move up to the Fossa⁽⁷⁾ di Navigazione and clear the Wedge. Artillery compensated for the absence of aircraft, opening without warning and sustained so as to keep the enemy's head down everywhere.

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- (1) 1 Flight of No. 651 Air O.P. Squadron.
 - (2) An Air Rover, with a tentacle sited on a Fantail supported 2 Commando Brigade.
 - (3) In 2 groups of 2, about 1½ miles apart.
 - (4) Of the 28th Garibaldi Brigade.
 - (5) Estimated at 60 at the most.
 - (6) 56th Inf. Div.
 - (7) Dyke.

The Diversionary Attack on the West Coast. Ground and Air Plans

On Fifth Army's D minus 4 Day - 10 April - Fifth Army was to carry out a diversionary attack with the objectives of capturing Massa and exploiting towards La Spezia. It was considered possible that this would draw in part of the German tactical reserve(1) and engage fully the local opposition.(2) On the left was a coastal plain, cut by three heavily fortified water lines. On the right were the Apennines, impassable to large forces. The foothills only offered ground for an offensive.(3)

The air plan was to attack first guns and positions at La Spezia(4) with about 60 Mitchell medium bombers. During the advance, up to 100 sorties by fighter and medium bombers were visualised as close support. The fighter-bombers were to assist in reducing the extensive bunkers, pillboxes and gun emplacements in the mountains.(5)

Plans for the Main Offensives

Eighth Army Plan(6) for Operation 'Buckland'

Eighth Army issued its plan without the hope of complete surprise. The enemy anticipated an attack somewhere between Lugo and Highway 9 or astride it. He was preparing to withdraw and try to hold it on the Santerno River.(7) He was, owing largely to losses inflicted by the Allied air forces, short of fuel, transport and ammunition and the air interdiction of his supply routes ruled out any reasonable hope of improvement.

The Eighth Army intention was to establish a bridgehead over the River Santerno, exploit north towards Ferrara and, in conjunction with Fifth Army, westward towards Bologna. V Corps and II Polish Corps were to be the offensive corps, with X and XIII Corps co-operating under command of Eighth Army.

V Corps' task was to cross the Senio and the Santerno, establish a bridgehead to include Massa Lombarda and be prepared to exploit northwards on the axis Bastia - Argenta - Ferrara. Plans for operations across Lake Comacchio were designed. They might capture the River Reno crossing and/or Bastia; they might develop the Comacchio gains; or they might attempt, with the help of an airborne attack - (Operation 'Earlsdon'), to turn or capture the Argenta Gap. H Hour was 1920 hours, D-Day 9 April.

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- (1) The 29th and 90th Panzer Grenadier Divisions.
 - (2) 148th Grenadier and Italia Bersaglieri Divisions.
 - (3) Fifth Army History.
 - (4) The heavy naval guns, already referred to in Chapter 5, could be used in the land battle to good effect.
 - (5) Fifth Army History: M.A.T.A.F. Operational Summaries.
 - (6) 8th Army Operation Instruction No.1457, 3 Apl. 1945. (A.H.B./I.I.J./58/24(B), App. E-8).
 - (7) German opinion seems to have been divided, for while the plan for withdrawal to the Santerno was recommended to O.K.W. by the Supreme Commander S.W., three of the best divisions were left covering Highway 9 until it was too late to use them in the actual sector of the attack.

II Polish Corps, simultaneously, was to cross the Senio and Santerno and link up with V Corps. X Corps was to play first a deceptive role, then, as II Polish Corps outflanked the enemy opposite X Corps, advance towards Highway 9. XIII Corps was to hold Monte Grande, attack the rugged Vena Del Gesso and come into play later.

Tactical Air Plan for Support of both Armies, Operation 'Wowser' (1)

Operation 'Wowser' was designed for the employment of maximum air support in co-ordination with the 15th Army Group during the initial stages of the offensive. It gave the object of the combined attack as the destruction of the maximum enemy forces south of the Po, the crossing of the Po and the capture of Verona. A large number of targets were selected, the properly timed destruction of which would afford maximum benefit to the armies. Flexibility was essential, owing to the doubtful factors of the rate of Allied advance and enemy reactions. 'Buckland' was the amplification of 'Wowser' on the Eighth Army front.

On the first day of the Eighth Army offensive, after 1350 hours, Strategic Air Force was to bomb two areas in the Lugo area ahead of the two corps and 57th Wing's and No. 3 S.A.A.F. Wing's medium bombers were to bomb gun areas and communications. Desert Air Force aircraft were to bomb communications prior to 1400 hours and engage in close support thereafter. XXII Tactical Air Command was to bomb communications prior to 1400 hours and six headquarters thereafter. That night, heavy bombers of No. 205 R.A.F. Group were to attack two defended areas(2) and Desert Air Force to afford close support. Tactical Air Command was to carry out armed reconnaissance north of the Po River.

On D plus 1 Day - Eighth Army -, the Strategic Air Force was again to attack two extensive troop and gun concentration areas, this time beyond the Santerno River. The medium bomber wings were again to attack gun areas and Desert Air Force to render close support all day. XXII Tactical Air Command was to attack further headquarters and carry out wide armed reconnaissance. Nothing apart from normal commitments was yet designed for that night. It was not anticipated that the Strategic Air Force would be required again on this front. The plan for the next two days resembled closely that for the first two in other respects.

On D plus 4 Day, the Fifth Army were to attack. On the first day, Strategic Air Force was to attack the enemy defences over a wide area(3) between 1400 and 1530 hours and again on the second day between 1200 and 1400 hours, with some liability to change of target to conform with the ground progress. During the preceding night, XXII Tactical Air Command and Desert Air Force night operational aircraft were to cover close support and the Po crossings, and armed reconnaissance north of the river respectively. On D-Day, both tactical air elements were to act in close support, with Desert Air Force carrying out armed

(1) M.A.T.A.F. Operation Instruction 17A, 7 April 1945.
(A.H.B./IIJ1/122/83/10(B), Encl. 6a).

(2) Refer to Figure 26 for air target areas for day and night bombers.

(3) Refer to Figure 27 for target areas.

reconnaissance north of Highway 9 in addition. On D-Day, the 57th medium bomber Wing was scheduled to attack communications targets and on the next day (with an eye, like the XXIII Air Command, on the chances of an enemy withdrawal) on five Reno River bridges and Fourteenth Army's H.Q. Both tactical air elements were to provide close support, with Desert Air Force absorbing additional commitments. Night operations on the second and third nights were to resemble those on the eve of the attack.

The 'Wowser' plan was more of an early general résumé than a detailed plan and only the broad lines have been indicated here. The details follow in their right context. It went on to outline the various safety precautions arranged for the heavy bomber operations by both the Air Forces and the Armies. Cesenatico, a turning point on the heavy bomber course, was to be marked throughout the strategic attack with visual markers and white smoke and the axis of approach at three points from Cesenatico to Cotignola. There were various arrangements to mark the course to the Lugo area and protect the forward troop positions along the line of the River Senio, all concerning Eighth Army, and at Pistoia and Prato and other critical positions along Fifth Army's front. Flak line altitudes were to be flexible to the limit, in case of any lowering of bombing altitude.

To demonstrate the thoroughness of the planning, note may be taken of the plans for selected formation leaders of Strategic Air Force to fly over the battle area before operations to orientate themselves. Recognising the Army tension before heavy bomber attack close to the front lines, elaborate arrangements were made for Fifteenth Air Force radio control stations at Tactical Army H.Q.s to warn in case of last minute cancellation should the Tactical Air Command order it.

Interdiction of communications remained a high priority task; counter air force operations were allowed for; Strategic Air Force fighter escorts were to cover and escort medium bomber and transport missions in the rear areas. Order of execution was to be given at least 24 hours in advance.

Air Plan for Operation 'Buckland'(1) D-Day

The full army/air plan for air support on the first two days of the Eighth Army's main attack was very flexible and, of necessity, very long. The following were its essentials.

Some 800 Liberators and Fortresses(2) were to carpet(3) two areas namely 'Apricot', opposite II Polish Corps front from 1350 to 1420 hours and then 'Apple', opposite V Corps, from 1420 to 1520 hours. Over the whole period of the heavy bomber operations, three U.S. Mitchell groups(4) were to

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- (1) Army/Air Plan 'Buckland' (including 'Fighter Bomber Targets on D-Day' supplement). D.A.F. and 8th Army 5 April 1945. (A.H.B./IIJ1/122/83/10(A-B), Encls. 33a & 23a resp-y).
 - (2) In some 42 waves of 18 aircraft each.
 - (3) With 175,000 fragmentation 20 lb. bombs.
 - (4) Some 120 aircraft of 57th Bomber Wing.

attack three gun areas - 'Tom', 'Dick' and 'Harry' - opposite II Polish Corps and one wing of Marauders(1) the 'Stalk' gun area just north of 'Apple' area.

The elaborate fighter-bomber target programme was simplified by confining the XXII Tactical Air Command effort to divisional H.Q. targets and armed reconnaissance on all roads leading to the battle area. Desert Air Force was to bomb 47 selected batteries and other defences and headquarters on both fronts. The Senio defences, by this time of unusual strength and depth underground, called for special attention. To supplement the flame thrower attacks planned, aircraft were to attack on the two Corps fronts. On the Polish front, the floodbanks were to be 'blitzed' for a whole hour beginning at 1830 hours. On the V Corps front, the fighter-bomber attacks were synchronised to fall in the ten minute intervals in the artillery programme. There were to be four of these attacks by aircraft; fire bombs were to be dropped and the western bank raked with cannon shells. Just as the forward troops began to cross the river there was to be one special run over them and across the river, but no bombs were to be dropped. It was a split-second attempt to keep the enemy's heads down exactly when necessary.

The utmost endeavours were projected in the way of night operations by the most concentrated night plan formulated up to that date. After dark, about 100 Boston and Baltimore light bombers were to harass gun areas and road movement opposite both Corps fronts. During the night, about 100 Liberators and Halifaxes of the R.A.F. No.205 Group were to attack the Santerno defences in an attack lasting only four minutes.(2) During the attack, red night marker shells were to illuminate the centre of both areas; area 'Pig', opposite V Corps, included the Santa Agata river crossing; area 'Whistle', opposite II Polish Corps, included the Mordano crossing. The artificial moonlight was to be switched off during the attack.

During the morning of D plus 1 Day,(3) areas 'Charlie' and 'Baker' opposite II Polish and V Corps respectively, were each to be carpeted for three-quarters of an hour by the same heavy bomber force used on D-Day. The same entire medium bomber force was available for attacks on gun areas or carpet bombing of defences. Plenty of notice was needed in this case, for there was no question of wasting this vital force. The Germans could work wonders in repairing their system even in a bare 24 hours.

Tactical and artillery reconnaissance(4) were well covered. The latter, of such great importance, was to be continuous all D-Day, but would have to be shared with tactical reconnaissance on D plus 1 Day in what ought to be a fairly fluid ground position.

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- (1) Desert Air Force. 48 aircraft. No.3 S.A.A.F. Wing, who came under operational control of 57th Wing for the battle period.
 - (2) From 0400 to 0404 hours.
 - (3) Area 'Charlie' 1100 - 1145 hours. Area 'Baker' 1145 - 1230 hours.
 - (4) No.285 Wing was to co-operate with 24 missions daily.

Navigational Aids for Day Heavy Bombers (1)

In the planning for heavy bomber participation, it was intended to cover every possible contingency and achieve the maximum security for the ground forces. From the first stages of planning until the last Wowser sortie had been flown, Fifteenth Air Force liaison officers from the Operations, Intelligence and Communications Sections remained at Tactical Air Force and Army Group H.Qs. In the general selection of targets it was decided that the minimum distance from Allied front line troops was to be 3,000 yards. Aircraft were to bomb the chosen targets as low as possible. Great altitudes would have increased the difficulty of identifying precise aiming points on the small targets (personnel, mortars and machine guns and supply installations) and so reduced the normal damage expectancy. The general distinction between the targets on the two army fronts was that on Eighth Army front troop and gun areas were to be attacked whereas on Fifth Army front the targets were more precise and included dumps, troop concentrations, gun sites and Army H.Qs. located along Highways 64 and 65 and in and around Bologna. Another difference was that on Eighth Army Front, first 'Apricot' area and then 'Apple' area was to be attacked, whereas on Fifth Army front the groups were to attack targets in both highway areas as nearly simultaneously as practicable. Units in both cases were of 18 aircraft and formations a column of wings in order. The principal weapon was the clustered fragmentation bomb.

The D-Day attack was to fall within a period of one and one-half hours; the D plus 4(5) Day attack within two hours. Inasmuch as haze was always a problem in the Po Valley, the axes of attack were planned so as to incur minimum interference from sunray refraction; thus a fairly low ratio of visibility could be accepted. The initial point for D-Day was Cesenatico on the Adriatic coast, where the heavy bombers, which the enemy was to believe were bound on a Central European attack, were to turn inland. In the Fifth Army D plus 4 (5) Day attack, the initial points for each of the parallel axes of attack were in the vicinity of Pistoia and Prato.

Elaborate plans were made to prevent bombs falling on friendly troops. There were three types of safeguards, all fully employed. These were pre-attack familiarisation flights, radio aids and visual aids. (2) The radio aids may be briefly summarised as follows. On each front there was more or less the same pattern, namely parallel radio beams for the approaches, a radio bomb line along the track of the visual bomblines marking, a point to point radio station and a unit for the emergency recall of bombers, all linked by telephone. This set-up was planned to cover any operational condition of visibility.

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- (1) M.A.T.A.F. Operation Instruction 17a, 7 April 1945.
(A.H.B./IIJ1/122/83/10(B), Encl. 6a).
Operation Wowser H.Q. 15th A.F., 31 May 1945.
(A.H.B./IIJ11/47).
- (2) The safety precautions for D-Day are shown in the diagram at Figure 23. The bearings in this figure are true, but for the purposes of clear exposition, certain features have been simplified and are purely emblematic.

The visual aids had to be distinctive, so as to stand out against the geometrical strip pattern of the closely cultivated fields. On D-Day, there was to be white smoke at Cesenatico, the Initial Point; there were to be three sets of bars along the approach lane, each bar 100 yards by 16 yards of white-washed Hessian cloth; there was to be first one bar, then two, then three and at each set of bars white smoke was to be burnt. (1) The line of troops along the River Senio was to be marked by a row of fourteen white Ts, (2) of which two were to be sited astride Highway 9. At Ts. 1, 5, 9 and 13 red fluorescent panels were to be laid for emphasis; alongside letters T.1, T.8 and T.12, yellow smoke was to be burnt. (3) An Anti-aircraft bomblines consisting of groups of shells bursting at 15,000 feet (4) was to be fired at six pinpoints (5) so as to indicate the forward troops positions. It was to cease on termination of the heavy bombing of 'Apricot' area, while the medium bombers attacked 'Tom', 'Dick' and 'Harry'. It would then recommence when the heavy bombers switched to 'Apple' area. (6)

Navigational Aids for Night Heavy Bombers. (7)

Great hopes were placed on the night heavy R.A.F. bomber attack at the close of D-Day and much thought devoted to navigational aids for them. It was suggested that the Army should fire a red marker shell on pinpoints in each of the two areas chosen - 'Pig' and 'Whistle' (8) - every ten seconds. The marker shell plan (9) was adopted in lieu of the usual methods of illumination. The Master Bomber, having checked that they were correctly positioned, was to alert his crews that it was safe to bomb with a green marker incendiary. All searchlights were to be dowsed during the attacks. During the attacks on the first two nights in support of Eighth Army, Night Letter Landmarks (10) were to be used. A special night letter N was repositioned.

Airborne Plan for Operation 'Earlsdon' (11)

Operation 'Earlsdon' was finally planned before D-Day as an airborne landing along the shores of Lake Comacchio between Fortomaggiore and Argenta, with the object of capturing Argenta and exploiting northwestwards. It was to take place on 13 April. Although it was cancelled, its main features as an important complement of the air/ground plan for 'Buckland' should be briefly considered.

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- (1) From 1335 to 1520 hours.
 - (2) Off white-washed Hessian, 100 yards long.
 - (3) From 1345 to 1520 hours.
 - (4) At 30 second intervals.
 - (5) 3 from 1345 to 1420 hours and 3 from 1420 to 1520 hours.
 - (6) Details of the various other preparations by air forces and armies to ensure the best possible results from air operations will be given shortly.
 - (7) Adv. H.Q., D.A.F. Operation Order No.25, Appendix C. (A.H.B./11J/122/83/10(A), Encl. 34a).
 - (8) Important crossings over the Santerno and defended positions, which Allied troops hoped to reach on D plus 1 Day.
 - (9) The red marker shells were to be fired at 20 second intervals from 0356 to 0406 hours. Bombing was to take place from 0400 to 0403 hours.
 - (10) Slow burning petrol mixture in pots 20 yards apart outlined letters of the same size as normal Day Letter Landmarks.
 - (11) Adv. H.Q., D.A.F. Operation Directive No.25 to O.C. No.1 M.O.R.U. (D.A.F., O.R.B., App.F, April 1945).

It was envisaged as falling into three phases. (1) The first consisted of 115 Dakotas dropping parachutists from 1208 hours. The second consisted of 35 tug aircraft towing British Horsa gliders, which were to land troops at 1408 hours. The third was a re-supply mission (2) at 1730 hours.

There were some 32 heavy enemy flak guns within range of the dropping aircraft. Desert Air Force bore the responsibility of neutralising both these and light guns in the area for the entire period these dropping aircraft were within their range, as well as for weather reconnaissance. All guns were to be photographed and plotted. Ninety-six medium bombers were to bomb the heavy batteries before both the paratroop and the glider missions. By the time the re-supply mission flew over, the ground position would be too fluid for any special anti-flak operations. In any case, the medium bombers would not have had time to turn round. However, the re-supply missions would profit by the effects of supplementary fighter-bomber attacks on the guns during all three phases, as well as others by 12 aircraft on a roving anti-gun commission over the area. Air cover was planned in case enemy fighters were tempted to interfere.

Airborne Plan for Operation 'Herring'. (3)

Eighth Army suggested an airborne operation designed to harass the enemy and disorganise his movement in the event of his withdrawal to the Po, by operating at night to supplement confusion caused by air attacks during the day. The idea was developed by 15th Army Group and planning began on 24 March. Targets were likely to occur in the path of both armies; it was arranged therefore that they should be passed to the Army Group, who would allocate priorities.

Night operations behind the enemy lines called for a special type of personnel. These existed in the Italian parachute troops of the F. Reconnaissance (4) and Nembo Regiments. The plan was that a force of about 250 volunteers, under the supervision of their Force Commander, (5) were to be trained by Special Operations Mediterranean. The force was to be known as the I.S.A.S. - the Italian Special Air Service: all its members were trained paratroopers. Eighth Army formed it, XIII Corps was responsible. It was under 15th Army Group Command. The two sub-units were to retain their Italian identity, be self-supporting and live off the land without means of communication after dropping. A British Training H.Q.

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- (1) Altitudes:- paratroop aircraft at 1,000 feet, descending to 600 feet at the initial point: glider releases at 1,000 feet: re-supply aircraft between 600 and 1,000 feet. No smoke.
 - (2) Of up to 45 aircraft, probably a mixture of Dakotas and Liberators. The part of 'Earlsdon' in the opening phase of the offensive may be traced on Figure 28.
 - (3) Notes on the combined army/air operations in the Italian theatre Apr/May 1945, Appendix C, Annexure 1. D.M.T., A.F.H.Q. (A.H.B./IIJ4/90/246) Brief for Commander Italian Special Air Service, C.O.S. 8th Army, 29 Mar. 1945
 - (4) Already noticed in a previous chapter.
 - (5) Major Ramsey, Parachute Regiment.

was set up at Rosignano, parachute dropping practised at Gioia⁽¹⁾ and ground tactics at Siena.⁽²⁾

The tactical air plan left the date of the mission as unassigned.⁽³⁾ The proposals of both armies when rendered into terms of operation meant that probably 16 aircraft⁽⁴⁾ were to lift sections of parachutists from Rosignano airfield and drop parties of three or four in areas close behind the enemy's fluid front as he was pressed towards the River Po. The first aircraft was to arrive over its target as soon after darkness as possible. Four corridors were laid down. There were 34 targets for choice and six emergency landing fields. Allied aircraft were to stay out of an especially restricted area from 2030 to 0200 hours. Operations would certainly be mostly by night and directed against enemy road traffic. The special object of these was to create traffic jams which would provide favourable targets for Allied aircraft the next day, as well as improve on current confusion created by the same source.

Aerial Re-supply Plan for Operation 'Sinister'⁽⁵⁾

In mid-April, it was decided by 15th Army Group to prepare for the maintenance of an armoured column, of approximately divisional strength, by air, in the event of an armoured break-through when the battle became fluid. Planning⁽⁶⁾ began on 18 April. By 25 April, the packing and assembly of the necessary supplies, ammunition and fuel had been completed.

Sixty Dakotas were moved to Ravenna. They were to drop, at 24 hours notice with effect from 26 April, 145,000 gallons of petrol⁽⁷⁾ and 12,000 gallons of diesel fuel with lubricants to scale, all packed at Rimini. No. 2641 Special Group of Liberators based at Rosignano were to drop 60 tons of ammunition. Liberators of No. 461 Bomber Group, based at Torreta, were to drop 25,000 rations. The maximum daily fuel drop was to be 30,000 gallons⁽⁸⁾

Air Plan for Operation 'Divorce', the Attacks on the Reno and Samoggio Rivers.⁽⁹⁾

The River Reno ran from its mouth just north of Ravenna westwards and northwestwards as far as Poggio Renatico; soon thereafter, it bent south and passed through Bologna. The original plan for the air attacks on 12 of its principal bridges including the secondary Malalbergo bridge, had been abandoned towards the end of the previous September because of fatal delays during which bad weather ensued and the enemy built up prohibitive defences.⁽¹⁰⁾

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- (1) At the R.A.F. Parachute Training School.
 - (2) At the Special Operations Battle School.
 - (3) In the event it was launched on one occasion only, the night of 20/21 April.
 - (4) Of 64th Troop Carrier Group.
 - (5) Notes on the combined army/air operations Apr/May 1945. D.M.T., A.F.H.Q., C.M.F. (A.H.B./11J1/90/246).
 - (6) By G-3 (Air) and G-4 sections H.Q. 15th Army Group in collaboration with A.F.H.Q., the latter H.Q. acting as executive H.Q.
 - (7) 80 octane.
 - (8) In the event, owing to the early collapse of the enemy, the operation was never put into effect.
 - (9) M.A.T.A.F. Operation Instruction No. 18, 3 Apr. 1945. (A.H.B./11J1/122/83/23(A), Encl.6a).
 - (10) Refer back to the narrative in Chapter 2.

In view of the forthcoming need to cause the maximum of interference to the movement of enemy forces if they attempted to withdraw from both Army fronts, the plan for 'Divorce' was revised before the opening attacks and expanded to cover the undestroyed road bridges over the Sanogio as well as the Reno River. It was intended to support the advance of both Armies. The task was divided fairly evenly between 57th Bombardment Wing, XXII Tactical Air Command and Desert Air Force, 15 road bridges in all being chosen for destruction. Flak, both from fixed defences in the Bologna area and from mobile light batteries with the troops was a serious factor hard to estimate, but likely to be concentrated. There was a possibility of heavy bombers bombing the targets given to the medium bombers, if the latter were needed for other tasks. It was open to both Armies to veto the operations planned for their sector. In the event, Fifth Army did so on the grounds of excessive risk to front line troops moving on a fast flexible front. This, as will be seen, prejudiced the overall advantage which might have been gained, but was not fatal.

Air Plan for Operation 'Corncob' (1)

Like Operation 'Divorce' (the attacks on the Po and Reno), Operation 'Corncob' was planned by Tactical Air Force at the request of 15th Army Group and both the tactical air commands and the medium bomber wing were employed in support of the Army Group. If the Army plans worked out to schedule, the enemy forces remaining would have been cut off, by the capture of Verona, from the northwest of Italy. Their need and the emplacement of their strong defence line on the Adige and in the Venice area would bring the Adige and Brenta rivers into prominence as escape routes. The point of 'Corncob' was the maximum interference with such organised movements, inevitable, it was felt, into northeastern Italy. They might begin quite early with the withdrawal of heavy equipment into the Adige Line.

The broad plan fell into two phases. In the first, the remaining intact road bridges across the Adige between Verona and the Adriatic were to be destroyed. In the second, the remaining bridges serviceable to motor transport across the Brenta, between Bassano Del Grappo and the Adriatic, were to be destroyed.

The destruction of the nine Adige bridges⁽²⁾ was the task of 57th Bombardment Wing, that of the fifteen Brenta bridges or diversions was divided among three forces. Seven⁽³⁾ were the task of that same medium bomber wing, and four each⁽⁴⁾ the task of XXII Tactical Air Command and Desert Air Force. The use of heavy bombers was not envisaged in the plans issued on 17 April, but in the event a major part of the assignment was transferred

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- (1) H.Q., M.A.T.A.F. Operation Instruction No. 19 17 Apl. 1945. (A.H.B./IIJ1/122/21(C), Encl. 14a).
 - (2) Cavarzere, Boara Pisani, Lusia, Garzare, Badia Polesine, Legnago, Bonavigo, Albaredo and Zevio.
 - (3) Codevigo, Sacco, Sandon, Vigonovo, Stra 1, Stra 2, Friola.
 - (4) XXII T.A.C. - Cartura road bridge and diversion, Bassano 1, Bassano 2.
D.A.F. - Brandola (railway), Ca-Pasqua, Padua East 1, Padua East 2.

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at short notice to the Strategic Air Force.⁽¹⁾ Even if the bridges were all destroyed, the problem of the numerous ferry crossings (as in the case of the Po) was bound to arise, but these were not mentioned in the plan.

Ground Plan for the Fifth Army Offensive

Since Fifteenth Army Group had outlined its broad plans for both armies in February,⁽²⁾ no major change of intention had occurred. All the early plans for the Eighth Army ground operations and the air support plans have been given. It only remains to consider briefly the rather different ground and air plans for the Fifth Army offensive in its opening stages.

The Fifth Army cover plan was to build up a threat on Route 65. Eighth Army was to seize the Argenta Gap. This, coupled with the diversion round La Spezia, ought to create a favourable background for an attack by the Fifth Army on or about 13 April. The attack was to be in three phases.⁽³⁾ II and IV Corps were to attack abreast, initially astride Highway 64. IV Corps was to open the assault. II Corps was to join the attack through the Genghis Khan Line.⁽⁴⁾ By the time Praduro was approached, two armoured divisions were to seize the Panaro River Line. While Bologna was being encircled and the Eighth Army met at Bondeno, Fifth Army was to drive to the Po. Thereafter, the plans elaborated the crossing of the Po between San Benedetto Po and Ostiglia and the opening up of Highway 12 to Verona, the capture of which was to isolate Northwestern Italy.

Air Support Plan for Fifth Army ⁽⁵⁾

The initial objectives of the Fifth Army attack involved the over-running of strong, natural, mountainous positions considerably improved during the winter. No detailed army/air plan was issued. The ground attack depended initially on the progress made by the Eighth Army on the right flank, not on maximum air effort, although this was planned.

The broad lines of the Tactical Air Force plan were laid down in the instructions for Operation 'Wowser'. The date of Fifth Army's attack was uncertain. The air plan was ready to apply when required, so long as the order of execution was passed to all commands concerned by 0900 hours of the day preceding the attack. It is worthy of note here, although as a matter of principle this narrative does not usually anticipate events, that the heavy bomber participation was more prolonged than planned for. The offensive here underwent very heavy going.

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- (1) The facts can be checked with the U.S. Air Force Historical Section, who are in possession of all the relevant documents belonging to S.A.F., 57th Bomb Wing and the U.S. air commanders.
 - (2) H.Q. 15th Army Group Operation Instruction No. 3, 12 Feb. 1945. (A.H.B./11J11/58/24(A), App. C-3).
 - (3) Green, Brown and Black.
 - (4) Using the 6th South African Armoured, 88th, 91st and 34th Divisions; and the Italian Legnano Group.
 - (5) M.A.T.A.F. Operation Instruction No. 17A. Operation 'Wowser' 7 Apr. 1945, (A.H.B./11J1/122/83/10(B), Encl. 6a) and Notes on the combined army/air operations in the Italian theatre Apr/May 1945/Appx F. D.M.T., A.F.H.Q. (A.H.B./11J1/90/246).

The two opening days of the Fifth Army attack⁽¹⁾ were provided for. The 10th Mountain Division was to lead off at 0945 hours. This, in the event, was on 14 April. During the preceding night, XXII Tactical Air Command was to support Eighth Army and bomb the Po crossings; Desert Air Force night bombers were to carry out armed reconnaissance north of the Po. Close support all D-Day was the task of XXII Tactical Air Command. It was to include a 'blitz', i.e. an intense attack with high explosives and fragmentation bombs, fuel tank incendiary bombs and rocket projectiles, on enemy defences and strongpoints in the area of Monte Figna, (south of Bologna), attacks on batteries on IV Corps front, H.Q.s, buildings and dumps, and armed reconnaissance south of Highway 9; cabranks controlled by Rover 'Pete' were to function in the normal fighter bomber role. Armed reconnaissance duties were divided between the Tactical Command and Desert Air Force. XXII Tactical Command was to reconnoitre south of Highway 9, and Desert Air Force north of it.

In the afternoon⁽²⁾ of D-Day, some 820 heavy bombers were to drop 1,500 tons of fragmentation bombs⁽³⁾ on dumps, occupied areas, gun areas and bridges on II and IV Corps fronts. Meanwhile, the medium bombers of 57th Wing were to attack communications, isolating, as far as possible, the Bologna area under attack up the two axes of Highway 64 and 65, with a new emphasis on the former.

On D plus 1 Day, a large force of heavy bombers was to attack points not fully covered by D-Day attacks.⁽⁴⁾ The medium bomber wing was to switch to the Reno River bridges and endeavour to destroy the H.Q. of Fourteenth Army. Any surplus effort was to be applied to communications. The two tactical air forces were to collaborate more closely, Desert Air Force's role becoming more specific in bombing the H.Q. of 51st Mountain Corps and targets passed by XXII Tactical Air Command.

The intention to make the most of the improved night operational aircraft position found expression in full programmes for the night before D-Day (Fifth Army), D/D plus 1, D plus 1/D plus 2 and D plus 2/D plus 3. The night bombers of No. 205 R.A.F. Group would be fully engaged on Eighth Army's front. The task of maintaining the best possible continuity with daylight operations fell, therefore, on the light night bombers of the two tactical air forces. Their programme on each night covered close support, attacks on the Po crossings and armed reconnaissance north of that river.

The next effort of the medium bombers was to be directed, in the strength of three hundred aircraft, against five road and railway bridges over the River Reno west of Bologna, during the early afternoon.⁽⁵⁾

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- (1) Referred to as D plus 4 and D plus 5 days. In the event the Fifth Army offensive was postponed one day, awaiting better flying weather. D plus 4 therefore became D plus 5 Day, and so on.
 - (2) Between 1400 and 1530 hours.
 - (3) 20 lb in weight.
 - (4) Between 1200 and 1400 hours.
 - (5) In the event, Fifth Army vetoed the operations on the grounds of excessive risk to front line troops.

The programmes for the lighter tactical aircraft are too long to elaborate here. They covered every known type of local battlefield target, the destruction of which would assist the ground advance, with every type of attack known to the theatre.

Navigational Aids for heavy Bombers, Fifth Army Front

Speaking generally, the same broad principles of aiding heavy bombers applied on both fronts. Certain local and specific differences must, however, be recorded. XXII Tactical Air Command was to arrange for the same ground panels, letter markers and flak bursts; the flak bursts, (1) however, owing to the presence of mountain peaks, were to be fixed at 18,000 feet above sea level, with option of lowering in case of cloud. White smoke was to indicate initial points at Pistoia and Prato. In addition to red fluorescent panels at quarter mile intervals, a long yellow fluorescent panel (2) was to be laid on a north-south bearing. Every vehicle normally operating within 1,000 yards of the forward troops was to carry a red or yellow fluorescent panel. As additional landmarks, there were a large white cross near Prato and a large white triangle near Pistoia with white smoke generators down wind from them and four white letter landmarks. (3)

Unity and Variety within Tactical Air Force

The admirable quality of the 'Wowser' plan for the participation of all the air forces in the Italian theatre in the set-piece battle was a clear vindication of the degree of autonomy and flexibility attained by the air arm as a whole. It is equally clear that the air forces concerned bore each a strongly individual stamp until the end. This was very evident in the methods of tactical support chosen. On the Fifth Army front, there was a Rover control attached to each of the two corps, (4) but none to the artillery. The Tactical Air Command specialised in what they called the 'Horsefly' principle of control. A Cub aircraft (5) was kept in the air as long as possible during the hours of daylight. Its main mission was to pass on the data of its crew's observations either to airborne fighter-bomber missions, bringing them on to targets by visual control, or, in the absence of aircraft, back to the controller. Another method, (paralleled on the Eighth Army front), was the employment of 'Speedball' Rover Stations, units of small fast contact cars, for deployment to leading divisions in a fluid battle. Most of the tactical reconnaissance was entrusted to R.A.F. squadrons and the British artillery reconnaissance radio telephone procedure adopted. Artillery reconnaissance included one innovation, the special road shoots. Fifth Army enjoyed the exclusive use of red fluorescent panels. Highly recognizable from the air, they gave an added sense of security to both front line troops and aircrews, enabling the latter to report back the progress of ground forces and thus perfect the build-up picture it was so vital to disseminate quickly and accurately.

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- (1) 32 simultaneous 90-mm bursts each 30 seconds, in line.
 - (2) 300 feet long.
 - (3) Refer to T.A.F., O.R.Bs and appendices.
 - (4) Rover 'Joe' with II Corps: Rover 'Pete' with IV Corps.
 - (5) Type L-5. Three Cubs, with complete crews, operated with each Rover Control.

Air methods on the Eighth Army front resembled these in some respects, but diverged in others. To begin with, they set up initially four Rovers, two with corps and two with artillery. (1) After the breakthrough, two were dissolved and a new one (2) attached to British XIII Corps, then coming into play. V Corps received a Rover Tank as more befitting the fluid situation. Desert Air Force's procedure also now included 'Midnight Rovers', 'Timothies', 'Dixies', 'Pineapples' and 'Pineapple Sundaes'. (3) Each Rover operated contact cars, which moved ahead with the leading ground columns into the battle and reported back the 'live' situation as it developed. The XXII Tactical Air Command controls used the same cars. (4) 'Midnight Rover' was in the experimental stage. The U.S. 3rd Photo Group took photographs at night with the aid of radar. On return to base, the photographs were instantly developed; interpreted and any important targets revealed passed, through sector control, to night intruders. It was successfully exploited (5) in the final battles. In 'Dixie' operations, tactical reconnaissance aircraft passed targets to the Rover, who briefed the fighter bombers. In 'Pineapple' operations, these reconnaissance aircraft flashed back hostile transport targets to the air control, (6) who vectored a waiting formation of fighter bombers on to the road targets. (7)

PRELIMINARY OPERATIONS (8)

The supreme Importance of Operation 'Roast' (9)

When Operation 'Roast' was launched in the early hours of 2 April, the background was favourable. The Allied deception plans were still working. The Germans, believing in the imminence of a landing in the Venice area, had ordered the formidable 29th Panzer Grenadier Division to reinforce that area. They were on the march northeastwards on 2 April and were not brought into the battle until 13 April, when von Vietinghoff had recognised his error. It was still, however, essential that complete surprise as to the hour and nature of the attack should be attained for the time necessary to seizing the springboard for the armoured attack on the Argenta Gap. In a sense, the whole ultimate success of the offensive might depend on the degree of speed and silence of Operation 'Roast'.

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- (1) Rover 'Paddy' with V Corps: Rover 'David' with II Polish Corps: Rover 'Frank' with A.G.R.A.: Rover 'Tom' with A.G.P.A. (Polcorps).
 - (2) Rover 'Jack'.
 - (3) M.A.T.A.F. Operations Memo No. 1, 22 March 1945. (A.H.B./11J1/183/6, Encl. 4a).
 - (4) The 'Speedball' Rover Stations.
 - (5) H.Q. M.A.T.A.F. O.R.B. Appendix D/SASO/7.
 - (6) At M.O.R.U. (G.C.C.).
 - (7) 'Pineapple Sundae' was a late development, in which the armed reconnaissance mission was airborne at the same time as the tactical reconnaissance mission and orbiting some pre-arranged positions waiting for a target. This was normally done in the case of the last light tactical reconnaissance missions.
 - (8) Refer to Figure 28 for ground and air operations by the Commandcs and others and Desert Air Force.
 - (9) Full details of the ground and waterborne operations may be found in the volume on V Corps operations, Pt. IV Section C of A.H.B./11J1/58/25(A).

The Launching of the Attack against the Spit, Operation 'Roast'

By 2345 hours on 1 April, the last marker boat on the lake was in position. (1) The water force, pushed their boats into the assembly area to await the Fantails. Although two hours behind schedule, all was so far favourable. There were just over five hours to daybreak. Almost immediately, trouble began. The leading 'Fantails' were bogged offshore. All attempts to launch others failed and it was evident that the lake could not be crossed that night in 'Fantails'. The whole operation, indeed the whole offensive, was in jeopardy. All men and equipment in 'Fantails' were transferred into boats. They man-hauled the boats and loads through nearly a mile of glutinous shallows. In the pitch black darkness the two forces became inextricably lost and mixed. Time was short. It would be fatal to be caught in such a plight at daybreak. The Brigade Commander rejected the idea of postponement. The air forces could not help, but there was plenty of supporting artillery. They were to continue. If landing was made in daylight, artillery was to lay a smoke screen. (2) The storm-boats started up their engines and the expedition literally roared across the lake.

At 0447 hours, the leading Commando was engaged while approaching the shore. By 0530 hours, it firmly held a bridge-head enabling the other to land. This beach was deep ooze and mud. Smoke from the artillery and the morning mist saved boats approaching after first light from heavy losses. More troops followed at 0705 into the bridgehead and pressed on to the Bellocchio Canal.

Advance along the Tongue (3)

The task of the 43rd (Royal Marine) Commando was to advance from its land base and clear the Tongue, then cross the Reno River and clear the southeastern half of the Spit. The 40th (Royal Marine) Commando was to draw fire with feints, then a troop was to be ferried across the Reno supported by two troops of Churchill tanks, to clear a strip of land between the Lake and the Reno. They moved forward, then, learning of the near-disaster on the Lake, turned back, but at 0500 hours the 43rd attacked and cleared the enemy from the Tongue. (4)

Exploitation (5)

The crowded day of 2 April saw the rapid development of their surprise attack, the attainment of several objectives, the capture and destruction of several hundred of the enemy and a series of manoeuvres aimed at neutralising the elaborate enemy defences. The 2nd (Royal Marine) Commando established itself firmly along the line of the Bellocchio Canal. The 9th Commando had a hard time getting round the defences of Santa Maracca. Air support and every form of mortar and artillery support failed to dislodge the Austrian defenders. The attack was

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- (1) Navigation parties from the Special Boat Service positioned lighted boats and other parties established control points and artillery call posts at the argine gaps.
 - (2) 6,000 yards long. *and*
 - (3) V Corps Operations. Opns. of Brit. Ind./Dominion Forces Pt. IV Sec. C. (A.H.B./IIJ11/58/25 (A)).
 - (4) 30 prisoners captured, 50 enemy dead.
 - (5) A.H.B./IIJ11/58/25(A). Refer to Figure 28 for Allied progress, enemy defences and air targets.

renewed from the south. A heavy artillery concentration fell on San Marlacca and a smoke screen concealed the initial attack. The smoke cleared too early and the final assault, which cleared the whole area, was made across open country.

Meanwhile, the 43rd (Royal Marine) Commando, having crossed the mouth of the Reno, doubled back southwards. By 1515 hours, after a day of bitter fighting, most of the southern territory was in Allied hands. The north bank of the Reno was cleared by evening.

Air Support on the first Day

Air records give the sortie total on 2 April as 86 fighter-bombers and 44 light bombers and the targets - guns, occupied areas, H.Qs, buildings and strongpoints - as all in the Porto Garibaldi area, at the head of the Spit. There were heavy guns and positions there and in a sense it was the root of the defence.⁽¹⁾ But in the event, the army records testify, some of the effort was undoubtedly directed against the stubborn Austrians round Santa Marlacca. Bombing must have been difficult and dangerous with such a wheeling pattern of small group fronts and such highly mobile forward lines, and it was definitely not ripe terrain for a big sustained air effort. At Porto Garibaldi, there was, as yet, no fighting and the bombing should have done much to soften it up, as well as deceive the enemy. At San Marlacca, the small air effort was not decisive but did something to assist our forces to establish themselves until reinforced and supported by a major artillery effort.

Clearing the northern Half of the Spit

The advance northwards to clear the Spit was the next task. The start was delayed until 1400 hours on 3 April. They failed to cross the Valetta Canal, at the northern end of the Spit. The weather handicapped Desert Air Force that day, but nineteen targets in the Valetta Canal - Porto Garibaldi area, all close to the Allied lines, were attacked. Many direct hits were reported, but, again, the ground forces were unable to take advantage of the conditions created.

Air and Ground Operations against the Islands on Lake Comacchio

Operation 'Fry' was launched on the night 4/5 April against four small islands in the Lake, with the object of protecting the right flank of V Corps in any advance along the southern shores. As a natural sequel to Operation 'Roast', and aiming at tying down potential enemy reinforcements moving west towards the Argenta Gap, raids from these islands on the northern shore of the lake were planned. The islands lay in two groups of two, about one and one-half miles apart. The defences were manned by about 60 men. The attacking force used light boats and punts.⁽²⁾

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- (1) These operations were part of the deception plan, too.
(2) One small force, composed of one squadron of the Special Boat Service with a few engineers and partisans seized the easternmost group, considered the most likely to be occupied, whilst a slightly smaller force, mostly partisans, seized the western group.

At about 1900 hours on 4 April, a force of 72 fighter-bombers(1) attacked buildings, occupied areas and two batteries on the islands. This bombing alarmed the garrison. Those not killed put out in boats for the mainland. All four islands were found deserted. A boatload of Germans returning to investigate were captured. Three of the prisoners belonged to 29th Panzer Grenadier Division.(2) It was only a unit, but perhaps the deception plan was breaking down. It would be very serious if the whole division were to follow. But these fears were unfounded. Von Vietinghoff still believed in an amphibious landing, not in thrusts at Argenta and across the Santerno.

The Operation against the Wedge, 5-8 April

It was now time to launch Operation 'Lever', the object of which was to secure firm ground along the southwestern shores of Lake Comacchio north of the Reno from which to outflank the narrows at Bastia and Argenta. The northern half of the Wedge was flooded and sealed by the mud of Lake Comacchio and the high floodbank of the River Reno. The enemy was thinly spread over the dubious terrain. There were no heavily defended points suitable for heavy air attack. It was a matter of advancing two miles and crossing two defended canals.

At 2115 hours on the night 5/6 April, Allied troops crossed the river, and on to the first canal. During the whole proceedings a light and continuous fire was rolling westwards, on all likely areas of resistance. By mid-morning of 6 April, the whole force attacked the tenacious defenders of the Canaletta Umana. By the night 7/8 April, the Fossa had been reached. Tanks supported the infantry. Within 48 hours, a large bridgehead north of the River Reno had been seized and engineers were opening up the way for the offensive.

Air operations were not possible in the cloudy weather of 6 and 8 April, and no direct support was recorded in the actual Wedge area, where fighting was so fluid and intimate, but over the Spit itself 17 Spitfire bomber missions were directed against the defences in the area of the eastern shores of the Lake: 265 sorties, mostly controlled by forward posts, were involved. The results there showed up in ground consolidation, but had only an indirect bearing on the Wedge. Preparations for the great attacks of 9 October now began to overshadow everything else.

Fifth Army Diversion against Massa and La Spezia

Although only a diversion, the preliminary operations on the extreme Allied left flank were of great interest and profit to the Air Forces. La Spezia had been a tantalizing problem for a long time. Until it was captured, there seemed no means of cutting off seaborne supplies to the Fourteenth Army or railway traffic marshalled safely in bomb-proof tunnels. The heavy guns continued to threaten both Allied naval and ground forces. The 15th Army Group would be very relieved if what they described as 'the constant irritation' of the La Spezia guns was eradicated. Those guns made any movement through the last

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- (1) Spitfires of D.A.F. whose operations included attacks on the Spit.
 - (2) 129th Reconnaissance Unit was on its way north to join the division in the Venice area.

strongholds of the Gothic Line in the Massa - Aulla area and up Highway 1 to Viareggio very hazardous.

The Fifth Army attack was opened at 0500 hours on 5 April. While small forces of Thunderbolts⁽¹⁾ bombed the normal battlefield targets, the troops took possession of several dominating heights. Through bad weather on the 7th they persisted, with Thunderbolt support, and cleared the summit of their first objective, Monte Belvedere, overlooking Massa and Aulla, the core of the last stronghold of the old Gothic Line. On the left, progress was at first very slow. Apparently the enemy, according to the Fifth Army official history, had intercepted certain attack orders. By 10 April however, Massa was occupied and on the 11th Carrara.⁽²⁾ Meanwhile the medium bombers of 57th Bombardment Wing had been applying their efforts to the La Spezia fortress.

The La Spezia Guns (3)

The air attack on the fortress of La Spezia was one of the last of its kind in the war and it is therefore important to judge, if it is possible, the degree of its success against the background of a long series of similar problems in N.W. Europe, Elba, Southern France and elsewhere.

The mountainous peninsula of Punta Bianca, southeast of La Spezia⁽⁴⁾, formed a natural barrier and an ideal site for guns commanding the approaches to the port both from the sea and along the coastal plains. Its tip was studded with 20 Italian naval coast defence guns, ranging from 100 to 152 millimetres in calibre, set in well fortified and camouflaged emplacements. There were also in the area six 90-millimetre anti-aircraft guns and an undetermined number of mobile 88-millimetre and light anti-aircraft guns, all of which could be used against land targets. They covered Highway 1 from Massa to Viareggio, so that only under their fire could Allied supplies be moved to the local front. They prevented a direct assault on Massa and hindered coastal road movements. Occasionally during the winter, bombs had been dropped on them as alternative targets, but there had been no heavy sustained attack, either from the air or sea. A feature of the guns were the heavy concrete casemates, often 8 feet thick, and the deep galleries.

Air Attacks on the La Spezia Guns

The really important attacks were made by Mitchell medium bombers dropping 1,000-lb. bombs.⁽⁵⁾ It was known from the air operations against heavy guns on Walcheren Island that the heavier bombs dropped from heavy bombers were effective in the case of a hit. In this case there were no heavy bombers available. There were several attacks by fighter-bomber formations using lighter bombs over the period, and these scored a few fortunate hits.

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- (1) M.A.T.A.F. operational summaries and O.R.B.
 - (2) Fifth Army History 'From Salerno to the Alps'.
 - (3) Monthly Air Intelligence Bulletin Apl. 1945 M.A.T.A.F. (A.H.B./IIJ11/18).
 - (4) Bounded by the Gulf of Spezia and the Magra River.
 - (5) Semi-armour piercing, fuzed .025 second delay.

The Mitchells attacked on four days - 5, 6, 8 and 11 April. The first day's effort was the heaviest and perhaps the most effective. Six missions by a total of 61 Mitchells attacked between 1042 and 1711 hours. Positions were reported pierced, two guns probably destroyed and some hits in the area. On this day, some of the 89 Thunderbolts operating in the area bombed the guns one of which was reported destroyed and one damaged. On 6 April, 12 Mitchells bombed the guns. Half of them missed, the other half believed in good coverage. The same day, another mission of six Mitchells bombed a cruiser in harbour which might serve as a blockship, but could place its bombs no nearer than 30 feet. After a day of bad weather, the Mitchells' attack was resumed on 8 April. The first mission, in the late afternoon, reported two gun positions destroyed and two damaged; the second reported no new damage. After a lapse, the series was concluded on 11 April, the day Carrara fell, by a mission of 24 Mitchells, who attacked in the afternoon guided by Shoran equipment. They claimed one hit and a good concentration on the centre.

Results of Air Attacks on the La Spezia Guns

From the army point of view, the immediate results were not entirely satisfactory, for some of the guns continued to be fired and to harass their advance up Highway 1 through the following days. Artillery was brought to bear against the Punta Bianca positions. Eventually on 24 April, after the last strongpoints of the Gothic Line had been reduced, La Spezia was captured.

It was not till then that a detailed survey was possible. The issue, as in Southern France, was complicated and, because of the joint air and artillery attacks, a complete assessment was ruled out. The Ordnance Section of the Twelfth U.S. Army Air Force was satisfied on the following points. Two 152-millimetre guns had been bombed out of action and hits scored on two similar guns adjacent to them. A 1,000-lb. bomb had made a 10-foot hole in one of the concrete gun foundations, throwing it out of position. One battery of four 100-millimetre guns under eight feet of concrete, inside a wall 70 inches thick was jointly destroyed by air and artillery attack. One bomb had made a big crater in the casemate roof of one gun with a direct hit, which filled the casemate with debris and rendered working of the gun impossible. An air raid shelter and ammunition storage tunnel 30 feet underground behind the casemates collapsed under the heavy bombing. Another 120-millimetre gun had been indirectly put out of action by debris from a crater 25 feet up the hillside above the gun, but this could not be positively credited to air attack.

Evidence on the results of 500-lb. bombs was not very conclusive. There was a casemate at the river's edge built inside a farmhouse. A 500-lb. bomb had destroyed the upper storey of the house, but left the casemate, with a six-foot wall and a six and one-half foot thick roof, intact. There is a reasonable chance that serious over-all damage, concealed by further attacks by aircraft and artillery, was inflicted, but the ordnance team was not impressed. 1,000-lb. semi-armour piercing shells as used were satisfactory ammunition against this type of casemates, but direct hits and very heavy concentrations of closely spaced bombs were needed to neutralise them. They admitted, as had been done in the bombing of guns and ships in Southern France, the sometimes fatal results of a near miss. Even when the guns were not hit, bombing attacks

would destroy subsidiary installations, kill or demoralise personnel, so reducing the effectiveness of the position.

After 8 April, the medium bombers were fully occupied in the grand offensive. Neither their attacks nor those of the fighter-bombers had been sustained for long enough.

Ground Progress through the last Gothic Line Positions

By noon of 9 April, the last day of the Mitchell attacks on the La Spezia fortress, reinforcements had pushed to the outskirts of Massa. Carrara was entered, unopposed, on 11 April. Shells from Punta Bianca, mines and craters had by now rendered the road impassable and troops were isolated without supplies. A Mitchell dropped 2,000-lbs. of supplies, but most of them fell over a cliff and only one box reached the infantry.

The enemy reaction was stronger than expected: when the troops prepared for a new drive, they found themselves up against a strong German line. On the plain and in the mountains they were shelled and counter-attacked. Not until 19 April, when Fifth Army had broken through west of Bologna, did the enemy pull back.

The purpose of the diversion had been attained. The enemy had been badly battered and all his available reserves, as well as some of the scanty tactical reserve, called into the line at a time when every man was needed elsewhere. Meanwhile, the major units were regrouping for the main assault. Three divisions were now in line on a narrow front from Monte Belvedere to Vergato. The enemy's forces on IV Corps front were concentrated in the area of greatest danger, from Montese to Vergato, strongly fortified. He expected that the direct thrust on Highway 65 was to be the main Fifth Army effort. It has never been made clear why General Lemelsen put up such a resistance. It was probably in the fear of losing his great supply base at La Spezia.

THE SET-PIECE BATTLE OPERATIONS ON THE EIGHTH ARMY FRONT
9-14 APRIL 1945

The German False-Front Manoeuvre on the Eve of Operation 'Buckland' (1)

General Herr, commanding Tenth Army, conscious of the weakness of his front and the imminence of an Allied offensive, put forward a plan for a false-front manoeuvre. The plan was to fall back from the Senio to the much stronger line of the Santerno 24 hours before the estimated time of attack, covered by a heavy artillery barrage. (2) If executed, this plan would have completely upset the plan for air and artillery support in Operation 'Buckland'. The ground yielded would have been small in extent and strategically valueless. The surprise would have disappeared. Von Vietinghoff sent the plan, with his support, to O.K.W., who replied by flatly forbidding the operation, known as 'Leonidas Eins'.

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- (1) Refer to special report on General der Panzertruppen Gerhard Graf von Schwerin, G.O.C. LXXVI Panzer Corps, captured 25 Apl. 1945. In A.H.B./ILJ11/58/29, Pt. IV Section G.
 - (2) A repetition of Ludendorf's most successful manoeuvre on the Western Front in the first World War.

German troops had been alerted all along the Eighth Army front since the beginning of April. 'Leonidas Eins' had been planned for 4 April. Although retirement had been forbidden, the German Command was so angry that it ordered the barrage on the night of 6/7 April. They knew it was a great waste of ammunition, but at any rate it raised morale for the time being and inflicted a certain amount of damage. Fears that this meant an enemy withdrawal to stronger defences ran very high at Allied headquarters all that night. They could see a dangerous delay ahead. These fears abated when daylight broke and reconnaissance revealed the enemy in the same positions. The mystery was not cleared up until the interrogation of the General Officer Commanding LXXVI Corps towards the end of the month.

The Germans waited expectantly and mistakenly for the main blow on the axis of Highway 9. To meet the offensive there, they retained the 4th Parachute Division north of the Via Emilia well into the foothills to the south, with the 26th Panzer Division to the north as I Parachute Corps' left flank. The rest of the line in the plain was still held by LXXVI Panzer Corps.⁽¹⁾ I Parachute Corps had three more divisions.⁽²⁾

Operation 'Buckland'. Heavy Bomber operations on 9 April

During the fine, clear morning of 9 April, the battle front was patrolled by aircraft as if it was to be a day of normal routine. A 'covey' of Air Observation Post aircraft began shoots on to enemy guns. On their bases in the Foggia area 242 Fortresses⁽³⁾ and 583 Liberators⁽⁴⁾ - 825 bombers in all - assembled and pursued a course northwards, escorted uneventfully by 88 Lightnings, as if bound for Central Europe. At Cesenatico, their Initial Point, marked by white smoke, the two main formations⁽⁵⁾ turned inland and, aided, by markers and radio beams, flew towards the enemy positions on the Senio River. The whole target area was roughly nine miles long and from one to two miles wide: the object was to shatter the stability of the enemy by saturating this area and so diminish the resistance to the ground offensive.

Area 'Apricot', opposite II Polish Corps front, was attacked between 1342 and 1420 hours and Area 'Apple', opposite V Corps, between 1420 and 1514 hours,⁽⁶⁾ the whole from left to right. A thick cloud of yellow dust rose and hung in the air. The target area was covered with reasonably good precision and only one incident occurred.⁽⁷⁾ At about 1500 hours, the foremost infantry moved back 500 yards and, at 1520 hours, the artillery bombardment opened upon the floodbanks. Cub aircraft patrolled over the front checking the accuracy of fire.

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- (1) With 98th Infantry Division from south of Cotignola to southeast of Lugo, continued from there by 362nd Infantry and 42rd Jaeger Divisions.
 - (2) 278th Infantry, 1st Parachute and 305th Infantry Divisions.
 - (3) Of 5th Wing.
 - (4) Off 47th, 49th, 55th and 304th Wings.
 - (5) In waves of 18 aircraft each.
 - (6) 825 bombers dropped 1692.4 tons of bombs, of which 1433.85 tons were 20 lb. fragmentation bombs and the balance 100 lb. bombs. Bombing was visual.
 - (7) Dealt with below.

U.S. Medium Bomber Operations on D-Day

Conveniently located at their new bases in the Fano area, the Mitchells of 57th Wing found that dust obscured large areas of the targets. Fortunately the light was good.

Three groups of Mitchells, totalling 234 aircraft, attacked 'Tom', 'Dick' and 'Harry' gun areas between 1450 and 1502 hours.(1) The guns(2) lay opposite the Polish Corps front, slightly to the west of the 'Apricot' area just smothered with small bombs by the heavy bombers. The Mitchell attack finished more or less at the same time as the 'Apple' attack. In about one and one-half hours, therefore, the whole of the U.S. heavy day bombers and medium bombers had delivered their loads.

Coming late into the field, and handicapped by lack of practice in co-ordination with army needs and methods, the U.S. medium bombers faced unfavourable conditions. So thick was the dust and smoke that about 17 per cent. of their fragmentation bombs were returned to base and nearly 3 per cent jettisoned. All the rest were dropped in or near the areas,(3) which enclosed important groups of batteries. The Army reported no return fire worth mentioning, between 1600 hours, after the attacks, and dark.

It was now the turn of the South African Marauders(4) to attack the 'Stalk' gun area north of Lugo, within a rough rectangle overlapping the 'Apple' target area round San Lorenzo. Between 1530 and 1550 hours, 48 Marauders bombed the guns against weak flak opposition. They reported two explosions and eight fires; it was believed that 60 per cent of their bombs fell in the target area.(5) Early Army reports spoke of their precision and what appeared to be excellent results, expressed in the poor enemy fire returns.(6)

The fighter bombers, meanwhile, had surged into the haze and smoke raised by the heavy bombers, in missions timed with intervals between artillery barrage phases. Some 820 sorties were flown. Most of their targets were pre-selected. The Thunderbolts(7) divided their attention between tactical headquarters, buildings harbouring troops, observation posts, troop areas, strongpoints, dumps, and a few communications centres behind the front. The Mustangs(8) and Kittyhawks(9) attacked guns, troops and an ammunition dump. A special mission of Spitfire bombers(10) and Kittyhawks(11) attacked a

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- (1) 36 of 340 Gp. at 1450 hours: 40 of 340 Gp. at 1454 hours: 78 of 310 Gp. at 1502 hours: 80 of 321 Gp. at 1512 hours.
 (2) 'Dick' contained two gun areas, 'Tom' and 'Harry' one each. Refer to Figure 26.
 (3) Bombs dropped - 25,804; jettisoned 884; returned 5,220.
 (4) Of No.3 S.A.A.F. Wing. On 13 April they passed to operational control of 57th Bomb. Wing.
 (5) The 4 missions dropped 138 500 lb. bombs, 91 250 lb. bombs and 4,316 fragmentation bombs.
 (6) Refer to Figure 26 for target.
 (7) 330.
 (8) 90.
 (9) 57.
 (10) 12.
 (11) 4.

divisional H.Q. successfully. The main force of Spitfire bombers(1) attacked guns, troops and strongpoints.

An eyewitness(2) spoke of the spectacular degree of accuracy achieved by the fighter-bomber missions operating in the ten minutes left after the artillery barrage, against hostile anti-aircraft and machine gun fire: he commented on the apparently leisurely way in which they approached and engaged their targets. They gave little impression of speed and it was with some surprise that they were seen pulling out safely, leaving a diminishing enemy fire tempo. The enfilade artillery fire and the air attacks were effective in probing some of the western reverse slope positions. The return fire seemed to come from isolated teams 'putting up a show' and did not appear to be co-ordinated.

Enemy Reactions to the Pre-Offensive Air Attacks

Evidence of the full effect of this all-out air offensive can only be partial. The reports of the aircrews indicate uneven flak defence ranging from vicious, heavy and accurate to feeble retaliation, dependent on the area and the survival of the gun crews. It naturally fell in volume as the enemy's casualty rate rose. The Army reports indicate a collective victory which could be roughly measured by the falling-off or disappearance of heavy and medium artillery fire. Much of the destruction was self-evident.

There was no interference from enemy aircraft in this phase of the battle. The adverse effect on the enemy morale was testified to later by many prisoners. It is still easier to understand the fillip to Allied morale reported and that at the time the Air Forces' reputation stood at a high level. From a large selection of interrogation reports there was, after discounting the after-effects of shock, a consensus of opinion on the great surprise and confusion at the volume, weight and comprehensiveness of the attacks. It was said that the fatal casualties were relatively small, but the number of personnel stunned or neutralised very high. Bombs and shells together had weakened the enemy's power of exercising effective control by damage or destruction to his headquarters, telephone lines, roads and supplies. The preparation by the air forces for the ground advance was as thorough as it could have been under the circumstances and later developments were to bring forth the full fruits of the long and elaborate preparations.

At the last moment, a few Spitfires flew low on a dummy run over the river in the New Zealand Division's sector, dropped no bombs but diverted the enemy's attention while the troops and flame-throwers moved up and prepared to strike.

The Senio Floodbank Defences.

In addition to the heavy air attacks on the main river defences, the fighter-bombers had concentrated on the floodbanks. These floodbank positions were by now deep and strong and they were the target for many of the 616 Allied guns.

(1) 332.

(2) An officer on the staff of the Director of Military Training, A.F.H.Q. who accompanied 6th N.Z. Infantry Brigade during these battles.

Even this was not considered sufficient and a flame attack by massed flame-throwing tanks was opened. The enemy weapon pits and shelters dug into the reverse slopes of the 25-foot high flood-banks, presented a target much narrower than the limits of accuracy of the guns for range; but it was found possible to site some guns to a flank. In four hours five intense bombardments had fallen, each spaced between fighter-bomber attacks.

Upwards of 140 'Crocodiles' and 'Wasps' had crept forward and were now close under cover. The Poles on the left were well back from the river; the Indian Division on the right held the reverse slopes of the eastern floodbank; only the New Zealand Division held the entire eastern floodbank, i.e. its two slopes, and they made the direct assault across the river first.

The Flame-Thrower Attack on the Senio. (1)

Great reliance was placed on the 'Crocodile' and its smaller version the 'Wasp'. Success depended on a straight line of trajectory; the flame-throwing tanks had, therefore, to manoeuvre on to ground commanding the reverse slopes of the eastern and the forward slopes of the western stop banks. Most succeeded in doing this and enfiladed the deep shelters, setting fire to the shoring timbers and rendering the warrens uninhabitable.

A few minutes before H Hour, in almost complete silence, 8 'Crocodiles' and 32 'Wasps' formed up 200 yards from the river. Then, while the last aircraft were making their dummy run, a spurt of flame showed the first 'Crocodile' in action above the ford and, within a minute, flame throwers were shooting along the whole New Zealand Division's front. They were to a great extent successful, but most of the 'Wasps' failed to reach the top of the stop bank. The air bombardment had destroyed the ramps they were to use. The 'Crocodile' force, however, functioned to great effect and there were wide areas completely charred on the western stop bank.

The New Zealanders' Crossing of the Senio after Air Attacks

The river was first crossed from 1930 hours onwards by the New Zealanders in assault boats (2) and over assault bridges. (3) They were soon in among the enemy's western bank positions, meeting only scattered fire. On the bank there was little or no hand-to-hand resistance. Prisoners were reported as demoralised and terrified by the flame and bombs.

Behind a standing barrage, the New Zealanders pressed on into the deeper defences. Smoke and dust obscured the artificial moonlight and tracer fire. They worked by compass. Within 2,000 yards they met tanks. By 0230 hours on 10 April,

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- (1) For this and the following operations of 2nd New Zealand Division refer to the report, which was seen and approved by Lt. Gen. Sir Bernard C. Freyberg, entitled 'Operations of 2nd N.Z. Div. 9-16 Apl. 1945.' D.M.T., A.F.H.Q. (A.H.B./IIJ1/184/213).
 - (2) Mark II.
 - (3) Kapok bridges.

three bridges⁽¹⁾ were operating and tanks and supporting weapons reached them. By 0800 hours, there were two high level Bailey bridges erected, over which tanks were rushed to support the Polish Corps in their bitter fighting on the left.

Allied Bombing of Polish Troops

While the Poles on the left flank were waiting in the leafy vineyards and pollarded ditches, one wave of heavy bombers dropped its load too early and some of them fell in the area of the forward companies of both Carpathian Infantry Brigades.⁽²⁾ Most of the casualties were highly trained specialists in floodbank attack. Cables were cut and much battle equipment destroyed.

The first news caused great consternation. It seemed that one battalion could not attack at all and another would be much delayed. Lieutenant General W. Anders, the Polish Commander, visited the bombed units and with his commanders, succeeded in re-awakening the fighting spirit. He wrote⁽³⁾ to the Army Group Commanders the same day a generous letter, recording his appreciation of the difficult task of the heavy bombers and the possibility of such accidents in spite of the most careful planning and pleading that no disciplinary action should be taken. The Poles reformed, modified their first objectives and were ready by 1930 hours to follow across when the air forces had finished their incendiary bomb attacks on the floodbanks.⁽⁴⁾

It would be interesting, but is in fact difficult, to assess the whole problem of the accident. G-(Air) of Eighth Army records an error in bombing by the aircrews concerned, but states that casualties would have been less if more attention had been paid to ensuring that troops took cover.⁽⁵⁾ A report by A.F.H.Q.⁽⁶⁾ found that owing to a bomb aimer of the aircraft leading a box failing to adjust his sights correctly, one box of 18 aircraft bombed our own troops. Over-anxiety was suggested as a contributory reason. One should add the evidence of Fifteenth Air Force officers on the difficulty of identifying certain exact aiming points because of smoke and haze and on the occasional difficulty among such a crowd of aircraft of getting squared away in time for a normal run. The air forces recorded surprise at the high casualty figures,⁽⁷⁾ which could have hardly occurred, if the troops had taken suitable cover. Events moved very fast thereafter and there appear to have been no subsequent 'inquests'.

Allied Bombing of New Zealand and Indian Troops

Two similar incidents occurred the following day. Four or five aircraft from one of the heavy bomber formations

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- (1) Low level Bailey bridges.
 - (2) Of 3rd Carpathian Division.
 - (3) Letter to Gen. Mark W. Clark, reference 45/ADC 9 Apl. A.H.Q., D.A.F., O.R.B.
 - (4) II Polish Corps Operations, (A.H.B./IIJ11/58/28, Pt. IV, Sect. F.)
 - (5) G-(Air) 8th Army History (Cabinet Hist.Sec. 1002/40/202).
 - (6) Notes on the combined army/air operations in the Italian theatre Apl/May 1945. (A.H.B./IIJ1/90/246).
 - (7) Operation 'Wowser'. H.Q., XV A.F., 31 May 1945 (A.H.B./IIJ11/47).

misjudged their target⁽¹⁾ and bombed Indian troops near Fusignano, columns of men waiting to cross the Senio. Casualties and damage were reported as heavy. Shortly before 1230 hours, the leading New Zealand companies⁽²⁾ were bombed and suffered casualties as they were forming up. The subsequent regrouping there held up the advance for half an hour. One of the few available contemporary comments on the affair suggest that possibly some aircraft straggled from their formations at the moment of the signal from the leading aircraft to bomb.⁽³⁾

The Poles' Crossing of the Senio with Air Support⁽⁴⁾

The success of the New Zealanders on their right aided the Poles in seizing both floodbanks. The minefields were cleared, 'Crocodiles' sprayed the banks and the Poles waded over into the fire and black oily smoke. A small bridgehead was established. Twice after daybreak on 10 April, the enemy counter-attacked from Solarolo with support of tanks, including Tigers. Fifty minutes or so after the second attack was launched at about 0715 hours, fighter-bombers and artillery fire were vectored on to the tanks, the joint effort destroying the tanks and helping the Poles forward. There was heavy fire and strong resistance: but they survived all efforts to push them back into the water and prepared to advance towards the even more formidably defended Santerno River.

The Indians' Crossing of the Senio⁽⁵⁾ after Air Attacks

In spite of bombs, shells and flame, the defenders of the river in the Indians' sector opposed the assault with surprising ferocity. To reach the floodbanks under fire was extremely difficult. To storm them was a very grim undertaking. The floodbanks had been scooped out and accommodation built for a strong garrison. Tunnels rivetted with strong timbers developed shafts opening on to the bank sides like portholes and these were packed with guns commanding all approaches. Many of them had survived the air attacks. The curves of the river lent themselves to an interlocking post system which enabled the enemy to sweep a wider front with fire. The river was stormed by a series of hand-to-hand combats. Powerful enemy elements had survived the air, artillery and flame attacks. Neither individually nor collectively had they achieved complete destruction, but, in their absence, the attack would probably have failed. By 0100 hours, the Canale Di Iugo had been reached. By 2005 hours some Indian elements had crossed.

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- (1) According to G(Air) 8th Army History.
 - (2) Of 25 Battalion.
 - (3) Here again the historian is handicapped by the separation of air records. If access could be obtained to papers such as the XV Air Force mission reports and summaries in the U.S.A.F. archives in U.S.A. it is fair to conjecture that useful evidence would issue therefrom.
 - (4) II Polish Corps Operations - A.H.B./IIJ11/58/28, Pt. IV Sect. F.
 - (5) V Corps Operations - (A.H.B./IIJ11/58/25a).

No. 205 Group Air Operations on the night of D/D plus 1 Day

The devastating but still not fatal effects of the D-Day battlefield air attacks were enhanced by the operations of night heavy and light bombers. In direct support of Operation 'Buckland' the entire forces of No. 205 R.A.F. Group and the night light bombers of Desert Air Force were pooled. The result made possible a new record of effort. Eighty heavy bomber(1) and 162 light bomber sorties(2) were flown, while 56 more sorties were flown by the light bombers of XXII Tactical Air Command on bridges, Po crossings, movements south of the Po and targets requested by Fifth Army.

No. 205 Royal Air Force Group,(3) now fully equipped with Liberators, had been the first heavy bomber group to revert to close tactical bombing with four-engined aircraft. This was at the close of the battle of El Alamein.(4) They were now the first formation in the Mediterranean theatre to bomb positions indicated by marker shells. They had some apprehensions on account of the fact that both the Santerno target areas - 'Pig' to northwards and 'Whistle' to southwards - were only in the region of 2,000 yards from the front line troops. High hopes were centred in the system of red star marker shells the Army put down to indicate the targets. As the Master Bomber sighted and identified them as correct, he advised his visual markers. They checked the position of the red markers and dropped three green target indicator type colours as visual markers (not target indicators as such) at 0358 hours on Target 'Pig'; they were to drop similar lights on Target 'Whistle' at 0401 hours. The 'blitz' on 'Pig' was to be concentrated between 0400 and 0402 hours, that on 'Whistle' between 0403 and 0405 hours.

In later night operations, the Army wanted the bombing in the early hours of the morning so as to produce the greatest effect at a time of low vitality. The air group inclination was to bomb as early as possible, so as to overcome a tendency to deterioration of weather as the night wore on.

The aircrews' reports on the efficacy of the navigational aids are of great interest. No. 614 Squadron was despatched to bomb both areas, Nos. 231 and 236 Wings to bomb area 'Pig' and No. 2 S.A.A.F. Wing area 'Whistle'.(5) All crews pinpointed the illuminated 'N' ground sign. In area 'Pig' everything went to plan, but in area 'Whistle' there were technical faults on the ground. The master bomber of No. 614 Squadron saw the first red star marker shells; the green markers dropped, but almost directly after the first greens fell, the red star shells ceased and were not seen again. Three of these aircraft dropped their load on 'Pig'. These early 'Whistle' red shells were noticed by No. 178 Squadron. Some of No. 2 S.A.A.F. Wing's aircrews saw the early red shells and bombed towards the south end of 'Whistle', but five aircraft did not see any green signals, so returned their bombs.

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- (1) They dropped 209 tons of 500 lb. bombs.
 - (2) They dropped 166 500 lb., 22 260 lb. and 3,380 40 lb. bombs.
 - (3) Source for details: No. 205 Group O.R.Bs and Appendices.
 - (4) 5 Nov. 1942. No. 462 Squadron. Refer to O.R.Bs.
 - (5) 95 aircraft were despatched. 8 Pathfinders and 72 aircraft operated. 15 jettisoned or returned bombs.

In all, 72 aircraft attacked the two areas. They returned satisfied that their bombs had all fallen in the target areas.

Effect of Air Attacks on Ground Operations

The first Army reactions came in the form of a letter next morning. The commander of the forward troops told the Air Officer Commanding Desert Air Force that he considered the attack 'most satisfactory': he said it must have shaken the Germans in the area and confidently hoped his own task was going to be commensurately easier when he came up against the Santerno defences. In a later message⁽¹⁾ General McCreery recorded that 'the bombing of the Santerno defences played a most important part in the forcing of this river obstacle'. Generals Clark, McCreery and Cannon all witnessed the operation.

The Santerno River Defences

By 1000 hours on 10 April, battle reports were encouraging. The sky was crowded with fighter-bombers about their allotted harassing tasks. The New Zealanders held firmly the Canale di Lugo. The Poles held the open flank in front of them and had broken up a tank attack. The Indians had reached and passed the Canale di Lugo. Between the two prongs, Lugo and Cotignola had been caught. The Italian Cremona Group was heading rapidly for Alfonsine. Heavy support was on its way. Ahead lay the Fossatone dyke, (a tank obstacle), minefields and the Santerno River.

The section of the Santerno involved presented a double obstacle. The old river had followed a serpentine course, but the Germans had built a new embanked channel carrying the water straight across the loops. Air reconnaissance reported the old river bed as dry, but, like the river proper, a tank obstacle and well built up with defence works. The Santerno was broader than the Senio but more strongly defended. In all other respects there was a close resemblance.

Heavy Bomber Day Attacks on 10 April

10 April was another fine, clear day. The smoke at all points was clearly seen by the heavy bombers from the time they turned at Cesenatico, and the bars and Ts stood out clearly. As there was no cloud, neither the anti-aircraft bomb line nor the radio front line beam was used, although under cloudy conditions their value would have been great. But there was a good deal of smoke rising from morning bombing. Two hundred and forty-two Fortresses⁽²⁾ and 606 Liberators⁽³⁾ approached close on their scheduled times and opened their bomb bays over the sea. All the wings controlling the 21 groups engaged enjoyed target cover by

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- (1) Main 8th Army to A.O.C. No. 205 Gp. 14 Apl. 1945. Also note his reservations on the effects of fragmentation bombing.
 - (2) Of 5th Wing.
 - (3) Of 47th, 49th (Red and Blue Forces) 55th and 304th (Red and Blue Forces.)

fighters of XV Fighter Command, who also provided forces for dive-bombing and machine-gunning. (1)

The first bombs fell on the 'Charlie' area opposite II Polish Corps at 1103.5 hours, closely followed by those at 1107 hours on 'Baker' area opposite V Corps. Then followed two attacks on 'Charlie' at 1129 and 1145 and three on 'Baker' at 1152, 1219.5 and 1226 hours. The last bombs fell at 1230 hours.

Such operations could hardly proceed along the long journey from Foggia without a hitch. Unpredicted winds delayed some formations. Some aiming points were obscured and bombs fell short. 47th Wing had some formation difficulties, although the same men were flying in the lead as the day before. There were near-collisions in the crowded sky and, as one unit fell back unexpectedly under the formation, another withheld its bombs which fell on the upside of the target area. An autopilot in a leading aircraft functioned incorrectly. Two bombers were lost to flak and three for other reasons, as against six enemy aircraft destroyed. Two fighters were lost. (2) The relation of the bomb fall plot to the assigned targets may be seen at Figure 26.

First Impressions of Results of Attacks by heavy Bombers

The general impression was one of satisfaction with the methods used and the degree of precision attained, in spite of the two fatal bombing errors. Detailed interrogation of prisoners pointed to considerable dislocation of all communications within the bombing area and a demoralising influence varying with type of troops. While personnel from the less disciplined formations, (proportionately now more numerous after the attrition of nearly two years campaigning), were dazed, demoralised and 'bomb happy', men from the 1st and 4th Parachute Divisions gave more balanced answers. They had been frightened, not demoralised, and soon realised that safety from the fragmentation bombs could be attained by staying under ground. Their casualties were not, for this reason, unacceptable and the enemy forces as a whole were soon re-integrated.

Medium and Fighter Bomber Operations 10 April

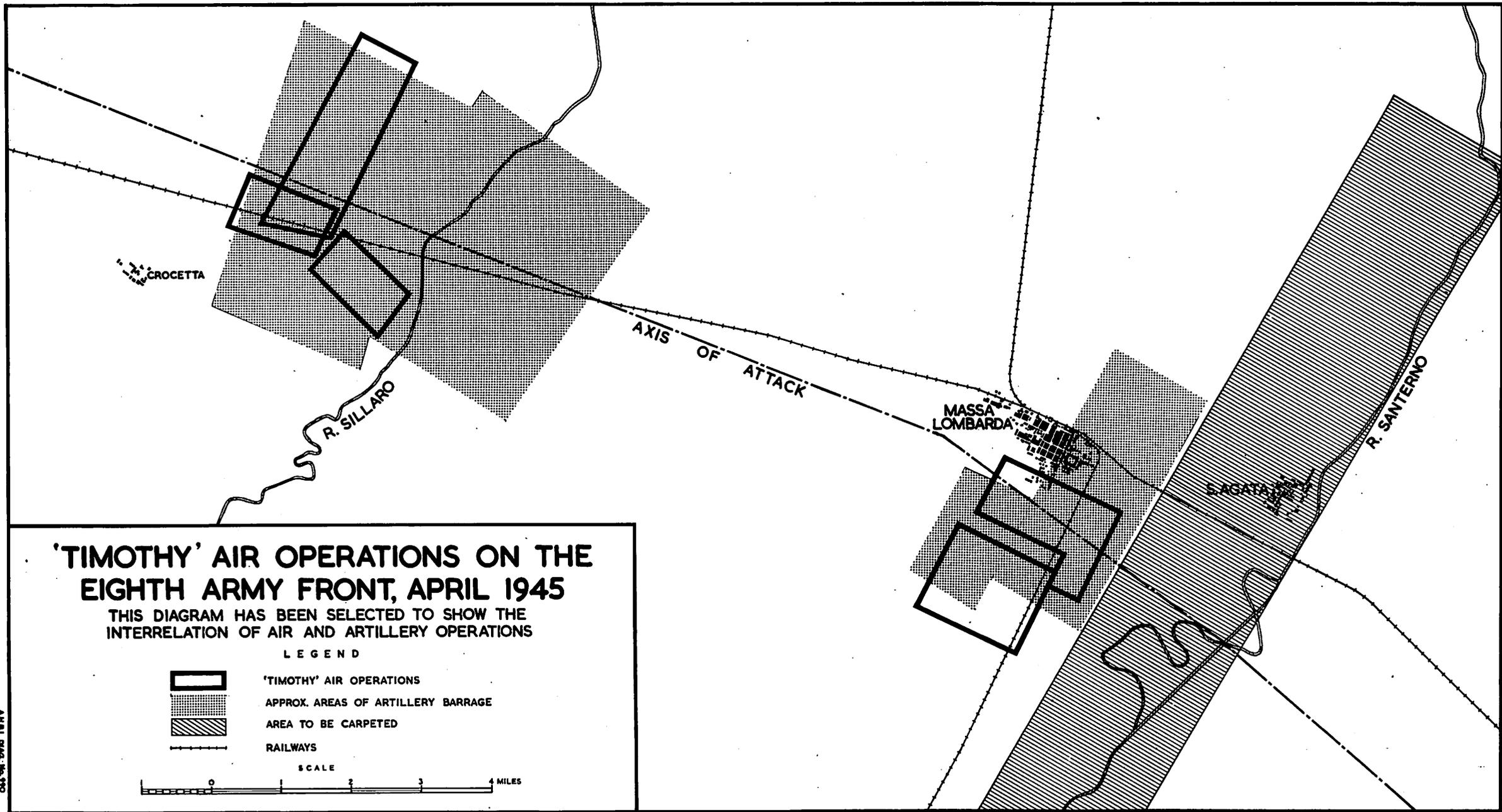
The medium bombers of 57th Wing and the South African Air Force concentrated on gun positions, as the Army was enthusiastic over their previous day's influence on the enemy rate of fire. The fighter-bombers of XXII Tactical Air Command attacked five corps and divisional headquarters and Mordano bridge and spent the whole day on armed reconnaissance. Six hundred and sixty-two fighter-bomber sorties of Desert Air Force were devoted to close support (3) including cabranks,

(1) 152 effective Lightning and 221 effective Mustang sorties were flown. The Lightnings dropped 94 tons (including) 46.5 tons of 1,000lb. bombs.

(2) Total short tonnage dropped by XV A.F. 10 Apl. 1945:-

Fortresses	524.70
Liberators	1,282.47
Lightnings	94.25
Total	<u>1,901.42</u>

The bombers dropped 179,120 20lb fragmentation bombs.
(3) D.A.F. and No. 1 M.O.R.U., O.R.Bs.



'TIMOTHY' AIR OPERATIONS ON THE EIGHTH ARMY FRONT, APRIL 1945

THIS DIAGRAM HAS BEEN SELECTED TO SHOW THE INTERRELATION OF AIR AND ARTILLERY OPERATIONS

LEGEND



- 'TIMOTHY' AIR OPERATIONS
- APPROX. AREAS OF ARTILLERY BARRAGE
- AREA TO BE CARPETED
- RAILWAYS

SCALE



'Timothies' (1) and short requests from forward units, all against targets similar to those of D-Day. Desert Air Force's effort was rising fast - from 703 on 9 April to 831, but the peak had not yet been touched: the ground situation was still relatively static, although vibrating ominously. There was no break throughout the day in the fighter bomber operations against guns, tanks, troops and strongpoints.

Before the battle, Eighth Army H.Q. had stated that the one factor which might hold up their advance would be the enemy guns, of which there were some 180 of various calibres within range of the sector. They repeatedly stated that if the Air Forces could neutralise these guns, then the Army could take care of the German infantry and lighter weapons and they were confident of success. First reports, as indeed later ones, indicated that the medium bomber effort in particular was achieving the desired results. Over the battle area hung a pall of smoke, 7,000 feet high in places, visible for many miles.

Eighth Army Advance to the Santerno Defences, 10 to 11 April

The opening attack of V Corps and the Air Forces so weakened and unbalanced the Germans opposing them that they were compelled to withdraw to the Santerno without appreciable pause. The fighting in this period falls into two phases, the advance to the Santerno, from 10 to 11 April and the crossings on 11 and 12 April.

The New Zealand commander decided to occupy both banks by 11 April. At 1300 hours on 10 April, a half-hour after the end of the heavy bomber 'carpeting', the New Zealanders moved forward and by 1440 hours were on the Scolo Tratturo waterway. By 2100 hours they stood a thousand yards from the Santerno, poised for the crossing.

The Indians were repeatedly thrown back with heavy losses and it was only at last light that the prospect improved. Tanks (2) crossed the Lugo Canal without infantry, charged forward in Balaclava fashion with all guns blazing towards the Scolo Tratturo and drove the Germans across to the west bank. Infantry followed up and the attack was resumed. Troops, tanks and guns tore a great gap in the Scolo defences and were soon close up to the River Santerno only ten hours behind the New Zealanders.

The Polish Corps' Progress with Air Support and Capture of Solarolo

All the day of the 10th, the Polish units struggled to bridge the Senio, to compete with the Tiger tanks confronting them and to gain the Lugo Canal. Early in the day, counter-attacks based on Solarolo were directed against their left. At about 0713 hours, combined artillery fire and bombs and rockets from fighter-bombers controlled by the Poles' own Rover destroyed the enemy tank force. They waited while the heavy bombers attacked area 'Charlie', then pushed on to the Lugo Canal, capturing Madonna Della Salute. As soon as sufficient bridges had been completed, they were ordered to seize the town of Solarolo.

(1) Cf. Figure 25.
(2) Of the 48th Royal Tanks.

Artillery concentrations against the stronghold were requested, but refused. Air and ground observation posts had reported that the enemy had left the town and that the population had hoisted white flags. But, Polish records affirm, this information was untrue. They attacked at 1700 hours without air or artillery support and were met by heavy machine gun fire from Solarolo and the adjacent areas. A completely new attack, with full artillery support, had to be launched after dusk. When Solarolo was captured they found that the enemy had demolished the church tower without warning, burying under its ruins scores of civilians who had taken refuge there from the Allied air bombing.

Eighth Army Crossings of the Santerno River after Air Attacks, 11 to 12 April(1)

Maoris attacked on 11 April with strong artillery and air support, and, in spite of heavy enemy fire, forced their way about 800 yards beyond the banks. After counter-attacks and a night of fierce fighting, the first bridge was in operation at 0410 hours on 12 April. Tanks were much in evidence and opposition bitter, but Massa Lombarda was reached at 1700 hours.

In the far north, irreparable damage had been inflicted on the enemy's railway system by air attacks. He could hope for no reinforcements. His ships had been destroyed or cornered, his barges sunk. The process was still going on. Behind the immediate front, headquarters had been bombed, lines cut, units isolated, roads blocked, bridges severed. The seeds of ultimate break-up had been sown by the air forces. But the front line crust was still firm, yielding flexibly but coherently, at great expense of men and material to the Eighth Army. The approaches to the Argenta Gap as well as the Gap itself and Bologna were still firmly held, and beyond the Santerno there were still other rivers.

Although a great weight of bombs and shells had fallen in the Imola area along the Santerno, the conclusions sought thereby and by the use of flame throwers were not reached. All the 'Wasps' broke down and only a single 'Crocodile' came into play. Wading through the river, the Indians met murderous enfilade fire. It was very dark, the air thick with dust. Units lost their way or ran on to minefields. Troops broke out northwestwards towards Mondaniga, but were forced back, some across the river by tanks. However, by 0600 hours, the Indians had a deep bridgehead.

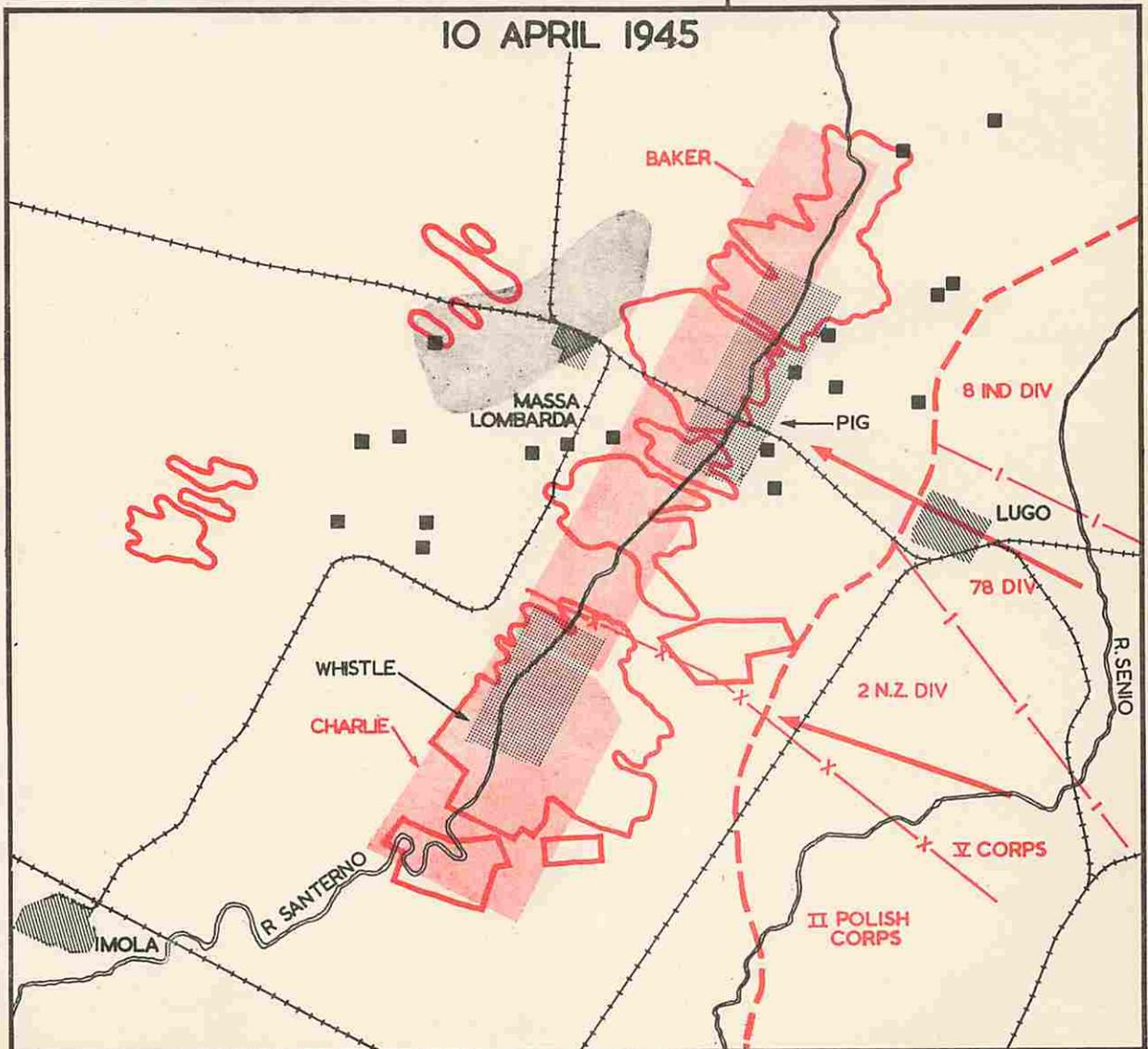
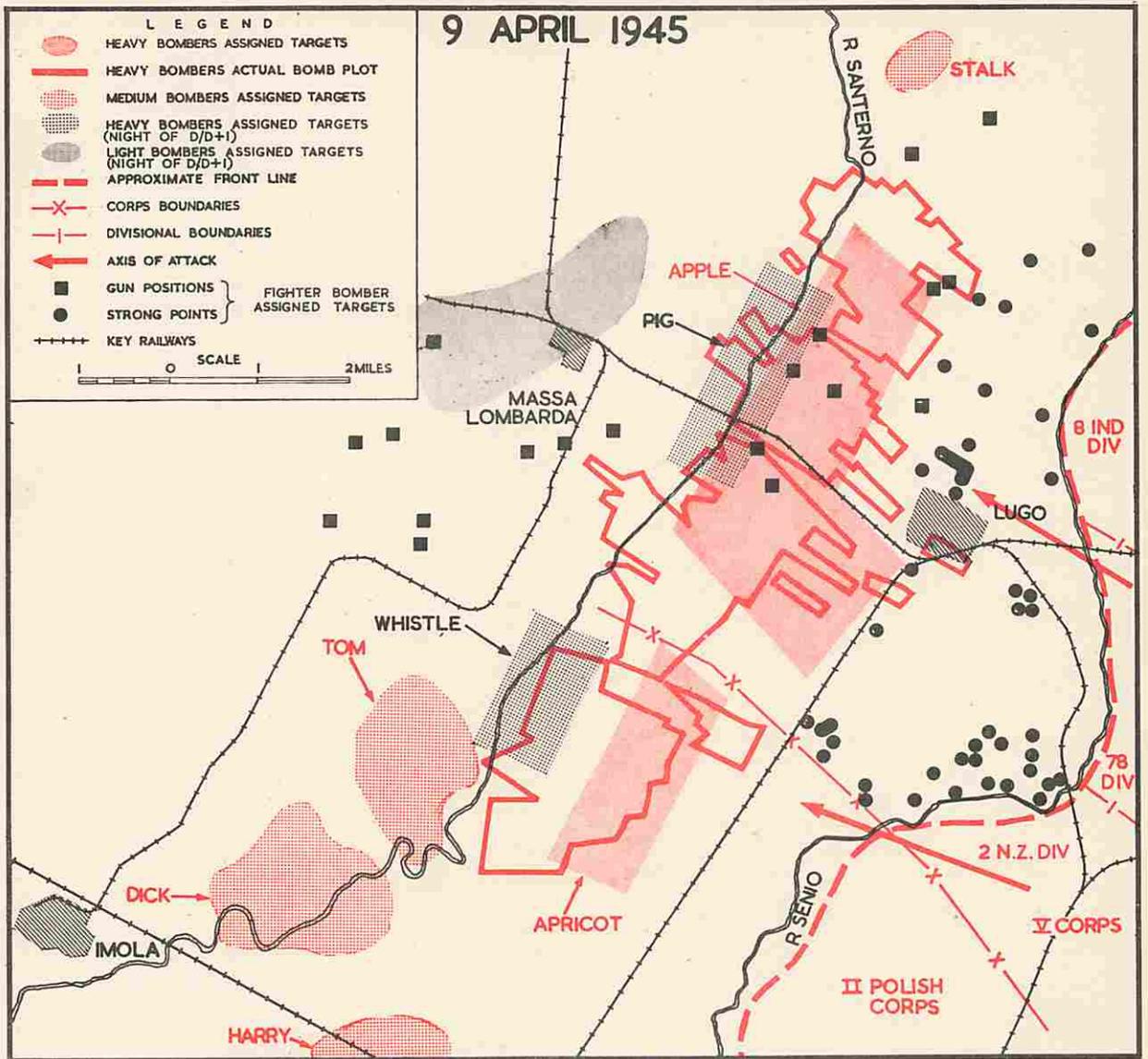
The Polish approach was partly made late on 11 April. They had less trouble and captured Castel Bolognese. By 12 April they were in the Lugazzo-Casalecchio area.(2)

X Corps Progress in the South

The Allied action compelled the Germans to withdraw from the Alfonsine pocket and prepare to withdraw in the X British Corps sector to avoid being cut off. X Corps, in the south, (3) changed their passive role to an active one

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- (1) V Corps Operations. (A.H.B/IIJ11/58/25(A)).
 - (2) Not to be confused with the town of that name west of Bologna.
 - (3) With the Italian Friuli Group and the Independent Palestinian Brigade.

ALLIED BOMBER ATTACKS ON EIGHTH ARMY FRONT OPERATION BUCKLAND



and seized Cuffiano on 11 April and Monte Ghebbio and Serra on 12 April. The Italian Friuli Group reached, on 12 April, points only a mile from the Santerno and the next day crossed the upper river, capturing Palazzo Gambetti and Ponticelli.

Tactical Air Operations 10 to 12 April and their Effects on the Battle

As an aid to measurement of the air effort in the set-piece battle, the weight and role of each of the various major formations must be briefly considered.

The medium bomber operations of 57th U.S. Wing will first be mentioned. The weather was favourable on 10 and 11 April and some 360 and 350 sorties respectively were flown. The emphasis on both days was, as on 9 April, on Eighth Army targets. (1) On 10 April, troop and defence areas round Massa Lombarda and Argenta were attacked morning and afternoon. A large number of aircraft were hit by flak. On 11 April, they divided their attacks between the bombing of three reserve areas round Argenta in the morning and, in the afternoon, concentrations near Lavezzola (south of Bastia), the La Spezia guns and four points on the Brenner Pass. (2) Low clouds in the afternoon of 12 April curtailed a full programme. Only four missions were flown and these were divided between the Brenner Pass Line, (3) Maribor and Borovnica bridges, (4) (the approaches to both of which they hit), and troop areas at Argenta. This diffusion of effort reflects the great scope of the Air Forces' commitments. While devoting a record effort to the front line areas, they were not, as will be seen both here and later, neglecting the over-all pattern within which they, and they only, could do so much to slow down the enemy system.

To give a detailed idea of the magnitude and variety of the fighter-bomber operations over those three days would only obscure their real impact in a maze of figures and isolated incidents. It is simple to grasp the facts of 1,200 sorties by XXII Tactical Air Command and 2,600 by Desert Air Force, spread fairly evenly over the three days. (5) One must then realise that this effort was distributed between four broad areas; firstly, the Eighth Army front, which absorbed a major proportion, secondly, the northern railways, thirdly, the area of the River Po with its supply and ammunition dumps and crossings and, fourthly, the Fifth Army front, still relatively quiet. Over the whole of these areas, a planned pattern of tactical, armed and photographic reconnaissance was woven with few breaks. Furthermore, a series of strategic attacks were now opening on and beyond the frontiers of Italy,

(1)	Casualties 10 Apl. - 48 damaged.	11 Apl. 1 missing,
	59 damaged.	12 Apl. 1 lost, 28 damaged.
(2)	Volargne fill, San Ambrogio, and Santa Margherita and Ala bridges.	
(3)	36 B-25s on Vo Sinistro fill and bridge.	
(4)	54 B-25s.	
(5)	<u>Sorties</u>	<u>XXII T.A.C.</u> <u>D.A.F.</u>
	10 April	413 831
	11 April	419 952
	12 April	393 850

These figures include light bomber sorties.

and on the ports and marshalling yards, all calculated to induce increasing stagnation, bottlenecks and delays.

The innumerable targets, whether pre-selected or of opportunity, engaged by the fighter-bombers once the Senio and the Santerno were crossed, resembled closely those thrown up in the offensive of the previous Spring. The Germans had lost many of their best troops, but those left were still, though more mixed in character and experience, presenting a most formidable obstacle. Their ^{genies} ~~genies~~ for quick repairs is by now fully understood. On firm ground they were closely packed; in the inundated country thinly spread.

Night light Bomber Operations 9 to 12 April⁽¹⁾ and their Effects on the Ground Battle

The night intruder bombers of No. 232⁽²⁾ and 253⁽³⁾ Wings of Desert Air Force and of 47th Bombardment Group⁽⁴⁾ of XXII Tactical Air Command assumed an important role in this period by harassing the enemy's gun areas, road movements, dumps and occupied areas during the only periods when he could move unobserved, and by giving little or no rest to his overstrained troops. Allied Forces Headquarters stated that especially at this time, when it was vital for him to be able to move freely to meet our threats as and when they arose, the practically constant cover of the battle area during the night maintained by the intruders seriously hampered his movement and restricted his artillery fire. Most of these operations were visual, but a limited number were under radar control. Throughout these

(1) Sorties and targets

Night 9/10 April

D.A.F.	162	Gun areas requested by 8th Army.
XXII T.A.C.	56	RR bridges, Po crossings, M/T mov. south of R. Po and targets requested by 5th Army.

Night 10/11 April

D.A.F.	117	H.Qs, dumps, gun areas, ferries and M/T on 8th Army front.
XXII T.A.C.	69	Armed recce, Po crossings, guns etc.

Night 11/12 April

D.A.F.	116	Dumps, guns and comms. on 8th Army front.
XXII T.A.C.	70	Po crossings and enemy positions on 5th Army front.

Night 12/13 April

D.A.F.	116	Guns, bridge, M/T and mov. in battle area.
XXII T.A.C.	31	Enemy positions in battle area and Po crossings.

Night 13/14 April

D.A.F.	100	Guns, roads and mov. on 8th Army front.
XXII T.A.C.	48	Dumps and comms on 5th Army front and Po crossings.

- (2) Bostons and Mosquitoes.
 (3) Baltimores.
 (4) Bostons and Mustang Invaders.

and the following days, valuable tactical, (1) artillery (2) and photographic reconnaissances (3) were also flown.

The Allied Position at the End of 12 April

By the evening of 12 April, three days after the opening of the offensive, as a result of the combined efforts of the Army and Air Forces, the Santerno line had been irreparably broken and many prisoners taken. (4) On the left, the New Zealanders in the outskirts of Massa Lombarda had now joined with the firm Indian bridgehead and high level bridges were open. The Alfonsine pocket had been liquidated. Air and artillery attacks had taken serious toll of the closely packed river defenders. Only one serious counter-attack had been possible (5). The momentum gained by the New Zealand division allowed the weakened 98th Division no time to stabilise on the Santerno; but the enemy improvised, reinforced and plugged holes: German armour (6) assisted in preventing a rout. There was no sign yet of movement by either of the German reserve divisions. The next move of Fifth Army would be noted before this happened. The 29th Panzer Grenadier Division was soon to march from the Veneto area, but this was not yet known.

The northern pivot of all the enemy's subsequent river defence lines - Bastia and the Argenta Gap - was still apparently secure. It was at this point that the V Corps Commander decided to launch the 56th Division across the northern floods to grasp the narrows at this point and, when the Santerno bridgeheads were firm, to follow this move up by turning the face of the Corps away from the west so as to strike across the enemy front, northwards towards Bastia. His plan had already been given feasibility by a landing at Menate on 11 April, the whole forming Operation 'Impact Plain', the flank attack on Bastia and Argenta.

The Air, Land and waterborne Attack on Menate

The thrusts on Bastia were made on three prongs, the first from the Lake, the second along its shores and the third from the Wedge and the Reno positions. The first objectives in this operation - 'Impact Plain' - were the towns of Longastrino and Menate and the area just inland off the western shore of Lake Comacchio; the second was the bridge and town of Bastia at the lower end of the Bastia - Argenta narrow road, as well as a secondary and roughly parallel causeway. The capture of Menate involved an appreciable element of surprise.

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|-----|--|--------|---|-----|--------|-----|--|
| (1) | 9 April: | D.A.F. | - | 8; | T.A.C. | 16 | |
| | 10 April: | D.A.F. | - | 12; | T.A.C. | 14 | |
| | 11 April: | D.A.F. | - | 18; | T.A.C. | 14 | |
| | 12 April: | D.A.F. | - | 10; | T.A.C. | 11 | |
| (2) | 9 April: | D.A.F. | - | 16; | T.A.C. | 5) | An assessment of the full effort will be given later |
| | 10 April: | D.A.F. | - | 34; | T.A.C. | 3) | |
| | 11 April: | D.A.F. | - | 32; | T.A.C. | 5) | |
| | 12 April: | D.A.F. | - | 13; | T.A.C. | 4) | |
| (3) | 9 April: | D.A.F. | - | 7 | | | |
| | 10 April: | D.A.F. | - | 9 | | | |
| | 11 April: | D.A.F. | - | 7; | T.A.C. | 12 | |
| | 12 April: | D.A.F. | - | 1; | T.A.C. | 9 | |
| (4) | 24 officers and 2,209 other ranks. | | | | | | |
| (5) | By <u>362nd Division</u> against the Indians just north of San Polito. | | | | | | |
| (6) | From <u>26th Panzer Division</u> . | | | | | | |

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But as the enemy held the area in some strength and had heavy guns in the area, it was decided to soften up the area first by night and early morning air attacks and to support the ground moves by day air attacks. Although 'Fantails' had proved a failure on the Lake, it was found feasible to mount guns in them and operate them over the artificially flooded areas southwest of the perimeter dyke. The early thaw and the dry spring had disproved the enemy's reliance on deep flooding and although photographs of the 'Fantails' were taken by one of the jet reconnaissance Arados(1) showing 50 of them on the Lake, these photographs were a day too late. To the time of the operation, the 'Fantails' were believed to be small craft capable of carrying only four or five men, and the fleet of well armed and fully manned craft came as a complete surprise to the defenders of Menate.

In the night of 10/11 April, aircraft made as much noise as possible to conceal the sounds of 'Fantails' assembling. Between 0300 and 0400 and at 0745 hours, 35 Baltimores(2) bombed three gun areas in the area just west of the Longastrino - Menate road and reported fires and explosions. Commandos moved throughout the night towards the Scolo (drain) Menate, thus protecting the right flank of a complementary move by other troops to disembark northeast of Menate, seize it and drive south to link up with another Force. The trek along the dyke became a race against the dawn. When dawn did break, they were near the bridge. They killed a challenging sentry. Their shots alarmed the enemy, who brought down a heavy and devastating prearranged concentration on them. Despite artillery support, no progress could be made until fighter-bombers(3) attacked the core of resistance at the pumping station. These attacks virtually silenced the guns there. The station was stormed and taken. Soon thereafter, the first 'Fantails' were in sight.

Resistance crumbled at the sight of a large fleet of amphibious troop carriers suddenly appearing on their flanks out of the floods. Menate was captured. The units advancing from the Wedge found very heavy going over collapsing roads and through minefields swept by well-sited guns. They reached a point near Filo and made two miles progress. The Filo defence area was scheduled to be attacked by night bombers, but for some reason unexplained there is no record of this happening.

The successes in this area confirmed the Army Commander in his decision that V Corps was to exploit northwards. Plans were prepared for breaking out of the Santerno bridgeheads. The extent to which Eighth Army's and Desert Air Force's success to this point had affected the German system must now be briefly considered, so that the situation ruling on the eve of the Fifth Army offensive may be evaluated.

ENEMY REACTIONS TO OPERATIONS 'BUCKLAND' AND 'IMPACT'

German Strategy on the Eve of Fifth Army's Offensive

Although the Germans had shrewdly estimated the opening date of Eighth Army's offensive, its direction had surprised

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- (1) Refer to Special Report on Von Schwerin, G.O.C. 76 Panzer Corps. (A.H.B./11J11/58/29).
 - (2) Of No.253 Wing, D.A.F.
 - (3) Thunderbolts of 79th Fighter Group and Mustangs of No. 239 Wing both record attacking buildings in this area and inflicting damage.

most of them and the three strongest divisions astride and south of Highway 9 were unable to take part in the fighting on the left flank river lines until too late. Once the initial shock was over and they were entrenched on the Santerno, their customary skill and tenacity began to assert themselves. Far in the north, the air forces were speeding the onset of a supply breakdown, but the front everywhere, except on the eastern flank, was still strong.

The Bastia road and gap leading to Argenta must be held, for here was the hinge of the Sillaro - Idice - Reno Line. Its loss meant the outflanking of the enemy army there. Hence the strong defences. Bastia bridge was defended from air attack by a specially dense concentration of guns. The attack from the flooded area had caught them unprepared, laid bare the whole defensive position. They withdrew through the gap between Bastia and Argenta and fought hard for the bridge at Bando, near which further landings had been made on 13 April. They fought at great expense of lives to drive in the Santerno bridgeheads, but failed.

Von Vietinghoff at last realised there was to be no amphibious landing in his rear and rushed down the 29th Panzer Grenadiers on 13 April to the Argenta Gap. He reduced the bulge south of Imola, relieved the battered 98th Division, (1) and pulled out the 26th Panzer Division for defence of the Reno line. The Sillaro bridgehead was contained. Imola was abandoned on 15 April. The main object was now to get back to the Idice line as soon as possible. Meanwhile the attack on Argenta had reached desperate proportions to the northeast.

Appeal by Von Vietinghoff for Authority to withdraw to the Po-Ticino Line

On 14 April, the German Army Group Commander made his last appeal to the Supreme Command of the Armed Forces for authority to conduct an orderly retreat, avoiding decisive battles, so that the Tenth Army could hold the Allies for another fortnight while the western and Alpine forces of the Fourteenth Army pulled back. They should then, he stated, stand on the Po-Ticino line and so preserve the North Italian industrial areas for their war potential.

Although it merely echoed views he had often presented, it also attempted to paint current events in realistic colours. If he could bring about a change of mind and a return to classical methods of warfare, there might still be a way out. The official philosophy of fighting where the armies stood was of great advantage to the Allies - he had an official statement from British sources to that effect. The object of the present offensive was to crush the two German armies by sheer weight of material. The air and flame thrower effort were clear proof of this. Close combat anti-tank weapons could not compete with the flame-throwing tank.

It was only a question of time before each new position was shattered. They were thinking of withdrawing from a number of salients, drawing on untapped sources for reserves.

(1) By putting the 278th Division under command of LXXVI Corps.

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I Parachute Corps ought to be posted northeast to stop highly dangerous pressure on Argenta. If not, there would be a breakthrough into the Po Valley. Therefore, eventually, the Genghis Khan Line must be given up. (1)

Von Vietinghoff on the Allied Air Attacks

The Allied air forces had, he pointed out, been ceaselessly employed in concentrated, co-ordinated attacks on the main focal points of the battle. By day and night, strong-points, artillery positions and command posts were being carpeted with bombs. Fighter-bombers were assaulting every discernible target by day and night (2) without respite. They were even flying over low hills undisturbed, keeping weapons out of action and hampering counter-attacks. Signal communications were continuously smashed, so that commanders were almost completely out of touch with forward units most of the day and artillery observers were rendered almost entirely ineffectual. Liaison officers took hours to cover even the shortest distances. Movement during the day of even the smallest reserves was out of the question. If such moves were recklessly made, units were destroyed before they could reach the enemy.

THE SET-PIECE BATTLE OPERATIONS ON THE FIFTH ARMY FRONT
14 TO 20 APRIL

Air Preparations and Support for Fifth Army's opening Attack

The Fifth Army troops were ready to attack by 12 April. The weather was bad for flying all this day and showed no signs of breaking the next day. There were cloud and low ceilings over the XXII Tactical Air Command's bases in the west coastal areas. The ground attack was postponed on 12 April for 24 hours and for another 24 hours the next morning. A favourable forecast late on the 13th led to the final decision that IV Corps was to open the drive the following morning, after night attacks by light bombers and an early morning 'blitz' by fighter bombers.

The Fifth Army plan was for IV Corps to concentrate all its force on a long drive up the hills on the west side of Highway 64. Here, as on the Eighth Army front, the sensitive point of impact was in almost anonymous country. The last hills of the Belvedere ridge commanded the entry into the Samoggia River Valley. The three hills to the northeast of the jumping-off point - Castel d'Aiano - were vital and very strongly defended. It was the defensive area of these three hills - Monte Pigna, Monte Mantino and Monte Pero - that the Tactical Air Command was called on to neutralise. The medium bombers, handicapped by weather, were scheduled to attack remote targets and the heavy bombers and their escorts preparing for an all-out attack on the Bologna approach defences and northern targets the next day, when II Corps were to open their drive up Highway 65. The 14th, therefore, was the day of the fighter-bombers, and as Desert Air Force was by this time deeply involved in the fighting near Bastia, very limited help could be expected from that quarter.

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- (1) Translation of Cable No. 1 - 00/04 H.Q. Army Group 'C' to O.K.W. G(Ops.) Branch 14 April 1945.
(A.H.B./IIJII/58/29).
- (2) It was, of course, the light bombers which operated by night.

On the night of 13/14 April, 21 U.S. Bostons and 27 Mustang Invaders continued the process of destroying enemy dumps, and bombed Po crossings and roads and reported on enemy movements in the key sector. Beginning at 0830, Thunderbolts bombed the Monte Pigna area until 0910 hours, using their entire armoury against headquarters, guns, troop concentrations and occupied buildings. Then, Allied artillery shelled these positions. Infantry moved ahead across the Pra del Bianco basin into defences still almost intact except for reduced gunfire and, by dusk, reached positions on Rocca di Roffeno.

Air support continued all that day on both pre-selected and call targets. Close support, (1) armed reconnaissance, (2) patrols, (3) tactical and artillery reconnaissance (4) and photographic reconnaissance were all covered to the limits of air strength. It could be claimed that the air forces had assisted in the breaking of the initial crust in the southernmost pocket. Nothing major or decisive had yet been achieved, however, and the hard going was a hint that greater weight of both ground and air forces would be needed to make much impression on the deeply defended hills round Bologna.

Development of IV Corps' Drive West of Highway 64 (5)

The enemy began evacuating his artillery and began a fierce delaying action to cover a withdrawal to the Panaro River. He was unable either to stop the Americans or disengage. The mountains were stormed and held against counter-attack. Tole, by now a shambles after bombing and shelling, was taken. On 17 April, they sent the enemy reeling back towards the Samoggia Valley. At the end of four days' attacks, forward troops drove to the northeast across the enemy lines of communications. Vergato was cleared: Monte Milano fell.

By the close of 17 April, the enemy was in a critical position on IV Corps front. The breakthrough in that zone rendered an extended stand on Highway 65, where II Corps' offensive had opened, very difficult. The 10th Mountain Division was moving into the last foothills before the Po plain with only light enemy forces before it. By 18 April, the assault had split the opposing division in two. With the enemy's reserves absorbed, the only possible help would have to come to him from south of Bologna.

II Corps' Drive up Highways 64 and 65 (6)

The country ahead of II Corps, on either side of Highway 65, was one great fortress area. The broad plan was to breach the defence line, continue northwest and capture Praduro on Highway 64: then to partially flank the west side of the defence lines immediately south of Bologna, by passing either west or east of the Reno. In the first

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- (1) 221 Thunderbolt and 104 Spitfire sorties.
 - (2) 50 Thunderbolt sorties.
 - (3) 9 Spitfire sorties by No. 8 S.A.A.F. Wing.
 - (4) 50 Spitfire sorties by No. 8 S.A.A.F. Wing.
 - (5) Refer to Figure 30 for progress of IV and II Corps 14 to 20 April 1945.
 - (6) 'Salerno to the Alps' - History of 5th Army, Washington Infantry Journal Press, 1948.

phase of the attack, which opened on 15 April, Fifth Division was to strike for the defended heights. In the next it was to make towards Bologna along both sides of Highway 65, dominate Praduro, then use a South African bridgehead over the Reno. For four days almost the entire weight of the Fifteenth Air Force heavy bomber groups was to be devoted to the reduction of the deep and powerful defences before Bologna.

II Corps' first attack at 2230 hours on 15 April was followed at 0300 hours on 16 April by the second blow on the east. The first three days of the offensive were inconclusive. Progress, even although the enemy batteries had been heavily bombed, was very slow: the Germans fought with undiminished vigour, although their rear communications and gun defence systems were gravely affected by air attacks.

After Monte Sole, Fifth Army captured two heights on the 16th and on the 17th and 18th, the remainder. Pianoro had to be reduced to rubble before the Germans would relinquish it. By the capture of Monte Adone, the tables were turned on the enemy. He held only the last fringes of the mountains by the 19th. The Allies could now look down on the towers of Bologna only ten miles away. In the first hour of the 18th, in a tank versus tank battle, the remainder of Lemelsen's only reserve lost most of its armour.

On 19 April, Fifth Army crossed the Reno. South of Bologna the enemy's right flank was weakening. On the morning of 20 April, Fifth Army entered Gesso, the first village on the plains and by evening they were astride the Via Emilia between Bologna and Modena. With the capture of Casalecchio, after No. 205 Group had bombed it, the first and most difficult part of Fifth Army's task was now accomplished.

The role of the air forces, and in particular of the Strategic Air Force in this advance must now be outlined.

Conversion of Allied Strategic Air Forces to tactical Operations

At a conference of Allied air commanders on 5 April, Air Chief Marshal Harris complained that his Bomber Command had practically no more targets left.(1) On 7 April, the British Chief of Air Staff warned his opposite number in the U.S. that further destruction of German cities would magnify the problems of the occupying forces.(2) The R.A.F. discontinued area bombing. The Deputy Supreme Commander Allied Expeditionary Forces demanded on 10 April that the weight of the strategic air forces ought to be thrown on enemy transportation. If the Combined Strategic Targets Committee had other ideas, he wrote, it should be reminded that its function was to choose targets and not to settle policy.(3) These statements merely voiced the fairly general feeling that it was high time the heavy bombers were employed in support of the land forces as first priority. On 13 April, accordingly, the last formal directive

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- (1) The routine weekly conference at SHAFF., H.Q., then at Rheims. DSC/TS.100/9, Pt. V, Encl.26a. (A.H.B./IIS/112/1/100/9(E)).
 - (2) Letter Portal to Arnold, 6 Apl. 1945 (A.H.B./ID4/23(B)) and P.M.'s directive.
 - (3) Letter Tedder to Air Ministry and U.S.S.T.A.F. 10 April 1945. (A.H.B./IIS/112/1/100(I), Encl. ~~92a~~ 92a)

was issued⁽¹⁾ giving direct assistance to the ground campaign in Northern Europe as the main mission for the Strategic Air Forces. The 'Jockey' Committee had already sent out its last signal. On 16 April, General Spaatz sent a personal message to Generals Doolittle and Twining⁽²⁾ to the effect that as the advance of the ground forces had brought to a close the strategic air war, from then onward the Strategic Air Forces must operate with the Tactical Air Forces in close co-operation with the Armies.

By the time Mediterranean Allied Air Forces had succeeded in translating this into a theatre directive, dated 23 April,⁽³⁾ the defeat of the enemy was certain. Tactical Air Force had had the Italian campaign well in hand for many weeks past and the role of the heavy bombers had already been principally one of tactical support since 9 April. It was therefore in strict keeping with the needs and policy of the time that the Fifteenth Air Force prepared to put out the greatest effort of its career on 15 April in support of the land battle, followed by three successive days of all-out tactical attacks.

Intensification of tactical Operations by XV Air Force between the two Army Offensives.⁽⁴⁾

Between the opening operations of 9 and 10 April on the Eighth Army front and their commitments on the Fifth Army front, the Fifteenth Air Force day heavy bombers applied themselves with great vigour to the Brenner Pass line and other railway lines and centres in Northern Italy and to the neutralisation of the enemy's major ammunition depots. Not only was an important force of day bombers fully stretched,⁽⁵⁾ but the best part of the fighters normally employed as escorts operated in large numbers at extreme range over remote communication targets beyond the frontier, hitting hard at the links between the German forces in southeastern Germany, Austria and Yugoslavia and reducing their hopes of effective mutual support and the build-up of a national redoubt, and blocking the entrances into Italy in that region.

On 11 April, a total of 623 heavy day bombers was despatched. Bridges along the Brenner Pass Line occupied the major part of this force. Continuous with the long programme of attacks on this line and essential to both maintaining the status quo and to slowing down traffic further, forces of Liberators had attacked Trento marshalling yards on the night 8/9 April⁽⁶⁾ and Innsbruck marshalling yards at the Austrian terminus on the night 10/11 April. Now the day bombers raised the tempo of destruction by attacking on the same day bridges and marshalling yards at

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- (1) No. 4. 16 Apl. 1945. (A.H.B./ID4/377).
 (2) C.G. XV Air Force.
 (3) Operations Instruction No. 115. H.Q. M.A.A.F. 23 Apl. 1945. The purely formed role of M.A.A.F. should be noted.
 (4) M.A.A.F. Operational summaries Nos.476-479 inclusive. (O.R.B.)
 (5) Heavy day bombers despatched on 11, 12 and 14 April:-
 11 April 623
 12 April 615
 14 April 361
 (6) 53 aircraft despatched.

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Vipiteno, (1) Campodazzo, (2) Campo Di Trens, (3) Ora (4) and Bronzolo. (5) All the difficulties of such operations have already been enumerated and few were missing on these occasions. The smoke raised by early formations hindered late arrivals who were forced on to alternatives. Flak concentrations destroyed 5 bombers, inflicted major damage on 24 and minor damage on one hundred and fourteen. Other formations bombed Osoppo M/T repair shops (6) as an alternative, and Padua North (7) and Fonte Gardena (8) railway bridges, but results at both places could not be photographed owing to dense smoke.

On 12 April, a force of 615 bombers, escorted as on the previous day, was dispatched. The Padua railway bridge was again bombed, with apparent partial success (9) Bridges at Nervesa (10) (reached by only seventy per cent of the force owing to adverse weather) and Ponte Di Piave (11) on the Venetian belt were heavily attacked and both cut, thus hindering supplies to the Tenth Army. Two supply depots, two bridges in Austria and railway routes into Northeastern Italy were also attacked. Those results observed pointed to reasonably accurate bombing.

Strategic Air Force Attacks on Enemy Ammunition

12 April saw the beginning of a series of heavy attacks on enemy ammunition. The important targets chosen were the Malcontenta filling stations, close to the Eighth Army front: delay action bombs were used to hinder repair efforts at this time of major need. The weather thickened as the 56 Fortresses dispatched approached Malcontenta: only one-half the force reached it and they dropped 84 tons of 500 pound bombs, scoring, according to photographs, some well-placed hits on the target. Malcontenta plant produced and stored mostly 120 and 147 millimetre Italian naval projectiles, but there were stores of small arms ammunition, rocket-parachute flares and ballistite propellant there, too. A short run by road led to a canal, which according to a barge owner interrogated later by Desert Air Force, carried some 20 barges a day with ammunition for Trieste, Venice and Chioggia. Malcontenta, therefore, was conveniently placed to radiate supplies to several sectors.

After a day's respite, the attacks on ammunition, already inaugurated early in the month by fighter-bombers, were resumed by the Fifteenth Air Force. On 14 April, while the fighter-bombers were preparing the ground for the 10th Mountain Division's assault, Malcontenta (12) was bombed again, as well as the ammunition factories at Spilimbergo, (13) Avigliano (14) and Palmanova/Medeuzza. (15) The partial photographic cover ~~achieved showed some good concentrations. At each target,~~

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- (1) 129 aircraft.
 - (2) 46 aircraft.
 - (3) 44 aircraft.
 - (4) 8 aircraft.
 - (5) 70 aircraft.
 - (6) 56 aircraft.
 - (7) 54 aircraft.
 - (8) 53 aircraft.
 - (9) 95 aircraft.
 - (10) 77 aircraft.
 - (11) 116 aircraft.
 - (12) By 57 Liberators.
 - (13) By 62 Liberators.
 - (14) By 82 Fortresses.
 - (15) By 31 Liberators.

achieved showed some good concentrations. At each target, smoke and explosions were recorded and photographs taken then and when the areas were overrun point to some interesting and mixed results. A bomb damage survey of several enemy ammunition dumps in Northern Italy was made later by the Ordnance Section, Headquarters, Twelfth Air Force; and their report on the effectiveness of air attacks suggests why the heavy bombers' attacks, although of value, were not 100 per cent successful.

German Dumps as Targets

It was very much a question of ends and means. By early 1945, the main structural work comprising the dumps had been greatly strengthened. Study of a photograph of Spilimbergo, for example, reveals a geometrical pattern of four rows of eight and seven revetted buildings alternately, resembling ancient Peruvian fortifications. Each building was 30 feet wide and 50 feet long, with walls 12 feet high and 1 foot thick and a roof peak 14 feet high. This building was surrounded by a narrow walk, with a 6 to 8 feet high concrete abutment and an earth revetment 12½ feet high. The Germans had hit upon a very clever design, for a detonation outside the revetment wall, or on the revetment itself, did not destroy the contents of the building. (1) On these and previous occasions 250 and 300-lb. General Purposes bombs and 500-lb. R.D.X. (2) bombs were used. Similar results emerged when 100-lb. bombs had been used. The only effective strike was a direct hit: hence the conclusion of the survey that the correct tactical method against these targets was to fill the aircraft with 100-lb. bombs and aim them all at the target - in other words, more bombs, more direct hits. In every case of a direct hit, total destruction of the contents occurred.

The Series of Heavy Bomber Day Attacks in Support of the Fifth Army

For four days in succession, the day heavy bombers of the Fifteenth Air Force participated in the Fifth Army offensive, beginning on 15 April. Their operations were mainly directed against tactical targets south and southeast of Bologna, but an important weight of bombs was dropped on railway diversions, bridges and an ammunition factory in the North of Italy. In the meantime, most of the fighter-bombers usually escorting the heavy bombers were operating against northern communications. Some idea of the weight of the Fifteenth Air Force's effort over the period may be gathered from the fact that, in all, 4,829 aircraft - bombers and fighters - were despatched over the four days. Of this number 3,924 were effective sorties. (3) These aircraft

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- (1) This clearly proved by the photographs shown in the May 1945 issue of M.A.T.A.F. monthly air intelligence and operations bulletin. (A.H.B./IIJ11/18).
- (2) Research Development Experimental - a high explosive in short supply.
- (3) Effective sorties:-

15 April	1684
16 April	280
17 April	1123
18 April	837
	3924

dropped in the same period 5,582 short tons of bombs, all this for the loss of only 12 aircraft. (1)

The main interest of all this effort centres round the Bologna area; the details of the four days' attacks in that sector will be shortly given, together with a map showing the locations of the targets both sides of Highways 64 and 65, (the axes of the two main thrusts) and on Highway 9 (which had to be crossed), together with the bomb plots for the three major day efforts.

Fifteenth Air Force's Record Effort 15 April 1945. (2)

On 15 April 1945, the Fifteenth Air Force put out the greatest one-day effort of its career. One thousand, two hundred and thirty-three heavy day bombers effectively bombed the assigned target areas. Of this number, 830 bombed tactical targets in the Bologna area, 256 (3) bombed railway diversion bridges, and 56 bombed an ammunition factory and stores. (4) The combined force despatched represented 98.6 per cent of all the combat heavy bombers in Italy and General Twining was probably justified in claiming that 'such a near-perfect achievement of the theoretical maximum effort is certainly an accomplishment without parallel in the history of large scale heavy bomber operations'. (5)

Only a brief space will be given to the attacks on this day and those following on railway targets, for they resembled in all essentials hundreds of similar attacks carried out by the medium bombers almost daily over the preceding five months.

Preceded each by a weather reconnaissance aircraft, and with route, target and withdrawal fighter cover provided, the five wings (twenty-one groups) engaged in the Red Force operation against the Bologna area proceeded in close column of wings, with 5th Wing leading. (6) All the bombers flew out to sea before turning inland. The route out lay through Giglio, (7) Piombino (8) and Volterra (9) and thence to the target area, and was characterised by many navigational aid devices similar to those employed in Operation 'Buckland'. Both yellow and red fluorescent panels were laid out.

To ensure that no mechanical failures or gross errors caused bombs to drop with possible danger to Allied troops, the following six procedures were followed. Bomb bay doors were opened over the Tyrrhenian Sea before approaching the initial point and closed before passing over the Allied lines on withdrawal. Each bombardier, at about 2 minutes before bombs away,

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- (1) The Army Air Forces in World War II - Vol. III. U.S.A.F. 'Operation Wovser'. Report by H.Q. XV A.F. (A.H.B./IIJ11/47). M.A.A.F. O.R.Bs. and Intelligence Summaries M.A.T.A.F., O.R.Bs. and Intelligence Bulletins.
 - (2) 245 Fortresses of 5th Wing and 585 Liberators of 47th, 49th, 55th and 304th Wings.
 - (3) 86 Fortresses of 5th Wing and 41 Liberators of 49th Wing on Nervesa; 103 Liberators of 47th and 55th Wings on Casarsa; 17 Fortresses of 5th Wing and 7 Liberators on Ponte di Piave.
 - (4) 56 Liberators of 304th Wing on Ghedi.
 - (5) Foreword to 'Operation Wovser', H.Q. XV A.F. (A.H.B./IIJ11/47). General Spaatz confirmed this.
 - (6) Followed by 304th, 47th, 55th and 49th Wings in that order.
 - (7) 422N. 1054E.
 - (8) 4256N. 1032E.
 - (9) 4234N. 1052E. An old Etruscan hill city.

called on the interphone at 15 second intervals his estimate of the number of seconds remaining before bombs away. Pilots and navigators double-checked the bombardiers' estimate. Bombardiers pre-computed release lines to be checked by navigators. Navigators checked the bombsight extended vision knot. The lead bombardiers fired signal flares before the bomb release line. Toggeliers released no bombs before the flare was fired. Before starting the bomb run, the bombardier informed the pilot of the number of seconds after the crossing of the 'V' radio beam and flak line when bombs could be dropped without endangering friendly troops. The pilot double-checked. This system was doubtless largely instrumental in completing operations without casualties to ground troops. It is also just to point out that the targets bombed were not, on the first day, so close to the Allied troops as they were on 9 and 10 April on the Senio front. As the days passed, however, and IV and II Corps troops moved up their axes of advance, the risk was progressively greater. It was, notwithstanding, a fact encouraging to all concerned that no fatal incidents were recorded.

The three groups of 305th Fighter Wing provided five forces for target and withdrawal cover for Red Force, picking up the bomber stream between 1300 and 1418 hours.⁽¹⁾ After the whole visual mission was accomplished, the bombers flew back to base through Monfestino, Borgo, Gorgona and Monte Cristo. Three of the five bomber wings had no difficulty with weather at any time; the other two had trouble with their rendezvous owing to poor weather and cloud, but caught up to schedule in time to operate. No flak was encountered along the route. On the whole, most of the escort was recognised in the target area.

Aircrews' Reports on Results of Air Attacks 15 April

5th Wing reported excellent to superior results of their attack in a company front formation. 47th Wing recorded superior results by one half of their 16 separate attacks. The late arrival of one squadron did not handicap the others. Smoke and haze were found to be handicaps to ideal bombing. 304th Wing reported good results of a 'routine' flight. After running into cloud close to the target, 55th Wing flew into a clear sky and attacked. Good results were generally reported. Sound planning saved one unit from confusion when a failure of instruments in the leader's aircraft prevented bomb release on time. The other aircraft dropped on the deputy, who had a normal release and only the bombs of one aircraft fell outside of the assigned area. 49th Wing bombed through breaks in the clouds targets obscured in parts by smoke and haze, reporting observation of good results. Premature dropping by one box deputy caused droppings one mile short: otherwise the operation was a smooth one.

Intelligence Reports on Results of Air Attacks 15 April

The precise targets attacked on the Fifth Army front in the four days 15 to 18 April were important, not so much in

(1) 2 forces at 1300 hours, 1 at 1346 hours, 1 at 1402 hours and 1418 hours.

themselves, but as vital links in a great chain of installations on which the mobility and battle efficiency of the enemy divisions in the field depended. What mattered, therefore, was the cumulative effect of the attacks. The results of the whole series of four days attacks will therefore be chosen for consideration as the only valid and worth while ones. The sources for these assessments were aerial photographs, inspection of areas soon after capture and the trends in the replies of prisoners-of-war to interrogators.

Photographs taken on 15 April⁽¹⁾ showed 18 of 19 assigned areas excellently covered with dense concentrations of craters blanketing virtually all of the sectors. In most instances, the majority of buildings in those areas were destroyed, partially destroyed or heavily damaged, and roads were rendered unserviceable. Photographs taken after the attacks of 16 April were only partial, but they suggested good results and those taken on the same day as the operations on 17 and 18 April were as encouraging as those of 15 April, showing great material damage.⁽²⁾

In an assessment of damage caused in all the heavy bomber day attacks on tactical front line targets, produced by H.Q. Fifteenth Air Force, the overall results were described as excellent, especially with regard to the effects on gun positions, personnel, supply dumps, troop concentrations, maintenance installations and communications. Bomb craters ranging in size from 9 to 14 feet and in depth from 3 to 6 feet marked the entire area covered by high explosive bombs: communications in these sectors were cut or rendered useless. Many gun positions received direct hits and were obliterated. So were many enemy occupied buildings and strong points. Men lightly entrenched were buried or became casualties. Many roads were blocked. In sectors covered by 20lb. fragmentation bombs, all supplies, vehicles and lightly protected equipment were rendered useless; and although the heavier guns and motorised equipment sustained only slight damage, they were often abandoned. Enemy movements were thrown into confusion and wire communications disorganised.

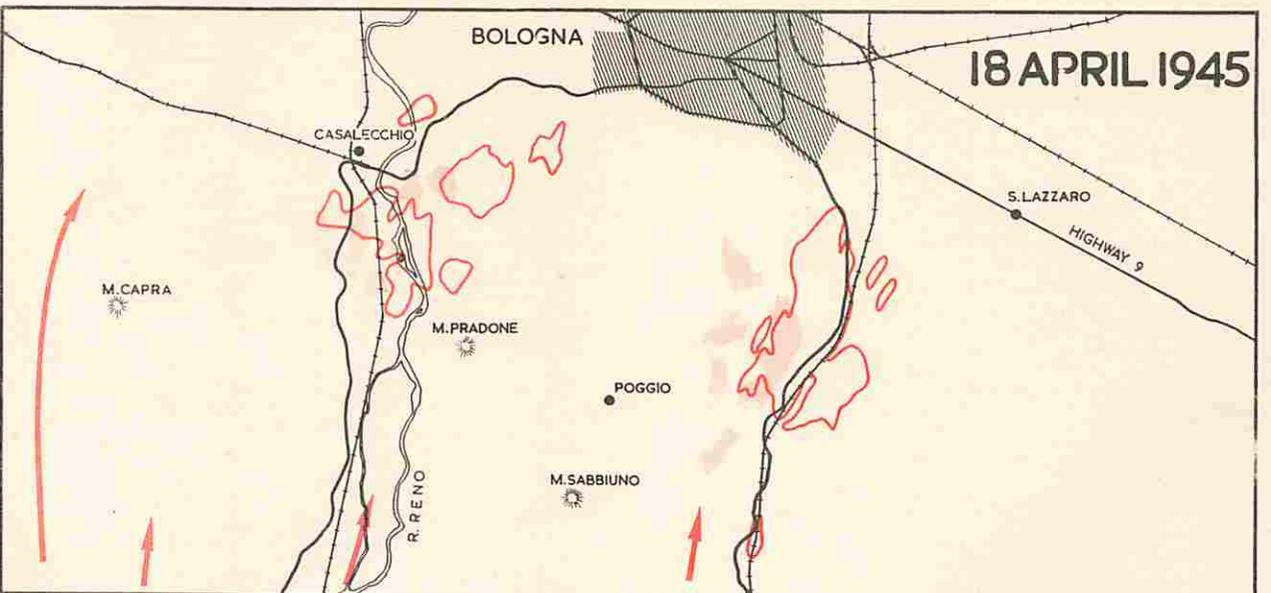
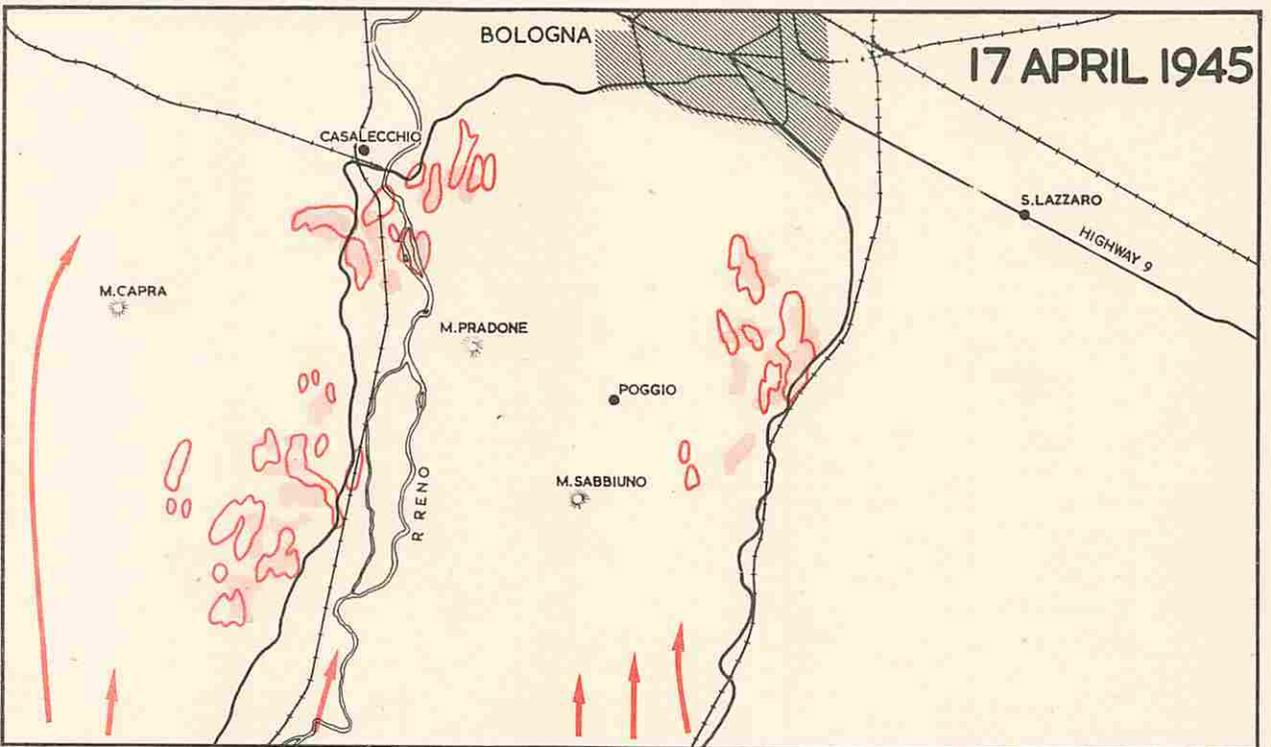
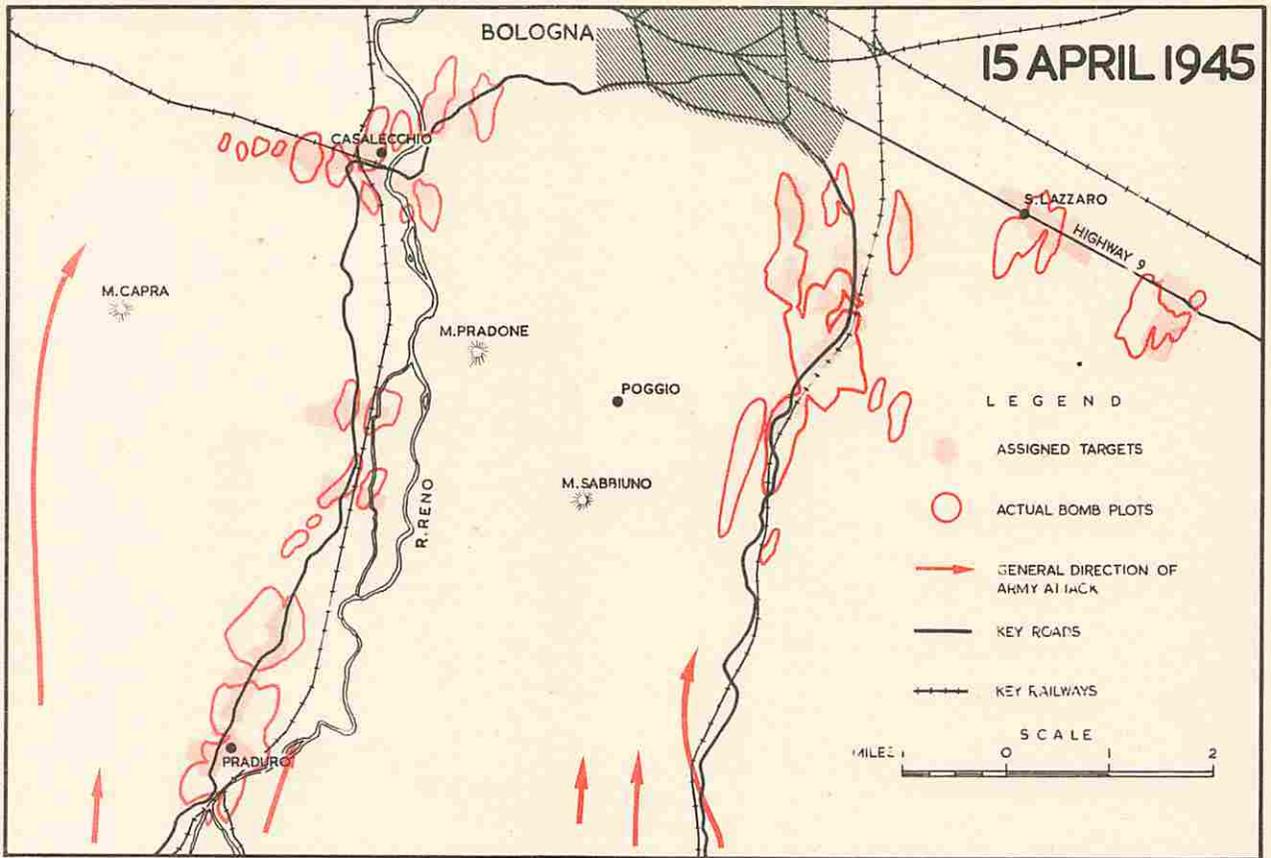
The tactical employment of so many heavy bombers for so long appears to have surprised the enemy and the absence of his own air forces was a source of deep discouragement. The attacks paralysed and disrupted operations over a critical period. There were many instances of enemy troops being captured in a demoralised condition without a struggle, but in spite of all this the Fourteenth Army still remained a unity, shaken as it was. In the meantime, events on the Eighth Army front were rapidly moving to a climax which was to enable both armies to deliver the final and mortal blows.

The Heavy Bomber Attacks of 16, 17 and 18 April

The operation of 16 April was intended to rival in weight that of the preceding day, but, owing to the fact that the assigned targets were obscured by cloud, 692 of the 790 bombers dispatched returned their bombs to base, leaving 98 Liberators⁽³⁾ to drop 216 tons of bombs between 1321 and 1400 hours visually.

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- (1) By 15th Photo. Recce. Squadron (Sorties 15 SG/1485 and 15 SG/1486 - P.I.R. No.15 DB/43).
 - (2) Bomb loads: 15, 16 and 17 April - 100, 250 and 300 lb. G.P. bombs. 18 April - 500 lb. R.D.X. and 20 lb.
 - (3) Of the 55th Wing and 484th Bombt. Group.

ALLIED HEAVY BOMBER ATTACKS ON FIFTH ARMY FRONT



The operation of 17 April had better luck with weather conditions. Seven hundred and fifty-one bombers(1) dropped 1,607 short tons of bombs between 1254 and 1459 hours visually, achieving great destruction at a vital period. On 18 April, 473 bombers(2) dropped 1,091 short tons of bombs. On 16 April, the west side of Highway 64 was attacked: on 17th and 18th the pattern ran along to the sides of Highway 64 and west of Highway 65. Highway 9 was not attacked by heavy bombers after 15 April. The Eighth Army had taken Imola and events were so shaping as to point to other, more vital sectors.

Medium Bomber Operations on Fifth Army Front 15 - 18 April

The medium bombers began their participation in the Fifth Army offensive on 15 April, (3) when the 57th Wing attacked the main enemy gun areas in the Praduro area, as well as positions in the Medicina area, northeast of Bologna, in the Eighth Army's sector.

On 16 April, (4) they bombed railway bridges at Bologna and Casalecchio and again, on 17 April, (5) road bridges and troop concentrations between Bologna and Praduro, which latter town had not yet yielded. On 18 April, (6) they bombed the enemy lines of retreat at Paderno, close to Bologna, midway between the two highways. On 19 April, they switched to the Eighth Army Front. By 20 April, the whole situation had changed. As will be seen, the enemy front broke and the 57th Wing joined in the break-through.

Fighter Bomber Support of Fifth Army 15 to 19 April

During the five difficult days of the approach to, and by-passing of, Bologna, XXII Tactical Air Command was fully stretched on the air plan to destroy the enemy's tactical mobility. Including tactical, artillery and photographic reconnaissance, they flew 1,713 sorties(7) in the battle area over 15 to 18 April. This first set-piece phase was notable for the predominance of planned blitzes or 'Timothies'.

Their assistance was especially welcome to Fifth Army on 16 April, when both the corps' thrusts were in progress over the rocky country leading to the Bologna area and the Strategic Air Force was foiled by bad weather. On this and every day, XXII Tactical Air Command devoted almost all its effort to close support. The various situations met and disposed of on request from ground units by waiting cabranks, the blitzes on specific guns, headquarters, buildings

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- (1) 248 Fortresses of 5th Wing; 503 Liberators of 47th, 49th, 55th and 304th Wings.
 - (2) 231 Fortresses of 5th Wing; 242 Liberators of 47th and 304th Wings.
 - (3) 121 effective sorties 15 April.
 - (4) 152 effective sorties, including attacks on Porto Maggiore.
 - (5) 183 effective sorties.
 - (6) 36 effective sorties.
 - (7) 15 April 507 sorties.
16 April 334 "
17 April 543 "
18 April 329 "
19 April 348 "

harbouring troops and equipment, tanks and armoured vehicles in the open, despatch riders, supply columns, all this resembled in its fluid complexity the pattern of the previous Spring offensive: but the increased use of rocket projectiles, fuel tank incendiary bombs, new explosives, new tactics, tighter controls supported by more modern communications, all gave to the pattern of the 1945 close support programme a unique aspect. Here the principle of concentration of forces was given full rein and instead of a dispersal of forces in 'penny packets' or a hit-and-run policy, the whole of the Tactical Air Force on both main fronts was brought to bear realistically on the core of the problem. The success which attended the wisdom of the air plan is surely eloquent testimony to its soundness.

On 17, 18 and 19 April, weather conditions were favourable for precision work and the Air Command continued its series of all-day 'blitzes' with high explosives, fuel tank incendiary bombs and rocket projectiles, working on a daily directive from the Command and guided by Air Liaison Officers, themselves fed by G-3 (Air) Fifth Army with up-to-date information on bomblines changes and the positions of the forward troops. The day of the Rover controls was to come later, in the phase of the pursuit.(1)

Heavy Night Air Attack on Casalecchio(2)

On the night 16/17 April, as IV Corps was pressing up west of Highway 64, No. 205 Royal Air Force Group carried out a timely attack on troop concentrations round Casalecchio, the suburb and road and railway key point three miles southwest of Bologna. The enemy was recoiling under the heavy day attacks of aircraft and artillery and the pressure of the infantry. The accurate bombing, reported A.F.H.Q. later, contributed greatly to the enemy's strain and confusion at a time when he would have profited by a respite. It interdicted the flow of reinforcements, destroyed the road bridge there and caused much other damage.

THE ASSAULT ON BASTIA AND THE BREACH OF THE ARGENTA GAP

Development of the Eighth Army Battle

On 12 April there was no sign of the enemy reserves being committed. The amphibious operations, although successful, had forced no decision. The Santerno had been crossed: Eighth Army was nearing the Sillaro. It was time to decide whether the Army should concentrate on a northerly or westerly thrust. General McCreery decided to increase the weight of both thrusts and ordered an advance towards Bastia, Argenta and the Gap, and a fresh movement west of Lake Comacchio to out-flank Argenta. The airborne operation 'Earlsdon' in the area was cancelled, as Intelligence reported that the enemy anticipated it. V Corps was to cross the floods and attack in the direction of Chiesa Del Bando and Argenta. To assist the Poles east of Bologna, XIII Corps was brought round into the plain.

On 14 April, while these moves acquired impetus, Eighth Army decided to thrust through the Argenta Gap to Ferrara and

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- (1) Notes on the combined army/air operations April/May 1945. D.M.T., A.F.H.Q. (A.H.B./ILJ1/90/246)
 - (2) No. 205 Wing O.R.Bs. 66 aircraft attacked.

thrust south of the Argenta Marshes to Medicina and Budrio westwards. It is against the background of these two main thrusts and the diversion east of Argenta - almost a new front behind the main enemy front in itself - that the air effort must be considered.

Distribution of Air Support in the two main Thrusts

The second waterborne thrust from Menate across the floods had interesting possibilities of outflanking the Argenta defences and perhaps piercing a way through Portomaggiore towards the Venetian Line; but both the terrain and the degree of enemy awareness in that area were still imponderables. Argenta and Highway 16 led to the plains of the Po Valley. The Germans knew its high importance, had studded the area with strong defences and prepared to reinforce it. Once through the Gap, the Allied armour would enjoy a spacious playground for the deployment of their superior strength. At the moment, they could claim to have won a jumping-off point, but in the two roads linking Bastia and Argenta there was no room to manoeuvre. The whole countryside was under water. The doorway to the main road lay at Bastia and its road bridge and junction. The road to the Po Plain lay through Argenta, focal point of all supply and troop traffic, direct or lateral. Desert Air Force appropriately decided that the task of reducing the defences of Bastia and Argenta lay with the tactical bombers, namely the medium bombers of No. 3 S.A.A.F. Wing, the 57th Bombardment Wing and its own night light bombers, aided when possible, by the R.A.F. Liberators of No. 205 Group. It was a problem calling for weight and concentration. The air and ground forces had to literally burst through the Argenta Gap. Any relaxation would have been fatal, for the Germans could still counter-attack dangerously and their guns were highly concentrated at well chosen points.

The bulk of the large fighter-bomber force was allotted the task of supporting the central and westward thrusts, notably the efforts of the New Zealand Division. The static war was over. There was movement, slow but steady, precisely the context for the exercise of mobile tactical control, of the cabrank and the armed reconnaissance on the maximum possible scale. Already the chance of the Rover controls had come and been seized and fresh units were coming into play.

Cancellation of the Airborne Operation 'Earlsdon', due 13 April

The success of 56th Division's landing at Menate encouraged them in the hope that a second waterborne landing higher up the lakeside might conceivably do more, with suitable aid from an airborne force, to crack the left flank of the Argenta defence, and perhaps capture Argenta. This effort, by opening up what was virtually a new front, ought to aid the thrust northwards to Bastia, Argenta and the Gap. The risks were far greater on this occasion. The enemy could hardly allow himself to be surprised a second time from the direction of the Lake and he might reinforce the already strongly held area. In the event he was prepared and he did reinforce.

The original purpose of the second waterborne assault was to reach the Chiesa Del Bando area over the floods and then drive on Argenta from the northeast. The route was

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difficult, but exactly how difficult was unknown, in spite of sundry scraps of information smuggled or signalled through by the hard-pressed partisans. It was therefore decided that the 2nd Independent Parachute Brigade, on 13 April, in the latest version of Operation Earlsdon⁽¹⁾, should make a descent a little to the northeast of Argenta in the vicinity of a canal ahead of the 'Fantail' force;⁽²⁾ it was to protect the landing area and the flank of the advance inland to Argenta from interference by the enemy to the north. If weather prevented parachute operations, the 2nd Commando Brigade was to fulfil the parachutists' role, crossing the floods in craft.

On 12 April, Allied Intelligence gave an unfavourable report. New anti-aircraft guns had been moved into the area of the Canaletta di Bando and the great Fossa Marina dyke: moreover, unusually active troop movement south from Portomaggiore had been reported, probably troops of the 29th Panzer Grenadier Division reserves. Operation 'Earlsdon' was cancelled.

The Failure of the waterborne Attack 13 and 14 April

A 'Fantail' force was detailed to break open the Argenta Gap. The landings were strongly opposed and greatly disorganised and some troops were isolated. The enemy had reinforced the area, backed by the Fossa Di Marina, with a fresh regiment,⁽³⁾ renowned for its skill and experience in counter-attack.

Progress on 14 April was slow, and faced by heavy fire. A short advance was made towards the formidable Fossa di Marina, Filo was taken and, by last light, two brigades were near the broken bridges at Bastia (attacked by air). The next move was to cross the Fossa Marina, secure Chiesa del Bando, and force a bridgehead over the Fossa Benvignante, three miles northeast of Argenta.

Air Support for the waterborne Landing near Bando

There was no intimate close support either planned or executed for the flank landings, but the troops concerned profited by the general air programme in progress supporting the whole of 56th Division's series of thrusts on the Bastia - Argenta complex. Further south, Mustangs and Kittyhawks were bombing buildings and troop concentrations round Filo and Thunderbolts cut the tracks of the approaches to Bastia bridge in six places. There is only one mention in records of anything approaching close support, and that was when a number⁽⁴⁾ of Mustangs and Kittyhawks bombed the area south of Bando, on 13 April.

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- (1) D.A.F. Operation Directive No. 25 to Officer Commanding No. 1 M.O.R.U.
 - (2) On the 'Mary' dropping zone.
 - (3) The 15th Panzer Grenadier Regiment of the 29th Panzer Grenadier Division.
 - (4) Unspecified. Most air records of the period made no attempt to link air operations with the pattern of the ground progress, although much time and space were given to grouped statistics and bomb loads dropped on general areas, given under category headings.

Preparatory Night Air Attacks on Bastia and Argenta by
No. 205 R.A.F. Group

Bastia was the key to the road to Argenta. Argenta and Portomaggiore were key points controlling the enemy escape and supply routes through the Gap. Only the heavier aircraft could neutralise them quickly. The heavy bombers of No. 205 Group therefore devoted four nights in close succession to the task. On the night 11/12 April, 76 Liberators dropped 224 tons of 500-lb. bombs so effectively⁽¹⁾ on the area round Bastia where Highway 16 crossed the Reno River that the enemy's communications at that focal point were disrupted and he was forced on to another retreat route over the Reno River further north. One hundred and eight light bombers of Desert Air Force were out in the sector that night and attacked Bastia town.

On the night 12/13 April, Argenta, with its important troop concentrations and facilities, was bombed by 42 Liberators, with great destruction resulting⁽²⁾ in the town and major blockage and cratering of essential roads. On the nights 13/14 and 17/18 April, the night heavy bombers flew 108⁽³⁾ effective sorties against troop concentrations, defences and communications at Portomaggiore. Crew reports on both attacks gave evidence of good results. Later it was confirmed that the two attacks covered the roads with rubble and craters and destroyed bridges and railway lines. The Army made pointed reference on 12 April⁽⁴⁾ to the noticeable smallness of enemy shelling over the few previous nights and attributed this to the work of the night bombers.

Progress by Eighth Army on a broad Front, 14 April

While the precarious situation on the right flank was being improved and a move made towards the strong defences of the Fossa Marina, progress on the extreme left was more solid. The New Zealanders had profited by the enemy's decision not to man the Sillaro, to cross it and advance as far as the Reno not far from Bastia. Here they were forced back after crossing. Two brigades were closing in on Bastia.

The next evening, orders were issued for the first phase of the breaching of the Argenta Gap. One force was to clear the Fossa Marina and the Fossa Benvignante - and advance northwest. Another was to pass through Argenta with a view to advancing from the Gap northwest. An attempt was to be made to outflank Argenta from the west.

Opening of the Battle for the Argenta Gap, 15 April⁽⁵⁾

The advance of the 78th Division northwards had caught the Tenth Army in the rear, but the remnants of it fought gamely defending Bastia. The attack on the right⁽⁶⁾ began on 15 April across the flooded area between the two gaps east of Argenta. It was brought to a standstill on the Scolo Marchetto. The attack on the night 15/16 April, ran into

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- (1) According to photographs and reconnaissance.
 - (2) According to army sources.
 - (3) 69 on 13/14 April and 39 on 17/18 April 1945.
 - (4) D.A.F., O.R.Bs.
 - (5) Refer to Figure 30 for details of the thrusts.
 - (6) By 56th Division.

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very heavy opposition, abandoned its boats and resumed by land. Bastia fell on 16 April. The Germans had lost the use of the bridge, which the air attacks had destroyed. Allied troops passed through it and headed for Argenta. (1)

The twenty-third Plan for airborne Operations

It still seemed that the enemy would make a firm stand on his well-prepared defences. Operation 'Cuckoo', the twenty-third in the list of plans for the employment of the 2nd Independent Parachute Brigade, was designed to secure an area northwest of Comacchio so as to isolate the area northwest of the lake, prevent the enemy from flooding the Bonifica della Trebba(2) and allow Allied troops to advance along the north shores of the Lake. Simultaneously with Operation 'Cuckoo', strong forces from the Spit, were to capture Porto Garibaldi and link up with the parachute brigade.

16 April, when the plan was laid before the Army Commander, saw the fall of Bastia and a general advance, aided by especially effective operations by Desert Air Force. Confident that current tactics would achieve success, he turned down the joint plan. He called for investigation into the possibility of effecting a landing somewhere in the Gulf of Venice, but the problem was beyond the naval resources available.

Air Support for the Guards at the Fossa Marina, 16 April

The Guards near the Fossa Marina played an important part in attracting for four days some of the best enemy troops in that sensitive sector, so weakening his forces south of Argenta. Official Army historians recorded soon after the event that nearly 40 formations of fighter-bombers attacked the Fossa Marina defences to very good effect: when the attack was resumed that night, a bridgehead was quickly established by filtering them through the buildings, now ruined by bombing and shelling astride the canal. Desert Air Force recorded giving some 'secondary support' to the 56th Division. It seems probable that the cabranks of No. 324 Wing gave most or all of the support.

Crossing of the Fossa Marina

The attack on Argenta and the Gap began to gather impetus on 17 April. It had to be completed quickly or not at all, for the chronic shortage of ammunition was making itself felt. In this task the Air Forces had an important role. As so often, the critical move was made by a small force. While on the left forces pressed up through Fortonovo in the hope of outflanking Argenta, the forces on the extreme right delivered blow after blow against the Fossa Marina.

This Fossa Marina canal ran across the whole area, skirting Argenta town to the south and east and resisting any attempt to pass through the town. Troops had reached its south bank on the night of 16/17 April. In face of the powerful defences, a small force was to pass by the eastern edge of Argenta and another was to patrol into Argenta. A third force was to

(1) A.H.B./IIJ11/58/25(A)
(2) Reclaimed land.

RESUPPLY OF NORTHERN ITALY

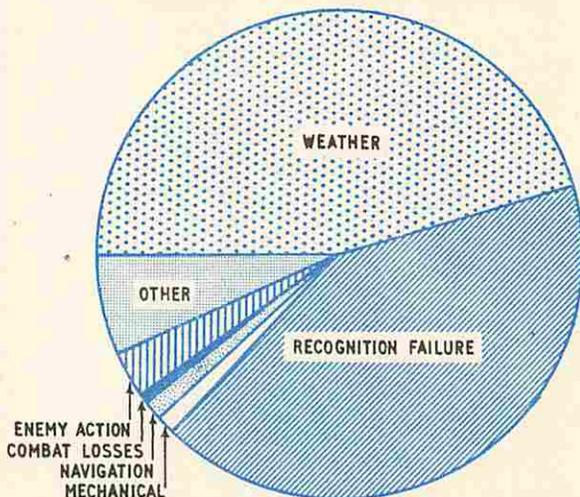
51ST TROOP CARRIER WING
22 NOVEMBER 1944 - 8 MAY 1945

1,746 SORTIES FLOWN

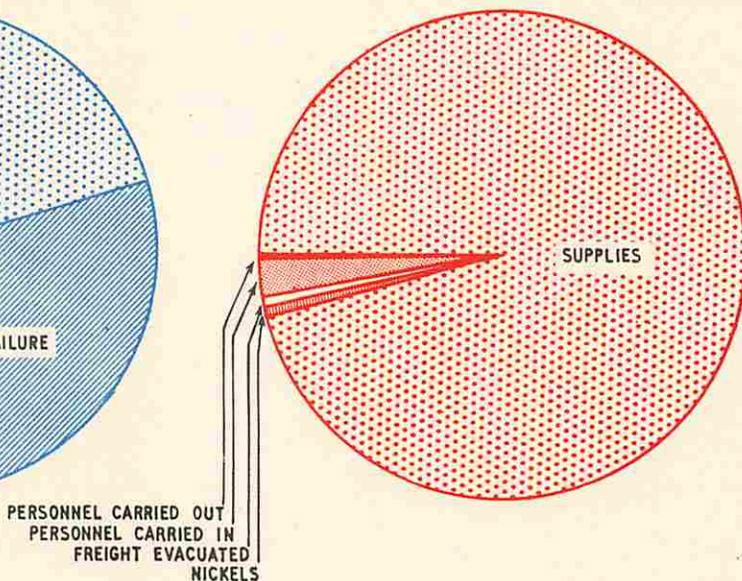


UNSUCCESSFUL	SUCCESSFUL	TOTAL
494	1,252	1,746

ANALYSIS OF UNSUCCESSFUL SORTIES



ANALYSIS OF SUCCESSFUL RESULTS IN POUNDS



TABULATION

	NUMBER	% OF TOTAL
WEATHER	224	46.18
RECOGNITION FAILURE	205	41.04
MECHANICAL	5	1.01
NAVIGATION	5	1.01
COMBAT LOSSES	2	.44
ENEMY ACTION	17	3.04
OTHER	36	7.28
TOTAL	494	100.00%

TABULATION

	POUNDS	% OF TOTAL
NICKELS	1,000	.23
SUPPLIES	4,769,102	96.67
FREIGHT EVACUATED	33,940	.67
*PERSONNEL CARRIED IN	115,000	2.35
*PERSONNEL CARRIED OUT	4,200	.08
TOTAL	4,933,242	100.00%

* WEIGHT COMPUTED AT AN AVERAGE OF 200 POUNDS PER PERSON

secure a bridgehead and advance to cut it off from the north. There were to be air attacks on and around Argenta and strong artillery support.

The crossing attempted late on the 16th evoked the most bitter opposition. By midnight a very small, tenuous bridgehead was established. This tiny bridgehead became the tip of a powerful crowbar which was eventually to tear open the Gap. Counter-attacks were thrown back.

During daylight on 17 April, the crack was prised open. Argenta was cleared. A strong counter-attack was beaten off. Troops passed through the bridgehead and fanned out.

Air Support for the Outflanking of Argenta on the West

On the left, the Commando Brigade, creeping along the Reno west of Argenta, was now faced with the enemy defences based in houses commanding the floodbanks. The centre had drawn off a great deal of interest, so a diversion here would, if it succeeded, make a hole in the enemy's right flank. To this point, the situation had precluded any major intervention by the air forces. They had devoted some attention, with great effect as observers later testified, to the towns and bridges at Bastia, Argenta and Portomaggiore. The Commando Brigade now called for air preliminaries.

At 0930 hours, fighter-bombers⁽¹⁾ attacked the positions 'outstandingly well', according to the British Historical Section of Central Mediterranean Forces. Then the Commando attacked along the floodbanks. By 1030 hours the area was cleared. In the next five hours, the enemy delivered four counter-charges with heavy artillery support, lost heavily and achieved little.

The light and medium bombers supported V Corps' advance every day, not in close tactical support, but with the intention of neutralising the focal points north of Argenta containing the heaviest troop concentrations. These operations at longer range played very intimately on the efforts of the two British divisions making for the Gap and did something to offset the heavy concentration of air effort on the New Zealand and Polish effort westwards to Budrio.

No. 3 S.A.A.F. Wing was closely linked with the breach of the Argenta Gap. From 14 to 18 April inclusive, the entire wing of four squadrons operated daily, sometimes twice daily, against troop concentrations northwest of Argenta and in the vicinity of Portomaggiore. The results were visually promising. The proof of their success would lie in the events of the following days. To their effort must be added the contribution of the 57th U.S. Bombardment Wing, who had suspended their attacks on the Brenner and northeastern railway routes to aid the attempted breakthrough.

(1) Exactly how many is uncertain.

AIR PARTICIPATION IN THE BREAKTHROUGH TO THE PO RIVER

The Breach of the Argenta Gap and the general position 17 April

By early afternoon on 18 April, the Army stood beyond the last of the enemy's prepared defences. The critical moment for the Germans was on 17 April, when the Fossa Marina was lost. Outflanked, the Tenth Army Commander ordered withdrawal. I Parachute Corps escaped to the Po - Idice (Genghis Khan) line in good order. The main front was still intact. What brought about the next crisis was the gathering momentum of the Fifth Army thrusts and a threatened encircling movement by them and Eighth Army, both strongly supported by the Tactical Air Force.

Air Support for the New Zealanders' Advance to Medicina(1)

Desert Air Force diverted a high proportion of its fighter bombers to close support of the New Zealand Division throughout its advance across the Senio, the Santerno and Sillaro Rivers. Whenever the battle was held up and providing that targets were carefully selected by the forward brigade, it was found that a great deal of material damage could be inflicted on the enemy's strongpoints and defences prior to the resumption of the attack. The mass result of the seven days fighting on the ground and in the air was an advance of 16 miles across three rivers, the crippling of two enemy divisions and the destruction of a considerable portion of their armour.

Summary of Air Operations in Support of XIII Corps(2)

On 15 April, 210 fighter-bombers and 84 medium bomber sorties were flown in direct support of the 2nd New Zealand Division, including three 'Timothy' attacks and three fuel tank incendiary bomb missions on enemy positions across the Sillaro. The medium bombers attacked reserve areas near Medicina. On 16 April, Rover 'Jack' controlled 76 sorties which gave valued support to the New Zealanders exploiting from their Sillaro bridgehead. Another 72 sorties were flown against enemy occupied buildings north of Medicina. Road movement north and northwest from Medicina was attacked and 13 tanks(3) claimed as destroyed or damaged and 41 vehicles as destroyed.

On 17 and 18 April, British XIII Corps enjoyed the major part of Desert Air Force's close support effort. Three hundred and seven sorties on 17th and 251 on 18 April were recorded. Most of the targets came from 2nd New Zealand Division and were mainly enemy occupied buildings, with two bridges. The bridges were cut, the buildings damaged. On the night 18/19 April the New Zealanders crossed the Gaiano River and advanced to the Idice River. On 21 April, Comacchio and Porto Garibaldi were taken by partisans. The crossings of the Gaiano and Idice were very closely supported.(4) Pre-arranged

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- (1) Operations of the New Zealand Division 9 - 16 April 1945 D.M.T., A.F.H.Q. (A.H.B./IIJ1/184/213).
 - (2) No. 1 M.O.R.U., D.A.F., O.R.Bs. XIII Corps operations (A.H.B./IIJ11/58/26).
 - (3) The entire tank strength of Army Group C was hardly more than 200.
 - (4) 19 April - 351 fighter bombers 47 medium bombers
20 April - 218 fighter bombers 48 medium bombers
21 April - 88 fighter bombers.

missions came to an end with the growing fluidity of the battle, but in a special softening programme on 26 April, 80 request sorties were flown from cabranks.

Air Operation 'Divorce' against the Reno River Bridges

Tactical Air Force decided that the battle had reached a degree of fluidity high enough to justify the launching of Operation 'Divorce'.⁽¹⁾ This had originally been an ambitious project to destroy all the road bridges across the Reno and Samoggia Rivers still functioning on both Fronts. It would, it was reasoned, do much to hinder an enemy retreating towards the Po. Unfortunately for all concerned, Fifth Army H.Q. could not agree to that part of the air attack affecting its own front line. It was too near the bomblines. It was, therefore, in an emasculated form that the operation was carried out. It was decided that Desert Air Force should attack the bridges and crossings over the Reno from Cento eastwards, using fighter-bombers by day and light bombers by night. Desert Air Force had already stated that single-handed they were incapable of putting out all the 28 bridges capable of carrying vehicles over the river and, therefore, made no promises regarding the abbreviated version. The main effort was concentrated into two nights and days from 18/19 April to the end of 20 April.

On the two nights in question, Bostons and Baltimores bombed crossings over the Reno, as well as the Po and Adige. There were 109 aircraft engaged on the night of 19/20 April. Medium-sized forces⁽²⁾ of fighter-bombers included the Reno crossings in the two full days' activity of 19 and 20 April. Photographs and later survey showed that all six main bridges from Cento eastwards had either been destroyed or put out of action for a time sufficient to impose serious delays. It is a fact, however, that the Germans effected a fairly orderly retreat across the Reno and were still an intact force as they moved towards the Po.

The Advance on Budrio, 13 to 17 April

By the morning of 14 April, when Fifth Army launched its attack, the westerly thrust of Eighth Army had covered half the distance between the Senio River and Budrio. XIII Corps assumed control of the northern part of this thrust on 14 April. On the day of 17 April, fighter-bombers supported the advance. By 18 April, the River Gaiano had been reached, and was being bombed by Desert Air Force. Castel San Pietro and Medicina had been captured. The end of the battles south of the Po was in sight, but operations continued meanwhile with heightened fury. The Germans held up all movement beyond the Gaiano.

After a heavy artillery barrage on 18 April, Desert Air Force executed a 'Timothy', with three formations of fighter bombers - each of 12 aircraft - at intervals of 15 minutes. The Poles followed in and joined battle with the elite of the German army in a struggle which lasted until the night. The delay effected by the German parachutists enabled the two armies to escape the pincer thrust developing.

(1) M.A.T.A.F. Operation Instruction No. 18, 3 April 1945. (A.H.B./ILJ1/122/83/(A), Encl. 9b).

(2) The actual number engaged is not given in O.R.Bs.

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The critical Enemy Position on 20 April

By the morning of 19 April, Fifth Army had cut Highway 9 west of Bologna. Having cleared all the high ground before Bologna, it prepared for the attack upon it. The next move was to drive across the Po Valley, first between the Rivers Reno and Panaro, then across the Panaro up to the Po. On 21 April, Bologna was captured.

On the evening of 20 April, von Vietinghoff, faced with a breakthrough at Argenta, the collapse round Bologna, the danger of encirclement in the centre and his power of effective tactical control and defence being slowly crushed by our air offensive ordered, too late, a general withdrawal from the Bologna area. He signalled to Hitler that a static defence would bring disaster. He had no reserves left to cover an orderly retreat if he delayed. There was a chance left if he carried out his policy of mobile strategy.⁽¹⁾ His one object now was to extricate such of his forces as remained intact. He evacuated the line of the Idice crossed the Reno and, in the eastern sector, began to cross the Po. But he could no longer, as he soon found, dictate the pace of the battle.

The Retreat of Army Group C to the Po

Ferrara was now threatened. A breakthrough here would endanger both armies. The centre was weak and disorganised and Tenth and Fourteenth Armies were virtually split. Wherever the Germans turned, they found themselves in danger of outflanking by mobile forces supported by Rover-controlled aircraft. By the night 22/23 April the Allies had reached Bondeno, and a bitter battle ensued to close the escape route.

Meanwhile German forces and equipment were accumulating at the crossings, now under day and night attack by the Air Forces and Allied artillery. Struggling to withdraw his battered divisions, the German Commander-in-Chief decided to hold a bridgehead forward of Ferrara so as to hold open the Polesella - Corbola crossings. Other crossings were abandoned as suicidal transit. It was vital that the Armies should cross and reassemble in fighting order, so that they could reach and man the Adige Defence Line, as well as save the forces in northwest Italy.

The Air Forces's Plans for Attack on the Po River Crossings⁽²⁾

The time had now come to test the worth of the intelligence compiled by the Air Forces on the role of the Po crossings in the situation developing. For eight months, activities along the river had been studied with the help of air photographs, day and night reconnaissance reports and other sources. The leading question was - what crossings would the enemy now use? The conclusions reached were that the area of major crossings would be from Borgoforte to Corbola, in particular in the Borgoforte-Ostiglia, the Ficarolo-Occhiobello and the Polesella-Crespino area. Priority lists of night pontoon bridges, heavy and M/T ferries were established. A further

(1) Signal C.-in-C. S.W. to Hitler. G-3 No. 625/45
20 April 1945. (A.H.B./IIJ11/58/29, App.F).

(2) M.A.T.A.F. monthly air intelligence and operations
bulletin Apl. 1945.: M.A.T.A.F. and D.A.F. O.R.Bs.
(A.H.B./IIJ11/18).

check by night operating aircraft was applied over the months preceding the enemy withdrawal. This check threw up the fact that the only active night bridge was Polesella. The four to six nightly missions also proved that pontoons had been moved to San Benedetto and that Guarda Veneta showed ferry activity and had pontoons available. Ficarolo seemed to be idle.

Air Operations against the Po Crossings, 11 to 20 April

From 11 April onwards, regular visits were paid by night intruders who, often guided by freshly taken night photographs, bombed the sites methodically in a strength of about one hundred. Sometimes up to 150 aircraft were involved.⁽¹⁾ Movement from the battle area to the Po was covered by continuous daily armed reconnaissance. From 17 April onwards, an increasing amount of traffic south of the river was observed, and this, like the crossings and ferries, was attacked whenever seen, thus imposing a continuous check on movement, piling up blocks, gradually wearing down installations both sides of the river and reducing the number of craft available for evacuation. For eleven days and nights before the Army approached close up to the Po, the Air Forces had created a highly favourable situation there, of which advantage might be taken.

Allied air intelligence, reporting on the status of communications in the Po valley during the period ending 17 April,⁽²⁾ stated that all the permanent road bridges from Piacenza to the east coast, which had been neutralised in Operation Mallory Major, were still impassable, although Piacenza bridge itself was probably functioning. But, they said, summarising hundreds of air reports, the ferries and pontoons were busy. Through traffic was impossible on the lines north of the battle area and an air attack on 15 April had cut all through lines at Portomaggiore. On the night of 19th/20th, light night intruder bombers again concentrated on the Po crossings, but very little abnormal movement was observed. On 20 April, Allied armour began to move into the Po plain and the breakthrough gathered impetus.

On the night of 20/21 April, a photograph was taken which showed Polesella night bridge assembled; Ficarolo (which had been non-operative for months) was up and a convoy of 115 vehicles was approaching it from the south. Guarda Veneta was at last assembled. The whole area from Ostiglia to Crespino was very active. The picture thus revealed proved that the time was ripe for a heightened tempo of air attacks on the river crossings on the Po, the Adige and the Brenta. The enemy withdrawal across the river had begun. Before proceeding to the narrative of those decisive attacks, it is necessary to fill in briefly the details of fighter-bomber support and airborne operations in the phase of the breakthrough.

Airborne Operation 'Herring', 20/21 April

The time was now adjudged ripe by General McCreery⁽³⁾ for the execution of the planned airborne drop of Italians on

(1) D.A.F., O.R.Bs. Refer also to the note on 'Midnight Rovers' below.
(2) H.Q., M.A.A.F./S.6697/Int. 19 Apl. 1945.
(3) Signal COS.131. Main 8th Army to 15th Army Group.
(A.H.B./IIJ11/58/24(B), App.E-10).

the Eighth Army front. The latest version of Operation 'Earlston' was postponed in its favour. The time chosen was the night of 20/21 April. The Italian paratroopers were to act in a guerilla role against traffic and all other forms of enemy communications in the area northwest of Argenta and south of the Po.

For three and one-half hours that night, Tactical Air Force restricted all offensive air operations in the general target area other than fighter interception of enemy aircraft. Fifteen Dakotas⁽¹⁾ left Rosignano airfield with their load of 221 Italian volunteers. Another formation left with a load of 120 dummy paratroops, which they dropped in a different area as a diversion. After crossing the mountains, the main force dropped to 1,000 feet to enable them to distinguish the terrain. All pilots except one dropped their loads on their assigned targets and all returned safely, with a few flak hits. The operation was considered a great success.⁽²⁾ A considerable amount of confusion was caused and casualties inflicted on the enemy by Operation 'Herring', for the loss of 45 paratroops lost and missing, admittedly a high proportion of the force.

Fighter Bomber Support of Fifth Army in the Breakthrough and Pursuit (3)

As soon as the battle became fluid, the usual Army intentions passed to Air Liaison Officers for the information of air units ceased and it became progressively more difficult for the latter to realise the general ground picture in detail. Almost the entire fighter-bomber effort was devoted to cabrank and armed reconnaissance missions. The 'Horsefly' system of Cub aircraft control was employed with great success, due largely to the positive means of identification of Allied forward troops afforded by the widespread use of red fluorescent panels.⁽⁴⁾ The enemy apparently had no red panels and hence could not use them for deception. Information on the positions of forward troops was reported back for Army use, thus giving them an inestimable advantage over the enemy. Targets found, if it was not feasible to attack them, were flashed back. The Rover Cub,⁽⁵⁾ which was airborne, identified them and either briefed a cabrank to attack them or diverted armed reconnaissance aircraft on to them.

The valuable Function of the Rover Controls

The Rovers were now, in fact, the only possible means of putting in fighter-bomber attacks where and when they were required by forward troops. Cub aircraft were kept in the air during daylight hours, three Cubs in each Rover. Fighter-bomber missions were laid on for approximately half-hourly intervals. The aircraft operated, refuelled and were at once airborne. From the Radio Jeeps attached to forward formations, from tactical reconnaissance sorties and visual observation, more targets were always available than cabrank missions. The strongest organised resistance developed on II Corps' front, so Rover 'Joe' took the majority of the cabranks.⁽⁶⁾ On IV Corps'

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- (1) Of the 64th Troop Carrier Group of 51st Wing.
 - (2) M.A.T.A.F. Plans O.R.Bs April 1945.
 - (3) M.A.T.A.F., D.A.F., 324th Wing O.R.Bs.
 - (4) Fifth Army held and used most of the stocks of red panels.
 - (5) L-5 aircraft.
 - (6) That is, covered the work of Rover 'Pete' as well as its own.

front, ground units broke away and advanced against less opposition, so that few suitable targets were encountered and difficulties arose in keeping track of forward troops.(1)

The 'Speedball' Rover Stations, similar in principle to Eighth Army Contact Cars, were deployed during the pursuit to leading divisions. They often travelled so far with them that they lost radio touch. The battle became increasingly fluid as the days passed and the country was flat. They were prevented for these reasons from operating successfully and the 'Horsefly' system became the only practicable one.

Up to the time of the German withdrawal - 20 April - the majority of fighter-bomber targets were gun positions, strong-points, troop areas and other defence features. Once the enemy was 'on the road', the Air Forces proceeded to impede his retreat and reduce his potential by attacking bridges, vehicles and armour. Figures may be quoted to illustrate this change in air force function. During the period 17 to 20 April inclusive, which covered the breach of the Argenta Gap and the cutting of Highway 9, only 325 motor vehicles were claimed as damaged and destroyed; the figures for occupied buildings were one thousand three hundred and fifty-two. In the next four days - the initial phase of the pursuit - claims were for 3,733 motor vehicles and only 414 occupied buildings destroyed or damaged.

The 'Midnight Rover' in the Offensive

On 22 March, Tactical Air Force ordered the inauguration of the 'Midnight Rover' project for night photography of a new and flexible order.(2) This was a system of operation by photographic reconnaissance aircraft with radar aids to pinpoint navigation on nights which prohibited accurate visual navigation. The intention was to develop and interpret photographs immediately on return of the aircraft to base and to pass any important targets revealed, through sector control, to night intruders in the target area. An enemy withdrawal could thus be harassed by night. The necessary machinery was set up between 3rd Photographic Group and XXII Tactical Air Command and laboratories established at Pisa.

A report issued in April by Tactical Air Force(3) stated that the system proved extremely successful in denying the enemy full use of the Po River crossings during the breakthrough and pursuit phases. The photographs were, at their best, extremely revealing and clearly showed movements of traffic and the state of bridges and gun sites. A.F.H.Q., reporting on the night intruder effort, stated that it undoubtedly played a most important part in harassing the enemy's gun areas, road movements, dumps and occupied areas during the only periods available for free movement. In the pursuit phase, it contributed largely to the confusion on the enemy's lines of retreat and at river crossings, preventing movement in numbers and with speed.

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- (1) F.C.Ps (Rovers) - in Notes on the combined army/air operations - D.M.T., A.F.H.Q. (A.H.B./IIJ1/90/246).
 - (2) M.A.T.A.F. Operations memorandum No. 1. 22 Mar. 1945. (A.H.B./IIJ1/188/6, Encl. 4a).
 - (3) M.A.T.A.F. monthly air intelligence and operations bulletin Apl. 1945. (A.H.B./IIJ11/18).

SECRET

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THE DECISIVE AIR OPERATIONS AGAINST THE PO RIVER CROSSINGS

The Situation on 21 and 22 April

By 21 April, orders had gone out to both the Fifth and Eighth Armies to cross the River Po; the Germans had decided to withdraw across it and reform on their defence lines north of it. The Allied advance was at many points proceeding faster than the enemy's rate of withdrawal. The toll of enemy prisoners was mounting fast. The Air Forces, as already seen, had done much over the previous week to precipitate and hinder that withdrawal. A heavy toll had already been taken in lives, guns, armour and equipment and the strain on the enemy's tactical control was being felt as it had been in the offensive of the previous Spring.

Both Allied and both German armies had planned specific crossings in their sectors, but the pressure of events brought an unpredicted fusion of fronts and interests on both sides. On 21 April, the division of responsibility between XXII Tactical Air Command and Desert Air Force, and between the Strategic and Tactical Air Forces was fairly clear-cut, although they were all now in essence devoted to a tactical policy. Likewise the aims of the Fifth and Eighth Armies were equally definite and distinct.

On 22 April, several events occurred which changed the face of the situation. The two armies met at Bondeno, cutting off part of the enemy forces. Ferrara was captured and the Air Forces stepped up still further the heavy effort initiated on the previous day. Allied artillery assisted both the Air Forces and Armies by shelling the river installations.

Pattern of Air Operations against the Po Crossings, 21 to 24 April

Eighth Army were closing on Ferrara, the Naviglio Canal and the Po di Volano, but the Fifth Army had further to go to reach the Po; they still had to cross the Panaro. The general drift of the air attacks began thus by a concentration by Desert Air Force on the river ahead of V Corps' sector and a night effort by both air forces to cover as long a stretch of the river as possible. On 22 April, the whole Tactical Air Force concentrated on the river in an integrated attempt, with an expanded and important effort by the 57th medium bomber wing and the night bombers covering both fronts. On 23 and 24 April, while the whole river was under attack in the battle area, the very success of the air efforts broke up the picture again progressively into two principal component parts, namely the sector near Finale nell'Emilia on Fifth Army's front and the enemy bridgehead between Ferrara and Polesella and Corbola on the river.

Increased Air Attacks on 21 April (1)

After 100 of its night bombers had searched the river and bombed bridges and movements in both army sectors, (2) Desert Air Force opened a day of great activity, bombing crossings

(1) D.A.F., M.A.A.T.A.F., No. 1 M.O.R.U., O.R.Bs.

(2) Cremona, Pincenza, Ostiglia, Sermide, Comatta, Borgoforte, Polesella and Ficarolo.

over the Po and the Reno, and in particular barges and pontoons on the Po over a long stretch of water. The general impression was one of considerable success. (1) Many ambulances with Red Cross markings, most of them waiting to cross the river, were reported. Medium bombers suffered the same handicaps due to bad weather as did the lighter aircraft; their efforts to destroy Polesella were abortive. (2) Other formations, however, scored hits on Ficarolo crossing. (3)

XXII Tactical Air Command was fully occupied with the fluid battle proceeding northwest of Bologna, round Carpi and the approaches to Finale, doing everything possible to destroy all the havens, vehicles, guns and tanks in the area ahead of the Americans and South Africans.

Another profitable night was spent by bombers of both Air Forces against the crossings. One hundred and twenty-three intruders (4) covered the potential crossings thrown up by the day's evidence and all movement towards them. From now on there was no break in the air pressure on movement up to, and across, the river.

Crescendo of Air Attacks on the Po Crossings, 22 April

22 April, a day of far-reaching importance, opened, so far as the air forces were concerned, with difficulties. Morning fighter-bomber operations were restricted by an ever changing bomblines, so much so that all machine-gunning attacks south of the Po were prohibited in Desert Air Force territory. The weather closed in steadily and their airfields were out of action from 1300 to 1800 hours. As hopes faded, the weather cleared. There were still only a few feasible close support targets so the 500 sorties achieved were directed as armed reconnaissance to locate and destroy all movement northwards to the Po.

During the evening, the enemy, harassed by Eighth Army's armoured spearheads, came out into the open. Reports were flashed back from aircraft that there were between four and five hundred vehicles of all types on the roads north and northwest of Copparo bound for the Polesella crossing. Fighter-bombers pressed home attacks on them with satisfactory results. Altogether, during the day, it was reported, 78 motor transport and 19 horse-drawn vehicles were destroyed and 62 motor transport and 65 horse-drawn vehicles damaged. (5)

XXII Tactical Air Command devoted nearly all of its 588 sorties to the crossings. In this number were included 79 by the night bombers of 47th Wing operating in a day role. To the joint effort of the fighter-bombers and light bombers was added the weight of 57th Bombardment Wing, who operated 16 missions (6) during daylight against the crossings, a few of them with the aid of Shoran equipment.

(1) Total effort on the Po and in close support was 579 sorties.

(2) 21 Mitchells returned bombs to base.

(3) 27 Mitchells.

(4) 59 of XXII T.A.C. and 64 of D.A.F.

(5) These figures, like the other claims, are probably on the conservative side. No check from enemy sources is ever likely to be possible.

(6) Sorties:-

43 - Polesella: 18 - Guarda Veneta: 36 - Ficarolo:
 18 - Crespino: 12 - Occhiobello: 43 - San Nicolo:
 11 - Borgoforte: 6 - San Benedetto: 12 - Ostiglia.

The critical Day of 22 April

Three important events happened during the day. The Allied Armies met at Bondeno, Cento and Finale; the Eighth Army was in the outskirts of Ferrara and had outflanked it; spearheads of Fifth Army reached San Benedetto on the Po. These misfortunes made retreat even more inevitable for the enemy. He was still intact, although his casualties in men and material were mounting. But speed was the essence of the problem and his very speed in movement created a long-desired target pattern for the Allied Air Forces. Some idea of the fluidity of the ground situation may be gathered by Mediterranean Air Force's estimate that day of destruction and damage, (1) for the cost of 18 aircraft lost.

German Strategic Weakness South of the Po(2)

On Fifth Army's front, I Parachute Corps was threatened on both flanks. On Eighth Army's front, an armoured column sped out from Argenta along the north bank of the Reno to take Poggio Renatico on the night 21/22 April, brushing aside two German divisions. Bondeno was reached, cutting across the axis of withdrawal of I Parachute Corps.

During 22nd April, a bitter battle was fought between the Reno and Panaro northeast of Cento and in it the 65th Division was practically destroyed. Soon afterwards, its neighbour the 305th Division surrendered at Ostiglia. The improvised bridgehead at Bomporto and Camposanto on the Panaro River and the makeshift defences on the river itself were crumbling. The hole was wide open. The Fifth Army drove on to the Po on the Borgoforte-Sermide Line. (3) and reached it at 1045 hours on 23 April at Quingentole. Only at Finale were the Allies held up for long, but by the morning of 24 April, Allied armour was en route for the Po at Felonica.

Owing to the continuous air bombing of the roads and the waterways the rate of movement had slowed down and large crowds of shattered German forces were assembling along the river banks. From Sermide to Bondeno the crossings were very busy, but the roads leading to the river were cratered and jammed with the smoking and burning wreckage of hundreds of vehicles of all descriptions. The retreat could no longer after this evening be conducted on orderly lines; nevertheless; a large number of troops got across, some by swimming.

(1) <u>Claims for 22 Apl. 1945</u>	<u>Destroyed</u>	<u>Damaged</u>
N/T	702	564
H.D.V./Trailers	295	355
Locomotives	-	1
Rolling Stock	8	77
Bridges	6	5
Buildings	41	37
A.F.V./Tanks/Half-tracks	20	60
Tank transporter	-	1
Guns	8	26
Barges	5	21
Pontoons	5	-
Boats	1	25

M.A.A.F. Int/Ops daily summary.

(2) A.H.B./IIJ11/58/29.

(3) Ostiglia was the corps boundary.

Turning to the situation on the Eighth Army front, the enemy's position was even more desperate here, although he retained a coherent tactical form until a late hour. From 21 to 24 April, LXXVI Corps maintained, with great spirit, a bridgehead forward of Ferrara so as to cover the river withdrawal of the remains of Tenth Army, (1) but without hope, for its left flank was exposed.

Continued Air Attacks on the Po Crossings, 23 and 24 April

On both the nights 22/23 (2) and 23/24 April, night bombers maintained complete continuity with the daytime attacks, and as had been long predicted, this policy proved highly successful in allowing the enemy no respite for repairs or clearance. All day on 23 and 24 April, both Desert Air Force and XXII Tactical Air Command despatched every available aircraft against the increasing road and waterborne craft and the crossings, especially those from Bondeno to Ostiglia, and from Polesella to Rovigo and Adria, where the biggest concentrations were observed.

23 April was a fine day and the fighter-bombers' and medium bombers' claims were very high. As a sample of what was achieved, the fighter-bombers of Desert Air Force claimed 82 motor transport and 64 horse-drawn vehicles destroyed, which, when added to the claims of the preceding night made by Desert Air Force's intruders (the best effort to that date) of 55 motor transport destroyed and a very high combined volume of damage, give an insight into the local position. The pontoon at Corbola was destroyed and a direct hit observed on Badia. The medium bombers (3) on 23 April ranged over the Adige and the Brenta, as well as the Po, whereon they attacked Ostiglia, Polesella, Borgoforte, Crespino and Guarda Veneta. The 3rd South African Wing ran into bad weather, but three missions (4) managed to bomb the crossings. On Fifth Army front the fighter-bomber effort was on a proportionate scale. (5)

On 24 April, after another night's bombing of the critical crossings, great destruction was again wrought by aircraft of all offensive components of the Tactical Air Force. No. 47 Bombardment Group had converted its crews to day bombing for the purpose and its Bostons (6) covered the crossings and the valley in Fifth Army's sector. Desert Air Force, (7) extending its range to the Adige, (now assuming significance as an escape route to the Venetian Line defences), sighted at 0930 hours a pocket of enemy armour, guns and M/T on the north bank of the Po between Polesella and Berra. Fighter-bombers attacked it all day until evening, leaving most of the 300 or more vehicles destroyed or damaged. Its location suggests the depth of the battle at this point. The long convoys reached from near Ferrara and Finale, up to and across the Po, winding on, mile after mile, into the Padua area and the Venetian Line in the east, and to the west,

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- (1) Refer to Figure 30.
 - (2) D.A.F. sorties: 102 Bostons, 52 Baltimores, 20 Mosquitoes XXII T.A.C. sorties on and north of Po: 53.
 - (3) 189 sorties.
 - (4) Totalling about 40 aircraft.
 - (5) 450 Thunderbolts on armed reconnaissance.
 - (6) 86 sorties.
 - (7) 764 sorties on armed reconnaissance of Po and Adige.

through Carrara and the last strongholds of the Gothic Line and through Verona towards the Brenner line and the area of the newly formed Army Tyrol in the Alps.

The 57th Wing's medium bombers again heightened the pressure and, in accordance with the developing pattern, interdicted the crossings at Polesella and Zibello, westward across country to Cremona and even to Torricella, where the permanent bridge might still serve as an escape route. The results of the overall attack by day and night had been to restrict the possible crossings as well as to wreck those that survived and were in use. Probably the best primary evidence of the results of the four days' air attacks is to be found in the testimony of the German commanders themselves. This will be examined after a brief note on the artillery bombardment of some of the crossings.

Spotting Aircraft in the Artillery Bombardment of the Po Crossings⁽¹⁾

On the Fifth Army front, the bulk of the enemy forces, covered by the Parachute Corps, succeeded in disengaging across the Po. They left behind to both Armies, in the five days beginning 21 April, some 30,000 prisoners and a serious proportion of their equipment. On the more critical Eighth Army front the resistance in the Ferrara area was especially bitter and sustained. Allied artillery was called on to bomb the crossings.

First, long-range super-heavy artillery, then medium artillery and finally the entire weight of V Corps' artillery ranged on the crossings, directed by tactical and artillery (air observation post) aircraft. By night, the crossings were subjected to heavy fire. Also, aircrews, in the night air attacks of 22/23 April and those of 23 April, were successful in scoring direct hits on three pontoon bridges and on many rafts and installations.

Fifth Army had already reached the Po and were crossing at great speed. At dawn on 23 April, the greater part of two German divisions⁽²⁾ were still south of the Po. One was in a desperate position, for the crossings at Bondeno it planned to use had been severely damaged and they were being threatened with encirclement. The Germans turned about and fought to pass through the narrow corridor between Ferrara and the river to reach the Polesella and Corbola crossings. The artillery bombardments, planned on up-to-the-minute information from the Cub artillery aircraft, increased in weight, and the Army reports are correct in pointing out how these bombardments threw up more and more profitable targets for the fighter bombers as well as their own guns. All the day of the 24th, artillery, as well as aircraft, attacked the seething mass of Germans packed in the narrow area north of Ferrara still held, until by the evening the enemy had lost control and fled in disorder across the river. During the night of 24/25 April, after the capture of Ferrara during the day, the corridor between it and the river was cleared.

(1) A.H.B./IIJ11/58/25(A).

(2) 26th Panzer and 29th Panzer Grenadier Divisions.

German Evidence on the Air Attacks on the Po Crossings

Everywhere along the river, for days, elements of the German army had crossed the river by pontoon, ferry or barge, carrying with them what they could salvage from the chaos on the roads in the way of equipment. But every hour that passed saw the elimination of the very means to cross. It became suicidal to cross at the recognised crossing places. The infantry assembled on the south bank and began to swim across.

Five senior German officers were interrogated later on the effect of the air attacks on the Po crossings: their testimony is important in any final evaluation of the Air Forces' share in the victory. General von Vietinghoff, the Supreme Commander, said:-

'The crossings of the Reno and the Po were decisively influenced by the employment of the Allied Air Forces. The smashing of almost all ferries and bridges made an ordered retreat across the Po no longer possible. The troops amassed at the crossing points and often had to swim to the other bank without heavy weapons.'

General von Senger, commanding the XIV Panzer Corps said:-

'It was the bombing of the River Po crossings that finished us. We could have withdrawn successfully with normal rearguard action despite the heavy pressure, but owing to the destruction of the ferries and river crossings we lost all our equipment. North of the river we were no longer an army.'

General Graf von Schwerin, commanding LXXVI Panzer Corps, captured on 25 April, said:-

'The Po has been to the Germans what the Seine was to the Germans in France last yearevery one of my divisions when they arrived back at the river found their own engineers waiting to assist in the appropriate sector..... Needless to say I did not succeed in getting the tanks back across the river.'

Specific German Evidence on the Night Air Attacks on the Crossings(1)

The Supreme Commander, the Commander of Fourteenth Army and the Commanders of three infantry divisions(2) were questioned on the effects of the night air bombings of the Po and Panaro crossings and their replies consolidated. They thought that the night air attacks from 16/17 April onwards were an important factor in the stranding of their divisions and the resultant surrenders of so many troops south of the river. Although much had been carried across by day, the result of these attacks, coming during the only hours of possible movement on any large scale, was to cut almost completely the supply lines of the armies south of the Po. The bulk of Tenth Army, and in particular LXXVI Panzer Corps, already had some of its heavy transport and heavy artillery

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- (1) Interrogation report on five German generals. C.S.D.I.C., C.M.F., 1 Jly, 1945 (A.H.B./IIJ11/58/24(A-B)).
 - (2) 334th, 305th and 65th Infantry Divisions.

north of the Po by 13 April, and, while its rearguards held off the Allied spearheads, it was able to carry most of its troops and some of its vehicles across. But the greater part of its heavy transport which had not crossed by 17 April never crossed at all.

The main effects of the night bombing attacks, according to these officers, were four in number. Firstly, by destroying so many ferry boats and landing stages, and by creating congestion at the approaches, they delayed the retreat of the main formations. Secondly, by destroying ferries and causing congestion on the south bank, they prevented ammunition and petrol from reaching units in that area. Thirdly, by destroying so many heavy ferries, they isolated virtually all of Fourteenth Army's heavy vehicles and heavy artillery on the south side of the Po. Fourthly, by prevention of the crossing of signals units, they led to disruption of communications, hence loss of tactical control by the commanders. From all these causes combined arose the trapping of considerable forces south of the river.

Illuminating evidence was given on the effects on specific divisions of XIV Panzer Corps and LI Mountain Corps. Fuel in XIV Panzer Corps ran short on 19 April. The 305th Division had to abandon its heavy artillery and anti-tank units between Cento and Finale: short of petrol and ammunition, its stranded detachments were largely annihilated. As the bridge at Camposanto was reported blown, great congestion developed at Finale. The bridges there were attacked all day and on into the night by aircraft. Although they were not wrecked, burning vehicles crossing them slowed up the convoys. As a result, when the 305th Infantry Division was across, it found it had lost some 30 per cent of its vehicles and 20 per cent of its troops, mostly to rearguard actions, but some to air attacks. After the debacle at Finale, the 305th Division tried to cross at Ostiglia and Carbonara and the 65th Infantry Division at Sermide. Since the ferry boats and landing stages had been bombed in those areas, neither division was able to get any of their remaining heavy artillery and transport, nor more than two-thirds of their remaining personnel across the river before being overtaken by the Allies, to whom they surrendered on 23 April.

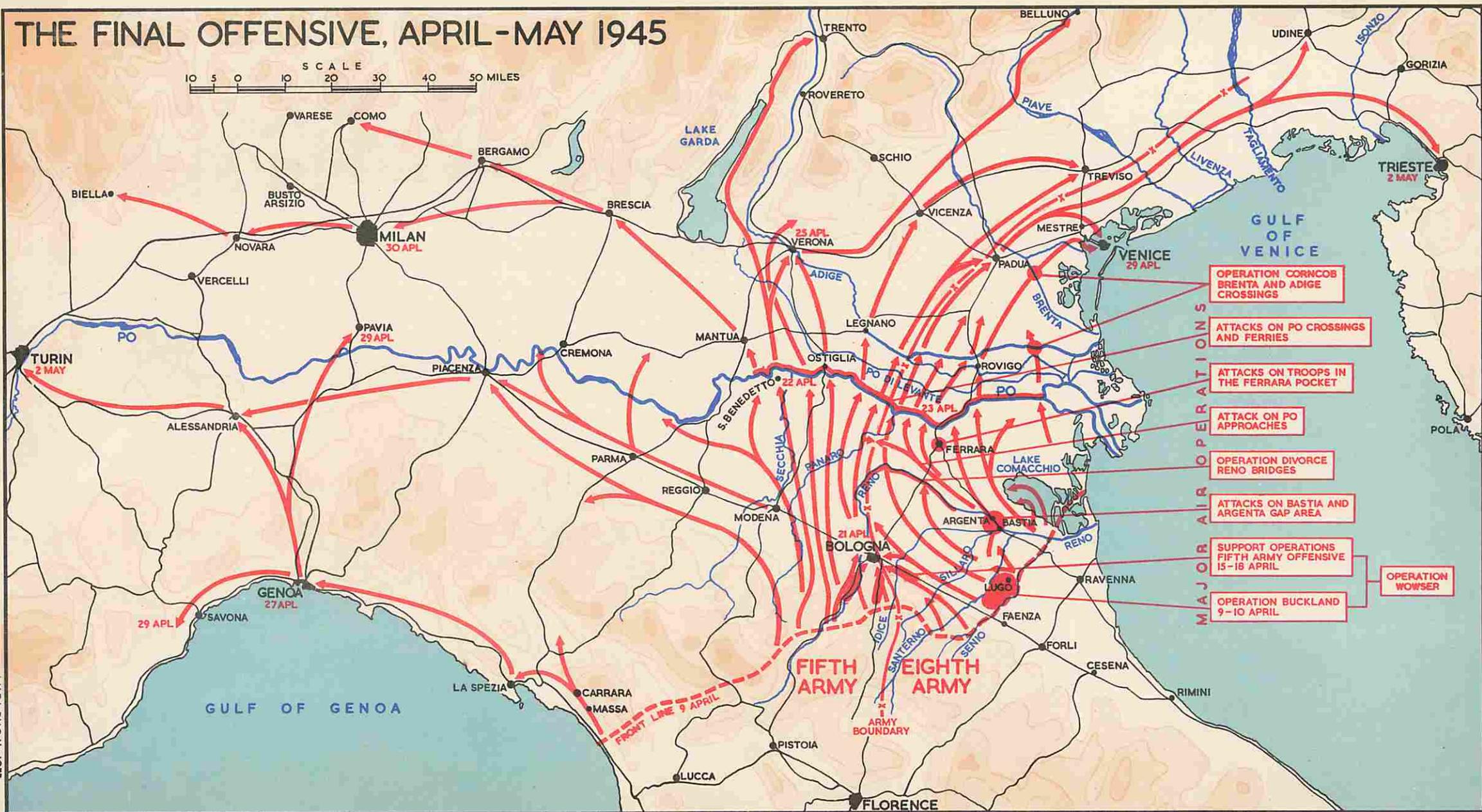
As the three divisions of LI Mountain Corps drew up to Modena on 22 April, they were short of fuel and ammunition. Fresh supplies were due to reach them across the river at Casalmaggiore. The night bombing cut these supplies off, so preventing them from covering their retreat on the flanks. They approached the Po between Torricella and Viadana, with most of their heavy transport and artillery. Unfortunately for them, the latest night air attacks had wrought great damage there. The heavy echelons, in advance of the divisions, were held up, causing congestion at the river approaches and holding up the main bodies. Most of the heavy fuel and supply vehicles moving south were held up on the north bank. What little managed to cross could not break through the congestion. Without ammunition, the three divisions were unable to hold off the 1st U.S. Armoured Division, were trapped south of the Po and forced to surrender on 25 and 26 April.

The Contribution of the Air Forces to the Enemy Defeat South of the Po

If one examines in detachment the record just brought to an end, weighs the Allied claims against the enemy's admissions

THE FINAL OFFENSIVE, APRIL-MAY 1945

SCALE
10 5 0 10 20 30 40 50 MILES



- OPERATION CORNCOB
BRENTA AND ADIGE
CROSSINGS
- ATTACKS ON PO
CROSSINGS
AND FERRIES
- ATTACKS ON TROOPS IN
THE FERRARA POCKET
- ATTACK ON PO
APPROACHES
- OPERATION DIVORCE
RENO BRIDGES
- ATTACKS ON BASTIA AND
ARGENTA GAP AREA
- SUPPORT OPERATIONS
FIFTH ARMY OFFENSIVE
15-18 APRIL
- OPERATION BUCKLAND
9-10 APRIL
- OPERATION WOWER

and sets both against the events of the following days, it is impossible to escape the conclusion that the Air Forces had played an essential and major part in the heavy defeat of the enemy in the battle south of the Po. It was not the last battle, but it was the decisive one. Long before the Armies were within range of the river, the approaches to it and all the potential crossings had been attacked by day and night. The slowing down of all road withdrawal, the congestion at the river, the heavy destruction of vital equipment and armour everywhere was very largely the result of the concentrated tactical air effort. The pressure of the Allied Armies and the accuracy of the Allied artillery blended with the skilful use of air power to provide favourable conditions for victory.

OPERATION CORNCOB

The remaining German Defence Lines

Throughout the winter, work had been pushed forward vigorously on the Adige Line. It had been reinforced. The Po position had been strengthened to westward to cover the withdrawal of Army Liguria. Behind it and the Adige Line lay the Prealpine Defence Position - the Voralpenstellung - east and west of Lake Garda, based on the Alps. Tied in with it were the river lines of the Brenta, Piave, Tagliamento and Isonzo. If von Vietinghoff had been allowed to withdraw behind the Po in good time, he would have been already manning the Adige Line and the idea of a National Redoubt have probably become a reality. The Higher Command's veto had tied his hands and it now became a matter of desperate urgency to fight a delaying action between the Po and the Adige River so as to get across the Adige, reform and man the line there. This was foreseen by the Allies and a series of air attacks - Operation 'Corncob' - against the Adige and Brenta River bridges planned and carried out. If they were successful, the end should follow quickly.

Operation 'Corncob', First Phase⁽¹⁾

The original plan for Operation 'Corncob', already outlined, was in two phases. The first, allotted to the 57th medium bomber Wing, envisaged the destruction of nine road bridges over the Adige River between Verona and the Adriatic.⁽²⁾ The second, allotted to 57th Wing, XXII Tactical Air Command and Desert Air Force, envisaged the destruction of 13 bridges and diversions over the Brenta between Bassano del Grappa and the Adriatic. In the event, heavy bombers were called in to assist in both phases and fighter bombers in the first.⁽³⁾ The object of 'Corncob' was to block and delay enemy formations, which had crossed the Po, retreating into the next defence line and northeastern Italy.

Phase 1 lasted from 20 to 26 April. On 20 April, 272 heavy bombers put the Adige bridges at Rovigo, Barbighia

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- (1) T.A.F., D.A.F. and No. 1 M.O.R.U., O.R.B.s and M.A.A.F. Int/Ops. Summaries.
 - (2) Cavarzere, Boara Pisani, Lusina, Garzare, Badia, Polesine, Legnano, Bonavigo, Albaredo, Zevio.
 - (3) Before Corncob, four railway bridges on the Adige and seven road bridges and four railway bridges had been cut and three temporary road bridges washed out by high water.

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and Lusia out of action. (1) On 23 April, a force of 773 heavy bombers, escorted by 155 fighters, was despatched to attack Adige bridges and three Brenta bridges at Padua. The majority of the bombers located their targets and heavy concentrations of bombs fell on Badia Folesine, Bonavigo, Zeivo, Legnago and Albaredo Brenta road bridges, leaving broken spans and general destruction. They damaged the approaches and bridge at Cavarzere. Photographs of Padua showed one bridge destroyed, direct hits on the second and a good concentration on the third. On the same day it was confirmed by photographs that a medium bomber attack tore a 190 foot gap in Corte bridge.

On 24 April, 18 Mitchells of the 57th U.S. Wing attacked Cavarzere bridge, using 'Shoran' equipment, but failed to hit it, according to aircrews. (2) During the three days, 24 to 26 April, fighter-bombers of Desert Air Force carried out frequent attacks and patrols over the 31 known ferry sites, almost the only means left of crossing. By 26 April, all nine bridges were believed to be unserviceable and the facilities over a long stretch of water gravely damaged.

Operation 'Corncob', Second Phase

Air Operations against the Brenta fell short of the plan owing to bad weather. After the successful heavy bomber effort on Padua of 23 April, the attack was renewed on 24 April. Fifty-seven Liberators bombed the new Friola road bridge, just outside Chioggia at the river mouth and destroyed one of its spans. Eighty-two others bombed Brondolo railway bridge and reported hitting it, and 65 more reported Bassano road bridge as probably down after their attack. On 25 April, the weather was non-operational and almost entirely so on 26 April. But 36 Mitchells bombed road bridges just outside Chioggia that day with success, hitting the north end of the north bridge and destroying a span of the south bridge. In spite of the breaks in operations, seven out of ten of the bridges still serviceable for motor vehicle traffic over the Brenta had been cut or blocked. (3) Adria bridge was being used however, on 26 April, and, according to a Spitfire report the same evening, Cavarzere was intact. (4) Above Bassano, six bridges were still intact, perhaps seven. The rapid advance of the Armies and the increasing disintegration of the enemy forces brought the need for extension of Operation 'Corncob' to an end.

APRIL AIR OPERATIONS AGAINST ENEMY LINES OF COMMUNICATION

Medium and Fighter Bomber Interdiction

The satisfactory state of the air interdiction of the frontier railway routes made the switch to tactical air support to the battlefield easier, but the commitment remained a serious one. Up to the opening of the Eighth Army offensive on 9 April, Desert Air Force continued its March programme of attacking railway bridges, tracks and rolling stock in the

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- (1) Refer to photographs in M.A.T.A.F. intelligence bulletin - April 1945. (A.H.B./IIJ11/18).
 - (2) Although a M.A.T.A.F. report said that one-fifth of the decking was destroyed.
 - (3) The three road bridges at Padua, Chioggia railway bridge, the road diversion at Friola, the bridges at Corte and west of Chioggia.
 - (4) No. 225 Squadron O.R.B.s.

lower Po Valley, the Venetian Plain and the lower reaches of the Northeast Frontier routes. Their fighter-bombers made about 100 attacks on railway lines and 25 attacks on railway bridges from 1 to 8 April. From 1 to 14 April, before the Fifth Army offensive, XXII Tactical Air Force's fighter bombers continued to attack railways on the lower Brenner Line and the east-west lines north of the Po as well as their lateral lines. They claimed nearly 900 railway trucks and carriages destroyed or damaged, 350 railway cuts, 2 locomotives destroyed and 71 damaged.

57th Bombardment Wing's medium bombers devoted most of their attention to battle area targets between 9 and 16 April. But from before 9 April and between 17 and 26 April, the wing flew approximately 1,100 sorties against Brenner Line targets. The targets most frequently bombed were San Ambrogio (nine missions) and Salorno (seven missions). San Michele, Steinach and Vo Sinistro were each attacked by six missions. Small attacks were made on the Borovnica viaduct, the south bridge at Postumia and the Chiusaforte bridge on the Tarvisio Line.

Heavy Bomber Interdiction⁽¹⁾

The Tactical Air Force nominated some of the more important targets for destruction by the Strategic Air Force, and it fixed priorities. The first priority was the Brenner Line, still functioning on a very reduced scale in a pattern of 'islands' each 12 miles in diameter and more active north of Bolzano than south of it. On seven days from 9 through 24 April, forces of heavy bombers ranging from 50 up to 265 Fortresses and Liberators attacked the Brenner Line. On 11 April, they effected major interruption by cuts at Campo Di Trens and Isarco-Albes bridges at the northern end, by putting out all three San Michele bridges and the Lavis viaduct and diversion further south and by cutting bridges at Rovereto, Ala and Parona, south of Trento. The Germans were also straining every nerve to keep the lines on the north-western routes open, but Allied Intelligence was more than a match for them and their efforts were nullified by fresh attacks.

On 8 April, the heavy bombers had flown 391 sorties against the three main frontier routes. On 12 April the Brenner and Venetian Plain Lines were heavily attacked. On 20 April bridges and marshalling yards on the Brenner Line were also heavily attacked. Thereafter, it became increasingly apparent that the Allies would occupy the Po valley and pass northwards. The policy was thereupon restricted to those targets contributing immediately to the support or withdrawal of the German armed forces. The immediate tactical policy was influenced by the anticipated Allied military needs after occupation and those of civil economy.⁽²⁾

State of Blockage in April

Known blocks on the Brenner Line varied from five to eighteen throughout April. At the end of the month, when the lower portion was under Allied control, there were at least

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- (1) Blockade report, M.A.T.A.F. (A.H.B./IIJ11/13) and The Army Air Forces in World War II, Vol.3, U.S.A.F.
 - (2) M.A.A.F. Int/Ops summaries and M.A.T.A.F., O.R.Bs.

five blocks north of Trento. Numerous attacks were made on fills, many of them still flooded by the Spring waters or in a sodden state. The enemy appeared very anxious in mid-month to open a through route in the northeastern area and made large-scale efforts to repair his bridge at that period. The Brenner was impassable to through traffic, although bridges north of Brennero, past Innsbruck, were repaired. For four days up to 17 April, the route was impassable from Brennero to Fortezza and all that week from Ora to Verona. The northeastern routes were kept closed by air attacks in spite of everything the enemy could do. The other frontier routes were barely working and that only in small sections.

On 24 April, Intelligence reported a visible weakening of the enemy counter-effort over the preceding week. Two days' freedom from air attacks owing to bad weather did not suffice to overcome the heavy leeway. He was falling away from his high standards, owing, no doubt in large measure, to shortage of material, the growing lack of experienced repair gangs owing to casualties and other calls, and to a flagging energy. He could no longer cope with a task growing hourly more serious and the prospects of success were nil as day by day more Allied aircraft were released from the immediate calls of the battlefield and became available for anti-communications operations.

Throughout the week ending 24 April, Brenner through traffic had been impossible from Matrei, north of Brennero, to Verona; very little movement was seen on the line. Repairs effected at San Michele diversion, San Ambrogio, Rovereto, Calliano and at Lavis diversion were largely nullified by cuts effected at Ora bridges and Lavis viaduct. Furthermore, all through lines were cut at Vipiteno marshalling yards, Fortezza, Ora and San Ambrogio, and seven railway fills were cut. Over the Austrian border, the picture was equally grim. The Trento loop line was still cut at Cismon and the Fortezza - Dobbiaco line probably cut at Perca. The Northeastern routes were still impassable. The Tarvisic route remained cut at many points. Casarsa diversion was again impassable. The Piedicolle-Postumia and Udine-Gorizia lines were still cut. (1) Clearly there was little hope of effective liaison between Army Group C in Italy and Army Group G and Nineteenth Army in southeastern Germany, Army Group South in Austria and Army Group E in Jugoslavia. The Army Tyrol, (2) in course of formation, was faced with every conceivable difficulty.

THE FINAL PHASE OF GROUND OPERATIONS

Fifth Army Progress North of the Po

By 25 April, Fifth Army had crossed the River Po from Sermide on the east to Borgoforte on the west. Troops reached Verona and by daylight on the 26th had cleared the city. Against confused opposition, the Army advanced to the Adige River and crossed the river the same day. Fifth Army had split the German armies in two. It blocked off the routes to the Brenner, between Lake Garda and Verona, and made for the Adige Venetian Line defences north of Verona. On the left, troops

(1) M.A.A.F./S.6697/Int. 19 April and 26 April 1945.

(2) 22, 757 personnel. Comprised 7 small 'Commands' of which the Command Schmidt-Hartung included the 114th, 148th, 232nd and 334th Division.

raced north past Mantua towards Brescia. On the Army's right flank, II Corps crossed the Adige and the South African Armoured Division moved across the Po and across the Adige. On the Ligurian seaboard, the Army reduced Aulla, the last Gothic position, on 25 April, then Carrara and La Spezia and raced towards Genoa.

On 26 April, the Army Commander issued new orders to cut off and destroy the Axis forces in northwest Italy and to assist the Eighth Army in the capture of Padua, forestalling a German occupation of the Venetian Line, and sent a division along the eastern shores of Lake Garda on the axis Verona-Trento-Bolzano, towards the Brenner Pass and the National Redoubt. Vicenza was cleared on 28th and the attack pressed north of Bassano and Treviso. The South Africans made contact with the Eighth Army in Padua on 29 April. The Adige Line, only partially manned, was taken with relative ease. A firm enemy front no longer existed. The effort of LXXV Corps to escape from the Alpine Front into the mountains was frustrated by thrusts to Como (28 April), Ghedi airfield and Milan, which latter town was found in the hands of the partisans on 29 April. The noose was drawn tighter along the Ticino River. LXXV Corps had no alternative but to surrender. Genoa fell on 27 April, Alessandria on 28th and Turin on 30 April. Army Liguria signed terms of surrender on 29th and Lombardy Corps on 30 April. Graziani was taken prisoner. Mussolini was arrested and executed by partisans.

The Destruction of LXXVI Corps by Eighth Army

Eighth Army crossed the Po on the evening of 24 April against feeble opposition and raced for the Adige. They caught the main German forces off balance just west of Ferrara, and progress was not difficult. By the afternoon of 26 April, the New Zealand Division had reached the Adige and by dawn on 27 April had established a bridgehead. The destruction of the major part of LXXVI Corps was accomplished between the Po and the Adige. All control lost, the Commander, Lieutenant General von Schwerin, surrendered on 25 April.

The Eighth Army Attack on the Venetian Line

On 26 April, new orders were issued that Eighth Army's task was to breach the Venetian Line, capture Padua, and advance on Trieste and the provinces of Venice and Venetia Julia. Early plans envisaged air support to the extent of two or three daily attacks with heavy bombs by heavy bombers of the enemy positions. General McCreery felt that the light fragmentation bombs used on the Senio - Operation 'Buckland' - had been disappointing and he was quite prepared to accept the devastated villages and cratered roads in the line of his advance, provided that greater material damage could be inflicted on the enemy. Once the breakthrough was assured, he planned to have the 2nd Parachute Brigade dropped in the latest version of Operation 'Earlsdon'. Both these plans were scrapped when the speed of advance ruled out the need for the operations.

There was very little opposition to the attack on the Venetian Line and there is no doubt that the air attacks on the river installations had helped to bring this about by

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denying the enemy his heavy equipment and supplies and impeding his formation into a coherent force. Venice was captured on 29 April.

The Change in the Military Situation

The military problem had now changed its traits and was interfused with the political aspect. On 25 April, the Italian Committee of National Liberation of Upper Italy ordered a general insurrection. Numerous and widespread attacks were made on the retreating Germans, and towns such as Milan and Venice were neutralised by the partisans. It was feared that trouble would arise from the unregulated assumption and exercise of power by the local bands. There was likely to be international disagreement over the fate of Trieste and Venetia Julia. These reasons pointed to the need for the earliest possible occupation of northeastern Italy by British and American troops. There was the important military task of rounding up the large remaining bodies of fugitive German and Italian Fascist troops.

After the capture of Padua on 29 April, the final moves were soon made. On 1 May, New Zealand troops hurried along the coast to make contact with the Yugoslav forces at Monfalcone. The Armoured Division drove up to the Dolomites, took Udine and Belluno and made contact with the Fifth Army at Treviso. The campaign was over.

AIR OPERATIONS IN THE PURSUIT

Desert Air Force Operations 24 to 28 April(1)

In the 24 hours ending at sunset on 24 April, Desert Air Force had put out 1,009 sorties. Most of their effort was directed on the retreating enemy, consisting mainly of armed reconnaissances and attacks on crossings remaining over the Po and Adige. They destroyed or damaged twelve crossings over the Adige and the Canale Bianco. Successful attacks on a large convoy east of Polesella crowned a day of great destruction. Reconnaissance over the rivers was continued throughout the night by Bostons and Baltimores.

On 25 April, the fluidity of the front precluded pre-arranged targets and any extensive use of Rover Controls. There was less enemy movement. The range was extended to the whole area north to Padua, Vicenza and Chioggia. Targets were harder to find and some methane plants were attacked as good alternatives likely to worsen the chronic enemy fuel position. The Adige and the canals leading from Venice were combed and bombed and craft and crossings hit.

After a full night of air coverage by light bombers of the area between the two rivers, the weather grew unsettled and interfered with operations(2) on 26 April. One-third of the effort was spent in support of the Eighth Army attack on the Adige defences and the assault was especially facilitated between the villages of Este and Anguillara. Here fighter-bombers bombed and machine-gunned guns and mortars, occupied houses and strongpoints, scoring many direct hits. Little road movement was sighted until the afternoon, when one concentration of more than 200 M/T and horse-drawn vehicles was

(1) D.A.F., O.R.B.s.

(2) The sorties for the 24 hours fell to 677.

discovered in the Cavarzere area, apparently waiting to cross the Adige, and another further along the river to westwards. Both were repeatedly attacked with successful results. (1)

During the afternoon, Allied troops were drawing close to the river and further attacks on the crossings were cancelled. Again at night, in electric storms, the light bombers patrolled the battle area and attacked several groups of M/T. They flew further north as far as Cittadella and Nervesa on the Venetian Belt. On 27 April, the spell of fine weather came to an end. Rainstorms and low cloud prevented operations until 1400 hours, when a few armed reconnaissance missions covered the Adige River to Padua and Treviso. Very few night sorties were possible.

On 28 April, the considerable advances made by the ground forces made planned support increasingly difficult. The positions of forward troops were generally obscure, hence the impossibility of fixing a sound pattern of bomb-lines. Pre-arranged and close support targets were now out of the question. Conditions that night were similar, but 73 sorties were flown against the Brenta crossings and movement in the Cittadella - Treviso - Monselice - Chioggia area. In support of a radio appeal to the partisans, leaflets were dropped in the Padua - Monselice area calling for an uprising.

The rapid Army advance continued through 29 April and they encountered no system of fixed defences requiring air attack. All day, with low cloud and storms prevalent in wide areas, the retreating enemy was harassed by offensive air patrols and armed reconnaissances along the Adriatic coastal plain and in the foothills of the Alps eastwards from Treviso. The day finished well with attacks on large concentrations of enemy traffic in the area round Conegliano, totalling, from reports, about five hundred. Late arrivals complained that they were already all in flames. The battle had now passed beyond the range of the Spitfire bomber. Looking back over the month, Desert Air Force estimated its total of enemy vehicles destroyed or damaged at a daily average of seven hundred and seven.

On 30 April, it was doubtful whether the Advanced H.Q. could keep pace with the ground advance. The rest of the month was spent bombing scattered enemy traffic in the Gemona - Udine area. The night bombers covered the escape routes through the Alps.

Throughout 30 April, many pilots reported processions in villages, flags flying from houses and universal celebrations on both sides of the bomblines.

XXII Tactical Air Command Operations in the Pursuit

Tactical Air Command's operations in support of the pursuit resembled those of Desert Air Force in all their essentials. First the mobile 'Speedball' Stations became redundant, then the Rover Controls. The ground advance outranged light aircraft based behind the old lines.

(1) Claims for the day were 150 M/T and 37 H.D.V. destroyed and 285 M/T and 37 H.D.V. damaged.

The air campaign became a large series of small reconnaissance missions picking their own targets in steadily worsening weather.

The Command fighter bombers began by harassing the retreating Fourteenth Army between the two rivers, attacking ferries, guns, boats, buildings, rolling stock, dumps and transport and the airfields at Ghedi, Bergamo and Thiene. As the destruction accumulated, sorties and counts hardly mattered from the point of view of the Italian campaign. It was already won. Yet it was still very important, in the view of Allied strategists, to prevent as many troops and as much material as possible from reaching the National Redoubt. Tedder and Strong, among others, held this view until a very late date.(1)

Coastal Air Force Ground Support Operations during the Offensive(2)

At the beginning of April, a large part of H.Q. staff of Mediterranean Coastal Air Force was busy planning reductions, but the operational staff was working at full pressure. A limited offensive was opened on the Alpine front to assist Operation 'Grapeshot' and the two French squadrons gave close support to the French troops engaged, putting out a high number of bombing and machine-gunning sorties. When the main offensive opened from 9 April onwards, these two squadrons were also called on to cover a comprehensive tactical reconnaissance effort west of a line Milan/Alessandria/Genoa.

No. 237 Squadron (operated by No. 338 Wing) also combined bombing missions, from the middle of the month onwards, with tactical reconnaissance for Tactical Air Force east of the French squadrons' area to a line Brescia/Parma. One flight was briefly detached to Falconara to work with No. 1435 Squadron and Beaufighters of No. 272 Squadron in attacks on two successive days on enemy radar installations on the Istrian peninsula and the northeast coast of Italy. These anti-radar attacks, although primarily designed to suggest to the enemy that amphibious landings were impending, were more successful from a destruction point of view than many previous much larger efforts against such difficult targets.

Coastal Air Force maritime and Night Operations in April

Coastal activities were more strenuous than they had been for some time, particularly in the Northern Adriatic, where the enemy, as has been recorded, was using midget submarines for landing agents and, possibly, with a view to anti-shipping attacks. On several occasions, Wellingtons and Beaufighters were homed to suspected positions. Although only one midget submarine was known to have been sunk, the agents in a second had to be put off in their dinghy prematurely and were captured on reaching land. Other submarines were so harassed that whenever they approached our coasts and shipping lanes their plans were frustrated. Blind bombing control was particularly successful.

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- (1) Air Commanders' Conference 5 Apl. 1945.
(A.H.B./IIS/112/1/100/9(E)).
 - (2) M.A.C.A.F. Air Staff O.R.Bs.

In the Gulf of Genoa, towards the end of the month, there were several desperate sorties by enemy E-boats. No. 38 Squadron Detachment dropped flares in darkness and helped to break up their attacks by bombing. The coastal traffic ran on until the last hour; it was now made increasingly vital by the breakdown in road and rail communications.

It was thought advisable to close the gap of the Luftansa night flights carrying high ranking officials out of Italy in search of havens, but nothing was intercepted by the standing patrols and it was concluded that the aircraft were routed over land. Minespotting began late in the month on an increasing scale as the Navy prepared to move up to captured ports.

The last anti-shipping attack by Coastal Air Force was made during the night of 30 April/1 May, when Wellingtons(1) bombed a convoy of E-boats and six landing craft at Parenzo. Offensive operations ended on 1 May, but the Air Force continued to assist the Navy in tidying up the Mediterranean.

THE FINAL EFFORT OF THE LUFTWAFFE

Operations during the Breakthrough. (2)

Enemy air activity from 5 to 16 April, although still on a very minor scale, was marked by a resumption of night bombing after a lapse of that form of attack for more than a month. It was reported mostly on the Eighth Army front, but never in greater strength than 15 mixed F.W.190 and Ju.87 aircraft. The damage inflicted was never taken seriously. Long range aircraft in small numbers occasionally took photographs so long as an amphibious landing was feared. Fighters occasionally intercepted bombers along the frontier and most of the few destroyed were operating on the Austrian side of the border. One of the three jet propelled Arado 234s was shot down by escorting Mustangs on 11 April south-west of Bologna.

The night bombing continued from dawn 16 April to dawn 23 April. The ground attack unit, probably operating from Villafranca, made bombing and machine-gunning attacks in the central and eastern sectors of the front. They were small efforts, mainly by formations of five to ten F.W.190s and usually made in the moon period. Mosquitoes were unable to overtake them. The jet reconnaissance unit was fully occupied. The day fighters continued the useless struggle and 14 more experienced aircrews were shot down, six of them by Mustangs on 19 April, when a formation of ten Italian-piloted Me.109s with a top cover of seven attacked at the southern end of Lake Garda. During a sweep in the Linz area on 16 April, five fighters and three others were destroyed in Southern Germany. These and previous victories made serious gaps in the fast diminishing strength of the Luftwaffe.

Mobile Operations Room Unit

- (1) Of No. 38 Squadron.
- (2) No. 1 M.O.R.U., D.A.F., T.A.F., O.R.Bs M.A.A.F. Air intelligence weekly summaries No. 126-129. Von Pohl interrogation reports.

The Order to withdraw the Luftwaffe(1)

Before the collapse of the Po front, the Germans had allocated airfields in the Prealpine Position for the withdrawal of the Luftwaffe in case of grave emergency. These included Graz for F.122, the long range reconnaissance unit, and for N.A.G.11, the short range reconnaissance unit, Sluderno for N.S.G.9, the night harassing bomber unit, Innsbruck and Bolzano for the three Italian fighter groups and Munich for the Faggione torpedo bomber squadron.(2)

When it was clear that the Po front was collapsing, General von Pohl ordered all his units, except the Italian fighter groups, back to the Prealpine Position. Tactical Reconnaissance Gruppe 11 was ordered to Bolzano. Owing to the onset of bad weather this move and others were delayed. All its aircraft were destroyed on the ground before they could leave.(3) The two Staffeln of the Long Range Reconnaissance Gruppe F.122, based at Bergamo and Udine was ordered to Innsbruck. Two aircraft were moved to Bolzano and six reached Innsbruck. Of the 25 (or thereabouts) aircraft of the Night Ground Attack unit N.S.G.9, due to leave Thiene for Dobbiaco and Sluderno, 5 F.W.190s and 15 Ju.87s reached Innsbruck/Hotting: the rest were destroyed at base. The personnel of Kommando Sommer (the jet reconnaissance unit) reached Lienz on their way to Bolzano. Their only remaining Arado 234 landed on the Autobahn near Munich.

As for the three Italian fighter groups, the 1st Gruppo burned their 30 Me.109s on the ground at Gallarate and the staff were said by von Pohl to have gone to Milan. The 2nd Gruppo transferred on 23 April from Bergamo to Aviano on 23 April and were never airborne again. The 3rd Gruppo had been training at Holzkirchen (south of Munich) but, owing to fuel shortages, had been ordered to proceed on foot to Italy, where they were disbanded in early April.

It is interesting to note that within the Bolzano H.Q. area all signals communications were found in working order and normal administrative control functioning. A complete underground operations room had been prepared but never used as such. It harboured the complete staff of Jafue Oberitalien (C.O. Fighters, Northern Italy - Oberst Neumann). No dumps containing fuel were found, although approximately 200 tons of fuel, including aviation fuel, were found distributed among units being used to carry out local movement.

There were a large number of flak guns left over from the collapsing defence of the Brenner and the Po debacle. These might have been turned to the support of the retreating armies, but, with the Air Force no longer capable of operating to any good purpose, it was decided that capitulation was the best policy.

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- (1) Von Pohl interrogation reports. M.A.T.A.F. monthly air intelligence and operations bulletin May 1945.(A.H.B./ALJ11/18)
 - (2) This torpedo bomber squadron was never observed on operations, but appeared in orders of battle.
 - (3) The method is nowhere mentioned.

THE LAST DAYS OF THE ITALIAN CAMPAIGN

Negotiations for the German Capitulation(1)

General Wolff's long and dangerous series of moves resulted in his sending two officers, representing himself and von Vietinghoff, to Lucerne, announcing that they were ready to go to Caserta with full powers to arrange a capitulation. On 26 April, the Combined Chiefs of Staff authorised the reception of the German parlementaires. After prolonged discussion, the Instrument of Surrender was signed on 29 April. This provided that hostilities were to cease at noon on 2 May.

Meanwhile, complications had arisen within the German Command; the secret Allied lines of communication were strained to the limit to bring out of the last stages of the German tragedy a clear decision. On 28 April, Kesselring was appointed Supreme Commander of the Southern as well as the Western Front. On 30 April, he dismissed von Vietinghoff and his Chief of Staff and sent two officers to replace them. For two days, the rival commanders alternately arrested each other. The death of Hitler solved many problems, for by it officers and men were released from their oath of allegiance. Kesselring agreed to the surrender. Von Vietinghoff was reinstated. Shortly before noon on 2 May, Field Marshal Alexander received radio reports that the German commanding officers were informing their troops of the terms for the end of hostilities. Von Vietinghoff sent a confirmatory signal. The news of the surrender was given out to the Allies at 1800 hours that evening - 2 May. On 4 May, General von Senger arrived at General Mark Clark's headquarters as liaison officer to ensure the implementation of the Instrument of Surrender. An Allied mission went to Bolzano, the headquarters of Army Group C, on a similar mission.

Tactical Air Force Action after Enemy Surrender(2)

On 2 May, General Chidlaw announced that an unconditional surrender was operating as from 1400 hours. All army, naval and air force units under control of Supreme Commander Southwest were involved. The general area of surrender was all Italy west of the Isonzo River, as well as the Tyrol and Vorarlberg provinces of Austria. It was purely a local surrender. The war against Germany continued.

The essential air operations to be maintained were reconnaissance patrols over lines of communications to report on enemy movement in or out of the enemy areas. Enemy aircraft, if airborne, were to be treated as hostile. The only permissible air attacks were those made on enemy units firing on Allied ground forces.. Aircraft not engaged in these operations were to remain at base.

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- (1) Although commanders' despatches are not used as sources for the narrative, the account given in Appendix E of Field Marshal Alexander's Despatch, written as by the Supreme Commander, is still probably the best objective account of the relevant proceedings.
 - (2) Signals M.A.T.A.F. 8942 and 8944 - 2 May 1945.
(M.A.T.A.F. O.R.B. Appendices C/SASO/15 and 16.

Proceedings between the Tactical Air Force Liaison Party and the Luftwaffe at Bolzano

A German Air Force liaison detachment was ordered to report to Tactical Air Force H.Q. at Florence. (1) An Allied party, composed of liaison detachments from Tactical Air Force, (2) 15th Army Group and the Navy reached Bolzano at midnight on 5 April. The Air party met General Ritter von Fohl on 6 May and questioned him on the disposition of his forces and the area of his control. He confirmed that the last instructions received by his subordinate formations were to withdraw to pre-arranged airfields and positions in the Prealpine Zone of Operations. The Allied air officers were linked up with their German opposite numbers and proceeded to obtain an order of battle and strengths and to make arrangements for concentration of personnel and disarmament. (3)

The German Air Force bases had been overrun and nothing remained of the once considerable Luftwaffe in Italy but one Ju.188 and four Fieseler Storchs. Personnel had shrunk from above forty-five thousand on 15 April to eighteen thousand three hundred and seventy-eight. (4)

Air Commander-in-Chief's Order of the Day to Allied Air Forces (5)

On 2 May, after the enemy surrender, Major General Cannon issued the following Order of the Day to all ranks of Mediterranean Allied Air Forces:-

'Air Marshal Garrod and I offer our heartiest congratulations on the part you have played in bringing about the unconditional surrender of the enemy. This triumphant conclusion to many years of courageous fighting and supreme devotion to duty gives you one and all just cause for pride and satisfaction. Such complete victory has only been made possible by dauntless enthusiasm and by our allied unity of purpose. Remember with deep gratitude those who have given their lives in service to our cause. For the many tasks that still lie ahead of us keep alive that spirit that has brought us all in comradeship to the victory in which we are proudly rejoicing at this moment.'

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- (1) Letter M.A.T.A.F. to Senior Officer, G.A.F. representation at M.A.T.A.F., H.Q. (H.Q., M.A.T.A.F., O.R.B., App. C/SASO/18, May 1945).
 - (2) C.O. - Air Commodore R.B. Lees, with 12 officers and 28 O.R.s. Refer letter of 3 May from Major General Chidlaw to Air Commodore R.B. Lees. (H.Q., M.A.T.A.F., O.R.B., App D/SASO/11, May 1945).
 - (3) Refer to Report T.A.F./301/5/INT of 24 May 1945, (H.Q., M.A.T.A.F., O.R.B., App. D/SASO/11, May 1945).
 - (4) The German Air Force had no operational control over the Parachute Corps, only certain administrative and supply responsibilities, exercised through Army Group C.
 - (5) The History of M.A.A.F. 1 Sept 1944 - 9 May 1945. Narrative Chapter XVIII (A.H.B./IIJ4/176/69)

ALLIED AIRFIELD CONSTRUCTION
IN THE SPRING OFFENSIVE 1944

XII TACTICAL AIR COMMAND AIRFIELDS

Name	Started	Completed	Occupied	Abandoned	Length (Feet)
Vesuvius *	-	-	-	13 June	-
Pomigliano *	-	-	-	16 June	4870
Capodichino *	-	-	-	-	4500
Santa Maria *	-	-	-	12 June	6000
Marcianise *	-	-	-	16 June	6000
Lago *	-	-	-	12 June	-
Castel Volturno *	-	-	-	12 June	-
Pignataro *	-	-	-	12 June	4800
Venafro *	-	-	-	12 June	3600
Nettuno *	-	-	-	-	3700
Tre Cancelli	-	5 June	5 June	16 June	4400
La Banca	-	6 June	6 June	25 June	6000
Cisterna Littoria	25 May	5 June	Not Occupied	-	3400
Ciampino	5 June	11 June	12 June	-	6000
Galera	9 June	11 June	12 June	-	6000
Palo	10 June	12 June	Not Occupied	-	4400
Targuinia	10 June	13 June	14 June	-	6000
Voltone	12 June	17 June	19 June	-	6000
Montalto	12 June	15 June	15 June	-	4460
Orbatello	15 June	19 June	20 June	-	6000
Ombrone	19 June	26 June	26 June	-	6000
Grosseto	19 June	25 June	26 June	-	6000
Biondo	25 June	Not Completed	-	-	6000
Follonica	27 June	3 July	4 July	-	6000
Piombino	26 June	3 July	4 July	-	6000
Cecina	2 July	12 July	18 July	-	6000

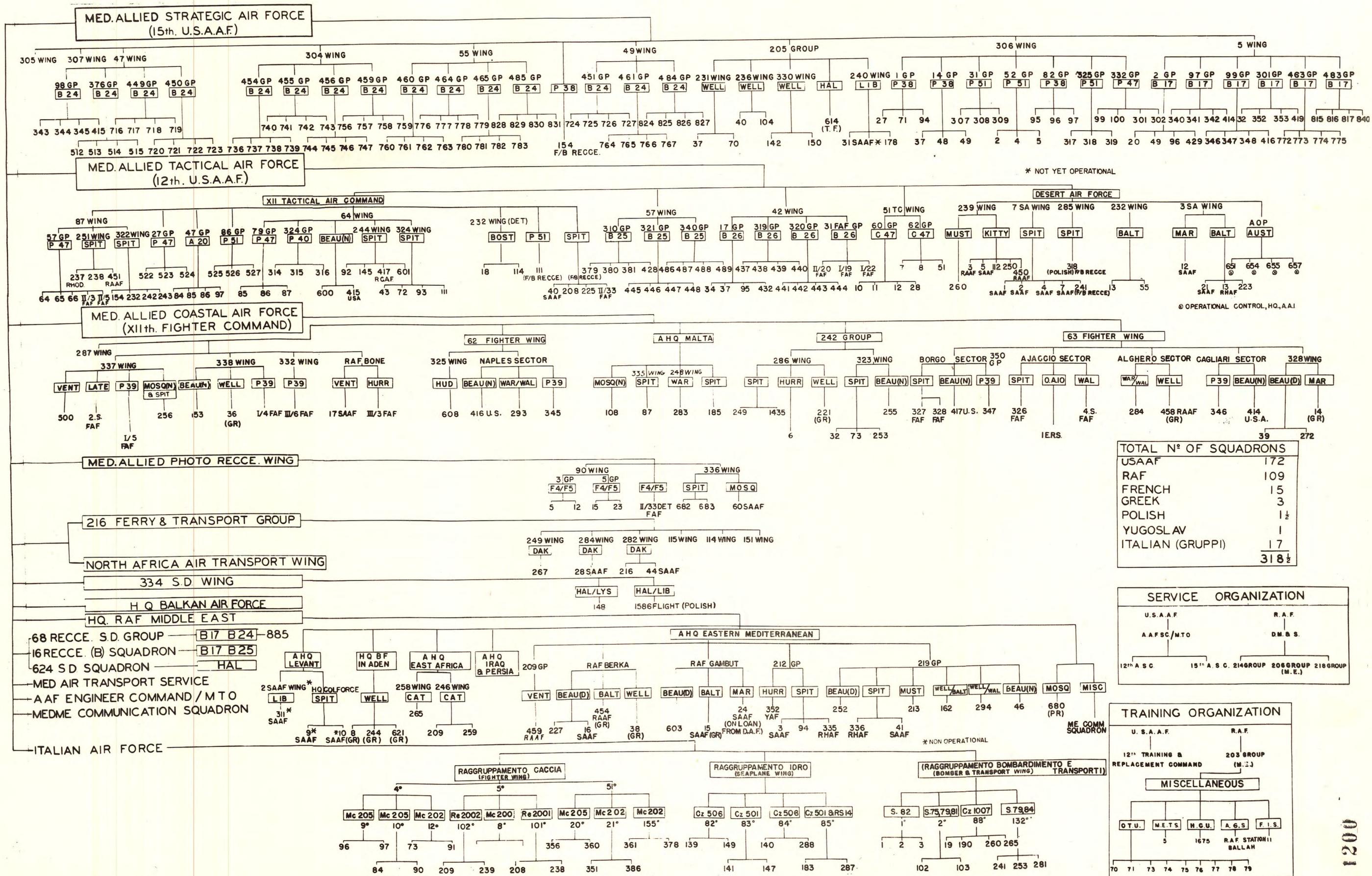
* Airfields existing prior to the advance.

DESERT AIR FORCE AIRFIELDS

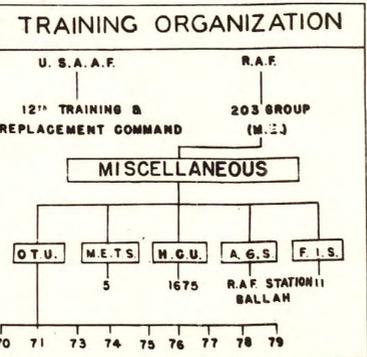
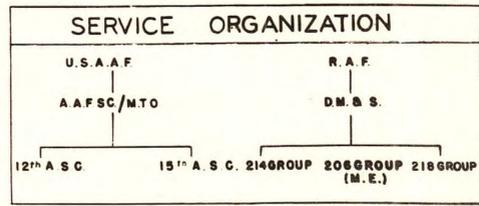
Name	Started	Completed	Occupied	Abandoned	Length (Feet)
San Angelo *	-	-	-	-	-
Madna *	-	-	-	-	-
Canne *	-	-	-	-	-
Trigno *	-	-	-	-	-
Cutello *	-	-	-	-	-
Biferno *	-	-	-	-	-
Sinello *	-	-	-	-	-
San Vito	-	-	18 June	-	-
Aquino	28 May	6 June	7 June	12 June	6000
Frosinone	2 June	9 June	Not Occupied	-	6000
Rome Littoria	9 June	11 June	11 June	17 June	3600
Marcigliano	10 June	14 June	14 June	-	6000
Osa	10 June	12 June	12 June	25 June	3600
Guidonia	8 June	12 June	12 June	22 June	4500
Falerium	21 June	25 June	25 June	8 July	3600
Fabrica	23 June	25 June	25 June	4 July	3600
Pescara	19 June	24 June	24 June	-	6000
Tortoreto	19 June	24 June	24 June	2 July	3300
Orvieto	20 June	25 June	25 June	18 July	4500
Perugia	23 June	3 July	4 July	-	5400
Fermo	26 June	1 July	2 July	-	3600
Crete	4 July	8 July	8 July	-	3900
Foiana	4 July	9 July	18 July	-	3600
Loreta	5 July	9 July	Not Occupied	-	3300
Aquila	8 June	-	Not Occupied	-	2700
Castiglione	1 July	5 July	6 July	-	3600

* Airfields existing prior to the advance.

OPERATIONAL ORDER OF BATTLE, MEDITERRANEAN ALLIED AIR FORCES 10 JUNE 1944



TOTAL N° OF SQUADRONS	
USAAF	172
RAF	109
FRENCH	15
GREEK	3
POLISH	1½
YUGOSLAV	1
ITALIAN (GRUPPI)	17
TOTAL	318½



1200

THE ROYAL AIR FORCE REGIMENT (1)Development since the Salerno Landings

A R.A.F. Regiment Wing landed at Salerno in September 1943. In early January 1944, reductions in the Regiment ceiling brought the figure for the Central Mediterranean down to three thousand five hundred men. As the land and air fighting bases assumed a clearer pattern, the Regiment itself settled down into a three-Wing organisation; one Wing(2) came under control of Desert Air Force, one(3) under Tactical Air Force and one(4) was attached to No. 205 Group R.A.F. in the Strategic Air Force.

In April and May, Field Squadrons fought in the line on both Fifth and Eighth Army fronts. Squadron duties, of which the primary had once been the defence of airfields, blossomed in several directions under the pressure of circumstance and the steady decline of enemy offensive air power. For example, on the eve of the fall of Rome, there were Regiment personnel in the lines, patrolling, occupying Ciampino airfield and claiming to be the first troops to enter the towns of Ostia(5) and Fiumicino.

After the fall of Rome, the Regiment settled down for a time in three areas. Firstly, on the western front, where they provided escort and anti-sabotage guards for M.A.A.F. Field Intelligence units; secondly, on the eastern front, where they provided anti-aircraft protection for airfields in the Pescara area and maintained the Ground to Air Landmarks(6) (also known as Ground Air Navigation Aids) referred to in Volume I, for V Corps of Eighth Army; thirdly, in the Foggia area with the Wellington Group, and a new wing was added in July. No. 1321 Wing broke away and joined Balkan Air Force, operating from the island of Vis.

MAAF/1405/4/
CRAFR/Encl. 211a,
17 July 1944
(A.H.B./IIJI/
273/1/4(A))

Removal of Airfield Anti-Aircraft Defences

M.A.A.F., O.R.B.
A.H.B. Monograph
on the R.A.F.
Regiment
(draft)

September brought an important policy change. It was decided to remove progressively all light anti-aircraft defences from airfields in Italy. By now, Balkan Air Force was controlling eight Regiment squadrons. The small forces remaining in Italy entered a period of intense activity, some operating with famous regiments in Wheelerforce in late September and in Porterforce in November; others carried on the maintenance of Ground Air Landmarks and others operated in small armoured vehicles as forward links in the Rover control system. The squadron in the line - No. 2721 - moved on from its base outside Ravenna across the Lamone River. Several Squadrons were sent to the Balkans and Greece from September to December.

-
- (1) For the full history of the Regiment, the special monograph must be studied.
 - (2) No. 1 (Provisional) altered to No. 1319 on 24 Apl. 1944.
 - (3) No. 2 (Provisional) altered to No. 1320.
 - (4) No. 3 (Provisional) altered to No. 1321 on 24 Apl. 1944.
 - (5) In the days of Ancient Rome a base for ships of war.
 - (6) G.A.L's.

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By the end of December, there were only two Rifle Squadrons and three Field Squadrons left in Italy. The former specialised in anti-sabotage and guard duties for M.A.A.F. from their bases on airfields at Santarchangelo and Rimini. The latter fought as infantry or worked on the navigation aids. By 18 February 1945, seven squadrons having been drafted to Palestine in view of trouble with the Irak Levies, only one Wing⁽¹⁾ and one odd Field Squadron⁽²⁾ remained in Italy.

Regiment Operations on Close Support

A.H.B. Mono-
graph on the
R.A.F. Regiment
(draft)

A brief word on the Regiment functions in connection with ground support will not be out of place here. The system of Rover control of cab-ranks with the out-stations providing a link of radio telephonic communication between troops in the forward sectors and the actual Rover control is, by now, familiar ground. From June 1944, one squadron of the Regiment was more or less permanently employed on this link work. They operated in their light armoured reconnaissance cars,⁽³⁾ from half-an-hour before dawn until dusk. Crews led a vigorous life with the forward troops and shared their risks. The work was eminently suited to the standing role and character of the Regiment.

-
- (1) No. 1320.
 - (2) No. 2744.
 - (3) General Motors.

AIR SUPPORT OF GROUND OPERATIONS

Headquarters Fifth Army
9 March 1944

TRAINING MEMORANDUM)

NUMBER 7)

SECTION I

PURPOSE

1. Training Memorandum Number 33, Headquarters Fifth Army, dated 22 April 1943 is rescinded.
2. Air Support has undergone many changes in the past eighteen months and this memorandum explains the present doctrine, and operation of Air Support as it applies to the Fifth Army. FM 100-20, Field Service Regulations, dated 21 July 1943, covers the basic principles of 'Command and Employment of Air Power.' Due to the lack of any detailed doctrine on air support of ground operations in the American Army, this training memorandum is being published. The latest War Department publication is FM 31-35, 'Aviation in Support of Ground Forces', dated April 9, 1942.

SECTION II

EMPLOYMENT OF AIR POWER

1. Any officer who holds high command, or who aspires to hold high command, must understand clearly certain basic principles regarding the use of air power. The greatest asset of air power is its flexibility, and this enables it to be switched quickly from one objective to another in the theatre of operations. So long as this is realized, then the whole weight of the concentrated use of the air striking force is a campaign-winning factor of the first importance.
2. The command of all air forces allocated to assist land operations is vested in an independent air commander. With limited air resources, there is a definite requirement for this centralized control to achieve the necessary measure of concentrated effort. Nothing could be more fatal to successful results than to dissipate the air resources into small packets, placed under command of division or corps commanders, with each packet working on its own plan.
3. Location of Air Headquarters
 - (a) The Headquarters of the Air Commander controlling the air units in the tactical area is located alongside the Headquarters of the Army Commander directing the battle, and therefore, is in immediate touch with developments in the ground situation.
 - (b) No portions of Air Headquarters, in the form of liaison officers, are permanently sub-let or attached to division or corps headquarters. However, the resources of the Air Headquarters can be made available to any unit in an advisory capacity for particular operational phases on request through Army Headquarters.
4. Role of Air Forces
 - (a) The primary value of the Air Force to the immediate ground situation is to prevent the enemy Air Force from interfering materially

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with our land operations. On the success of the air battle will depend the freedom of action of the ground and air forces at a later stage in the battle itself. Without this success the movement, concentration, supply and disposition of the ground units will be harassed and hampered and also known to the enemy, and the success of ground operations will be jeopardized. Consequently, when the Air Force is being employed on its primary task, the ground forces must appreciate its value in relation to operations as a whole. This point must be explained to all personnel so that the apparently independent air battle is placed in proper perspective.

(b) The secondary task of the Air Force is to assist the ground battle itself. The help that can be given by air forces at this stage will be discussed in later paragraphs.

SECTION III

AIR FORCE ORGANIZATION

1. In this theatre a combined British-American Air Force known as the Mediterranean Allied Air Forces (MAAF) has been established. MAAF includes the U.S. Twelfth and Fifteenth Air Forces and units of the British, French and Italian Air Forces. It is composed of the following major elements:-

(a) Strategic Air Force, primarily equipped with heavy bombers and long range fighters. Its mission is to attack and destroy, by bombing, vital industrial and communication centers of the enemy within the range of assigned equipment.

(b) Tactical Air Force, primarily equipped with medium and light bombers and fighters. The mission of the tactical air force consists of three phases of operations in the following order of priority:-

(1) First Priority. To gain the necessary degree of air superiority. This will be accomplished by attacks against aircraft in the air and against those installations which the enemy requires for the application of his air power.

(2) Second Priority. To prevent the movement of hostile troops and supplies into the theatre of operations, or within the theatre. The disruption of hostile lines of communication, the destruction of supply dumps and installations, and the attack of hostile troop concentrations in rear areas will cause the enemy great damage and may decide the battle. This accomplishes the 'Isolation of the Battlefield'.

(3) Third Priority. To participate in a combined effort with Army (and sometimes Navy) units in the battle area, to gain objectives on the immediate Army front.

(c) Coastal Air Force is in general responsible for air defense of rear areas and for anti-shipping operations.

(d) Troop Carrier Command is in general, responsible for movements of troop units, casualty evacuation and transportation of high-priority freight.

(e) Training Command is responsible for indoctrination of new air crews in matters peculiar to operations in this theatre.

(f) Air Service Command corresponds in general to the Army Service Forces organization and is responsible for the supply of all Air Force units in the theatre.

2. The Tactical Air Force is the part of the Air Force which is most closely connected with the operations of the ground forces. In this theatre, the Tactical Air Force is further divided into three elements:-

(a) Tactical Bomber Force, consisting of two wings, is equipped with medium bombers. It is normally directed against targets which affect the broad tactical operations of the ground forces. This force is also available to assist directly either the Fifth or Eighth Armies as the situation may warrant.

(b) XII Air Support Command, consists mainly of light bombers, fighter-bombers, fighters and reconnaissance aircraft. Its Headquarters adjoins the Fifth Army Headquarters and the Force is employed in close cooperation with the Fifth Army ground plan.

(c) Western Desert Air Force. The force is similar to XII Air Support Command and is employed in close cooperation with Eighth Army.

3. Staff Organization. Staffs of higher Air Force headquarters are usually divided into two major sections:-

- (1) The air, or operations staff, and
- (2) The administrative staff.

(a) The Operations Staff, consisting of the Chief of Staff, Air Plans, Intelligence and Operations, makes up the Advanced Headquarters and corresponds, in general functions, to the Chief of Staff, G-2 and G-3 sections of an Army Headquarters.

(b) The Administrative Staff, consisting of the Deputy Chief of Staff, A-1, A-4, armament, Adjutant, etc. makes up the Rear Headquarters and corresponds, in general functions, to the Rear Echelon of Army Headquarters.

SECTION IV

FORMS OF AIR SUPPORT

1. Reconnaissance.

(a) Air Force facilities are made available to the Army for the acquisition of visual and photographic reconnaissance information. Reconnaissance units remains part of the Air Force. However, to expedite execution of missions, the Army G-2, and sometimes Corps G-2, are authorized to transmit reconnaissance requests direct to squadrons. Such requests are processed through normal G-2 channels.

2. Fighter Operations.

(a) The fighter plane is an offensive weapon with the primary task of destroying enemy aircraft in the air. Success in air fighting is a vital element in destroying the effectiveness and morale of the opposing Air Force; any diversion of fighter planes from this role before the air situation is determined in our favor must weaken the air effort against the enemy Air Force.

(b) To give fighter aircraft a purely defensive role of protection in any capacity is an expensive employment of the weapon. Only in the most extreme cases is such employment justified. It must be remembered that fighter aircraft possess very short endurance and can therefore remain over an area being protected for a short period only. Another point is that fighter protection or cover to be effective must be on a scale comparable to the expected enemy attacks. The imposition of a mission of fighter cover is a serious strain on the operational capacity or effectiveness of an Air Force.

(c) Once the air situation has been determined in our favor, the offensive power of fighter planes can be employed in direct support of ground operations. A proportion of modern fighter aircraft are normally equipped to carry bombs. The fighter-bomber is capable of carrying an appreciable bomb load, and, having dropped its bombs, of again becoming a fighter.

3. Tactical Bomber Operations.

(a) The tactical bomber force represents real hitting power with bombs. A high measure of accuracy and destruction can be obtained against targets which are readily recognizable. Although tactical bombers carry an appreciable load, their employment is less flexible than that of the fighter-bomber. They are therefore somewhat unsuited for fleeting targets and are normally employed on a pre-arranged schedule against permanent or semi-permanent installations. Their occasional employment on a call basis usually occurs during a major push or to ward off withdrawal.

(b) Medium and light bombers which compose the bulk of a tactical bomber force normally require fighter escort. Multiple formations, of 12 to 18 bombers each, represent the most economical form of hitting power balanced against the diversion of fighters for escort. One or more formations of tactical bombers can be directed against any suitable target. Concentration of effort is practicable and is more likely to produce the desired result.

SECTION V

SELECTION OF TARGETS

1. It is impossible to provide rigid rules for the selection of suitable Air Force targets in the battle area. The importance of each target must be judged in relation to the overall Army plan.

2. In general, however, large concentrations of armor, vehicles, guns or troops which can be accurately spotted by the pilots are suitable. However, (again in general) close support should not be requested on targets which can be effectively engaged by concentrated artillery fire. Troops, guns, or tanks which are well dispersed and dug in are poor air targets.

3. When targets are presented to the Air Force for consideration, three factors are of prime concern in determining acceptance or rejection. These are:

- | | |
|------------------------------|---|
| (1) <u>Location.</u> | Is the target accurately pin-pointed and recognizable from the Air? |
| (2) <u>Nature of target.</u> | Of what does the target consist and how is it deployed? |
| (3) <u>Results desired.</u> | What effect is expected of the air action and how will it influence the battle? |

SECTION VI

METHOD OF AIR-GROUND COORDINATION

1. Air Support, as practised in this theatre, is promised on the established principle that the air and ground effort must be integrated at that level which is going to realise the maximum value from the available air power. Experience has indicated that this integration can best be attained at the level of the Fifth Army Headquarters insofar as it applied to air operations on the Fifth Army front. For this reason, Fifth Army Headquarters and Headquarters XII Air Support Command are normally located adjacent to one another. Corresponding staff members are thus able to exchange readily information and plans and are always available for discussion on matters of mutual interest.

2. Selection of Headquarters Sites. The selection of an Advance CP or an Advanced Headquarters normally is a result of compromise between the Army and Air Commanders. Both are influenced by the communications factors involved. The Army Commander is primarily concerned with communications to his forward units while the Air Commander is most concerned with wire communications to his airfields. The requisite adjustment is brought about through mutual understanding on the problems presented.

3. The Daily Operations Conference.

(a) Although operational information of mutual interest is exchanged continuously between the Fifth Army and XII Air Support Command Headquarters Staffs, an operations conference is held nightly to present and discuss activities of the previous 24 hours and plans for the immediate future (24 - 48 hours). This conference is attended by the 5th Army G-2, G-3 and Chief of Army Air Section and by the XII Air Support Command Chief of Staff, A-3, Intelligence and Operations Officers. The ideal form of procedure is as follows:-

- (1) The Army G-3 presents briefly the Army activity of the past 24 hours.
- (2) The Army G-2 presents briefly the enemy ground situation.
- (3) The Air Force (XII ASC) Operations Officer presents briefly the activity of friendly air units during the past 24 hours.
- (4) The Air Force (XII ASC) Intelligence Officer presents briefly the enemy air situation.
- (5) The Army G-3 presents the Army intentions for the immediate future and the requested air action for direct support for these intentions (see para. 3 Sec. V).
- (6) The Chief of Air Staff (XII ASC) accepts or rejects the individual Army Air requests missions and gives a brief summary of the over-all nature of air operations contemplated for the next day over and above those missions directly associated with the immediately battle front.
- (7) Any representative present brings out factors of mutual interest which may have a bearing on future operations.

(b) After the close of the conference, the Air Force (XII ASC) Staff prepares its detailed directive for the following day's operations and passes to the Fifth Army Headquarters details of effort to be brought

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to bear on request missions (weight of effort, time, etc.) This information is then passed by Fifth Army Headquarters to its subordinate units for the information of all elements and particularly for the benefit of the units which initiated air requests.

SECTION VII

MACHINERY OF REQUESTING AIR ACTION

1. Organization.

(a) On each division staff one officer should be designated as an assistant G-3, air. This officer should function in a manner similar to the assistant G-3, air, of an armored division.

(b) On each corps staff there should be established an Air Section consisting of an assistant G-3, air, and an assistant G-2, air. This section has all of the functions of the assistant G-3, air, on a division staff and in addition should handle matters of visual and photographic reconnaissance for the corps. This section handles all aerial intelligence matters through the Army G-2, and arranges all aerial attacks in support of the corps through the Army Air Section.

(c) On the Army Staff there is an Air Section consisting of sixteen officers. This section is charged with the establishment of the liaison network shown on Annex 1, the collection and dissemination of information from forward units and liaison officers with Air Force groups, and the collection of requests for air operations from subordinate units. Under the G-3, Army, this section processes and co-ordinates, within the Army Headquarters, all requests for air attacks, and all matters dealing with potential air targets. This section maintains liaison with the target section of A-3 of the Air Support Command for air advice on target suitability. This section also provides liaison officers to each Air Force group designated by the Air Support Command and employed in air support.

2. Communications

(a) The necessary radio communications, and terminal teletype equipment, for the radio nets shown in Annex 3 is furnished by an Air Support Communications Squadron. This squadron must be considered as a pool of radio parties that are sent out as needed. The number of sets employed and the type of set used depends on the situation.

(b) The Air Support Communications Squadron is responsible for the proper encoding and decoding, when cyphering is required in N-209 or Air Support Code, of messages passed over its nets. It also operates the message center at the Army Air Section Information Center.

SECTION VIII

ARMY LIAISON OFFICERS WITH AIR FORCE UNITS

1. Experience has indicated that the utmost in cooperative action is attained through mutual understanding at all levels. The ideal would be a constant interchange of personnel between ground and air units in order that each could see how the other functioned. Since such interchange is not always possible, experience has again indicated the desirability of establishing with each Air Force wing, group, and separate squadron operating on the Fifth Army Front, a liaison section consisting normally of two officers each. The mission of these officers is:

- (a) Keep the air unit and the individual air crew member informed of the ground situation and the immediate ground intentions, and
- (b) Keep the Army Headquarters advised of particular information reported by pilots which would have direct bearing on the ground situation.

SECTION IX

THE AIR SUPPORT MISSION

1. Air Support missions can be divided into two general classes. The first and most effective is the deduced or scheduled mission. This type of mission provides ample time for proper briefing of pilots and massing of effort. The second class is the call missions. These are missions on targets of opportunity.

2. Deduced Targets. All headquarters of Divisions, Corps and Armies prepare deduced targets.

(a) The Division, by careful study of the enemy situation, enemy capabilities and own plans can arrive at certain air targets which, if hit, will affect the Division's plans. The Division's requests for scheduled mission, arrived at by this process of deduction, are communicated to Corps Headquarters.

(b) The Corps, again by:-

(1) A careful weighing of the enemy situation and capabilities.

(2) Requests of Division, and

(3) Own plans can develop a series of targets which will benefit the Corps. The Corps requests for deduced targets are communicated to the Army Headquarters.

(c) After weighing the requests from all Corps, the Army staff is then prepared to summarize its requests to be presented at the nightly Army - Air Force Conference in terms of the overall Army Plan. (see Section VI).

3. Call Targets.

(a) A mission on a call target or targets of opportunity may originate at any headquarters. A Division may discover a target of opportunity through its artillery or other OP's. Corps may develop targets through Corps artillery sources or other means. Many of these, however, can and should be dealt with by artillery.

(b) The call target can usually be attacked within one and a half hours after discovery. The Air Support Command maintains one or more squadrons on ground alert to attack these targets of opportunity, if the general situation indicated the likely development of such targets. Experience in Italy has shown that only about 10% of all missions are on targets of opportunity. Call targets are proportionately more abundant in a moving situation.

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SECTION X

EXAMPLE OF PROCEDURE IN A CALL MISSION

1. Air OP of "X" battalion of "X" Division observes a column of 50 vehicles moving off the road into a bivouac in an orchard which is one mile east of S. ANGELO; orchard is at G-842158. This is outside of artillery range so the information is immediately passed by "X" F. A. Bn to "Y" Division Headquarters.
2. At the Division Headquarters the Division G-3 decides to request an air attack. He directs the assistant G-3, (Air) to submit the requests.
3. The Assistant G-3, Air then passes the following message, via telephone or via air support to the Air Section at Army Headquarters:-

"Fifty vehicles moving into bivouac at G-842158. Bivouac is in orchard one mile east of S. ANGELO. Attack as soon as possible."

 - (a) The above message is transmitted in the clear. Any other pertinent information such as a special bombline, restrictions on time of attack, etc. is sent as a separate message and encoded.
 - (b) Corps listens and can refuse the request but seldom does. Silence on the part of the Corps implies approval of the request.
4. On receipt of the message at Army Headquarters, the Air Section duty officer will have the request passed over rear link radios to all liaison officers at fighter-bomber groups as an information message. While the message is being passed to the rear the duty officer knowing the contemplated plan of action for the day, makes a quick check on the location of the target with respect to our troops. The duty officer then goes to the Army G-3 for a decision as to whether the Army will request the Air Force (XII ASC) to attack. If G-3 decides not to request an attack, the duty officer immediately initiates a refusal message to all personnel having the target request. The matter is then dropped. If the G-3 approves, the duty officer passes the request for an attack to the Operations Officer at the Air Support Command Headquarters.
5. Air Headquarters may reject the request. (e.g. Not a proper target, no planes available, unserviceable airfields, bad weather, too close to our troops, lack of definite location of target, etc.) If the request is rejected the duty officer notifies the G-3 and then sends a refusal message as in 4 above. If the request is accepted, the Air Force Operations Officer furnishes the estimated time over target and the designation of the executing unit plus such other information available or action desired of front line troops (show smoke, counter AA fire, smoke target, etc.) The Army Air Section duty officer then sends an acceptance message to the "Y" Division telling them the number and type of planes and the time of attack.
6. While the above action is being taken at the Army and Air Headquarters, the liaison officers at the fighter-bomber groups have informed the group operations officer of the request and also have assembled any detailed information of the target should that unit be assigned the mission.
7. The attack order having been received by "Z" Group through normal Air Force channels from XII ASC Headquarters, the briefing is expedited and the planes take off. The liaison officer with the group then sends an air support acceptance message to the Army Headquarters. This confirms information of the group attacking, the type, and number of planes.

8. The above procedure may appear to be complicated but actually is not and does result in fast response to call targets. The average time required from discovery of target to time of attack is about one hour and thirty minutes. In arriving at this time, a time of flight of thirty minutes must be considered.

9. (a) The attack is delivered and the planes return to the field. Upon return the pilots are interrogated by their intelligence officer. The Army Liaison Officer frequently attends the interrogation and is authorized to query pilots on matters peculiar to the ground situation. He then passes his information to the Army Air Section which in turn informs G-3 and the requesting division.

(b) In a like manner the assistant G-3, (Air) at the Division must secure any ground observer reports on results and transmit them to the Army Headquarters. This information is passed to the Air Support Command Headquarters and to the Army Liaison Officer at the attacking unit and serves to keep them informed of their results from the ground viewpoint.

10. This last interchange of results completes the mission. Normal time required from discovery of target to completion of interchange of observations should require not over three hours.

By command of Lieutenant General CLARK:

A. M. GRUENTHER,
Major General, G.S.C.,
Chief of Staff.

THE EFFECT OF AIR POWER IN A LAND OFFENSIVE

An Appreciation by Air Chief Marshal Sir John Slessor, Deputy Air C.-in-C.
M.A.A.F. dated 18 June 1944.

1. The following notes summarize the part that air power has played in the recent break-through in Italy and may be expected to play in similar circumstances in other theatres.
2. It may clear the issue to mention first the things that air power can not be expected to do in a land campaign of this nature:-
 - (a) It can not by itself defeat a highly organised and disciplined army, even when that army is virtually without air support of its own. The German will fight defensively without air support or cover, and does not become demoralised by constant air attack against his communications and back areas. The heaviest and most concentrated air bombardment of organised defensive positions can not be relied upon to obliterate resistance and enable our land forces to advance without loss.
 - (b) It can not by itself enforce a withdrawal by drying up the flow of essential supplies. The German's efficient organisation, his policy of living on the country regardless of the interests of the inhabitants and his extreme frugality and hardiness result in an unsurpassed capacity to maintain his stocks in apparently impossible circumstances at the essential minimum, in circumstances when he is not being forced to expend ammunition, fuel, vehicles, engineer stores, etc., at a high rate.
 - (c) It can not entirely prevent the movement of strategic reserves to the battle front, of tactical reserves from one part of the front to another, or of forward troops to fresh positions in rear.
 - (d) In short, it can not absolutely isolate the battlefield from enemy supply or reinforcement.
 - (e) It can not absolutely guarantee the immunity either of our forward formations or back areas, port installations, base depots, airfields, convoys at sea, etc. against the occasional air attack or reconnaissance.
3. What it can do, and has done in the present battle which, it must be remembered, began with the preliminary air offensive on or about 15 March, is to make it impossible for the most highly organised and disciplined army to offer prolonged resistance to a determined offensive on the ground - even in country almost ideally suited for defence; it can turn an orderly retreat into a rout; and virtually eliminate an entire army as an effective fighting force.

The converse of 2 (a) above is equally true. An army by itself cannot, in modern warfare, defeat a highly organised and disciplined army on the defensive. The power of the defence on land has not been overcome by the tank or by improved artillery technique, but by air power. It is doubtful whether anyone could be found to deny that if there had been no air force on either side, the German army could have made the invasion of Italy impossible except at a cost in national effort and human life which the Allies would have been unwilling if not unable to face.

4. This is dealt with in more detail in the following paragraphs.

The first thing the air force can do, to a degree which no one would have believed possible two years ago, is so to dominate the air in the battle area and in the enemy's rear that our army can make its dispositions, supply and administrative arrangements in the most convenient manner, virtually regardless of the enemy air threat. No one who is familiar in Italy with the vast supply dumps and camps - laid out without regard to dispersion - the crowded shipping in Naples harbour, the endless columns of vehicles almost nose to tail on the roads right up almost to the front line, the railways working to capacity night and day, the packed airfields, can adequately appreciate the appalling difficulty of supplying, maintaining and moving a great army in the conditions prevailing the other side of the line. It is hardly an exaggeration to say that the Army can safely disregard, and has virtually disregarded in Italy the existence of an enemy air force. There have been occasions such as in the Anzio beachhead, where the Luftwaffe has been a nuisance; when inconvenience has been caused by the sinking of an occasional ship with important cargo; and when a few casualties have been caused by a sneak raid. But taken by and large the Luftwaffe has ceased to exist as a factor of any importance in the land battle in Italy. The enemy has even been denied effective reconnaissance, while on no occasion has any Allied Commander ever had to go short of information required from visual or photographic reconnaissance; and an invaluable influence on the land operations has been exercised by the Artillery Observation aircraft which have been able to get on with their job virtually unhampered.

5. Largely owing to this domination of the air, the air forces have been able to create a situation on the enemy's lines of communication and supply in which his continuous maintenance of upwards of eighteen divisions south of Rome was little short of a miracle. With the exception of literally only one or two very short periods during which one relatively unimportant stretch of line was open, every single one of the railways south of the line Pisa - Rimini had been kept cut in several places since the 24 March, and immense dislocation has been caused by a series of very successful attacks by heavy bombers on focal points on the railway system north of the Apennines. For over three months before the assault on 12 May enemy M/T were being destroyed at the rate of 20 to 30 a day, representing a monthly loss of the order of 50 per cent of the M/T available in Italy, in addition to many others damaged. And, although the enemy was able to supplement his road and rail lift to a meagre extent by seaborne supply to the small ports on both coasts, movement of his shipping by day was brought to a standstill, and he was never able to approach the programme in terms of weekly tonnage which we know he had set himself.

6. Nevertheless, the aim we set ourselves at the end of February of making it impossible for the enemy to maintain his armies south of Rome, was not fulfilled before the opening of 'Diadem'. At the beginning of March he had substantial reserves in his depots and forward dumps, accumulated during the bad winter weather when flying was impossible for days on end; and in spite of the devastation of his communications and transportation he was able, by superb organization and unremitting labour, to trickle forward a daily tonnage adequate to maintain his forward stocks well above the danger level so long as he was not being forced to fight. It must be remembered that except for the short and abortive battle of Cassino in March the Italian front was inactive from the close of the enemy's last attempt to drive in the beachhead late in February till the opening of 'Diadem' on 12 May. In these circumstances it proved impossible for the air to do more than hold the position on the enemy's supply front and pave the way for the joint offensive in May, by preventing the enemy from putting himself in a position to resist for a longer time than the Allies were in a position to continue attacking. It should not be forgotten in the flush of victory that the real breakthrough did not come till 1 June, twenty days after the opening of the offensive, and it is a fact that by the end of May General Alexander thought it probable that it would be necessary to call a halt, rest his tired divisions, regroup and build up for a further staged attack on the Uncton line. But by this time the enemy's reserves of the two vital commodities -

fuel and ammunition - were well below the danger point, his capacity to distribute stocks to units in sufficient quantities to meet the requirements of intensive fighting had been paralysed by his enormous losses in M/T and the catastrophic condition of his roads and this, combined with fatal delays imposed by air action in the movement of reserves and with fatal reduction in the fighting efficiency of these reserves on arrival - particularly of the Hermann Goering Division - "snapped the elastic" and he broke.

It is not suggested that the break was due to the air alone; the army played its essential part by breaking in, maintaining the pressure, forcing him to fight and expend, and exploiting his weakness by the thrust on to the Alban Plateau and to Valmontone. But there is not the slightest doubt that the break through would have been impossible but for the air. And now we have ample evidence to prove that two vital contributory factors were shortage of fuel and ammunition.

7. It has been said above that the air cannot prevent the movement of reserves. 'Diadem' has proved, however, that it can delay and disorganize it, to an extent that will be fatal in circumstances when it is essential to the defence to be flexible, to move reserves quickly to a threatened point, and have them in a position to fight effectively on arrival at that point. We have ample and irrefutable evidence of delays imposed on the movement of strategic reserves by air action, probably the most critical of these was the move of Hermann Goering, who was brought in from the Leghorn area where they had been refitting as a reserve, it is believed, for the Western front. One of the most remarkable incidents of the whole battle was the way in which that redoubtable division failed to have any important influence on the battle. We now know that its arrival was delayed, it suffered heavy losses in men and vehicles from air action on the way in and its morale was at a low ebb by the time itself in a fluid battle called upon to putty up a gap which, by the time it arrived, was too ragged and gaping for any putty.

8. Lord Trenchard has said that all land battles are confusion and muddle, and the job of the air is to accentuate that confusion and muddle in the enemy's army to a point when it gets beyond the capacity of anyone to control. This is exactly what the air did to the German Army in Italy in the critical last days of May and first days of June. Roads were cratered and blocked by destroyed vehicles, telecommunications were cut, villages became a mass of rubble barring through movement, local reserves could not be moved because there was no petrol available, forward troops were out of ammunition and out of touch with their controlling headquarters, nobody knew for certain where anyone else was, and the troops were hungry, thirsty, tired and demoralized by constant attack from the air. Above all, perhaps, the enemy was deprived by the impossibility of rapid and coherent movement, of tactical flexibility which has always been such an admirable quality in German defensive fighting. The surprising thing is that the remains of the shattered divisions were able to disengage at all or to preserve any sort of entity as units. It speaks volumes for the discipline and fighting qualities of the German soldier that they were able to do so even to the limited extent they were.

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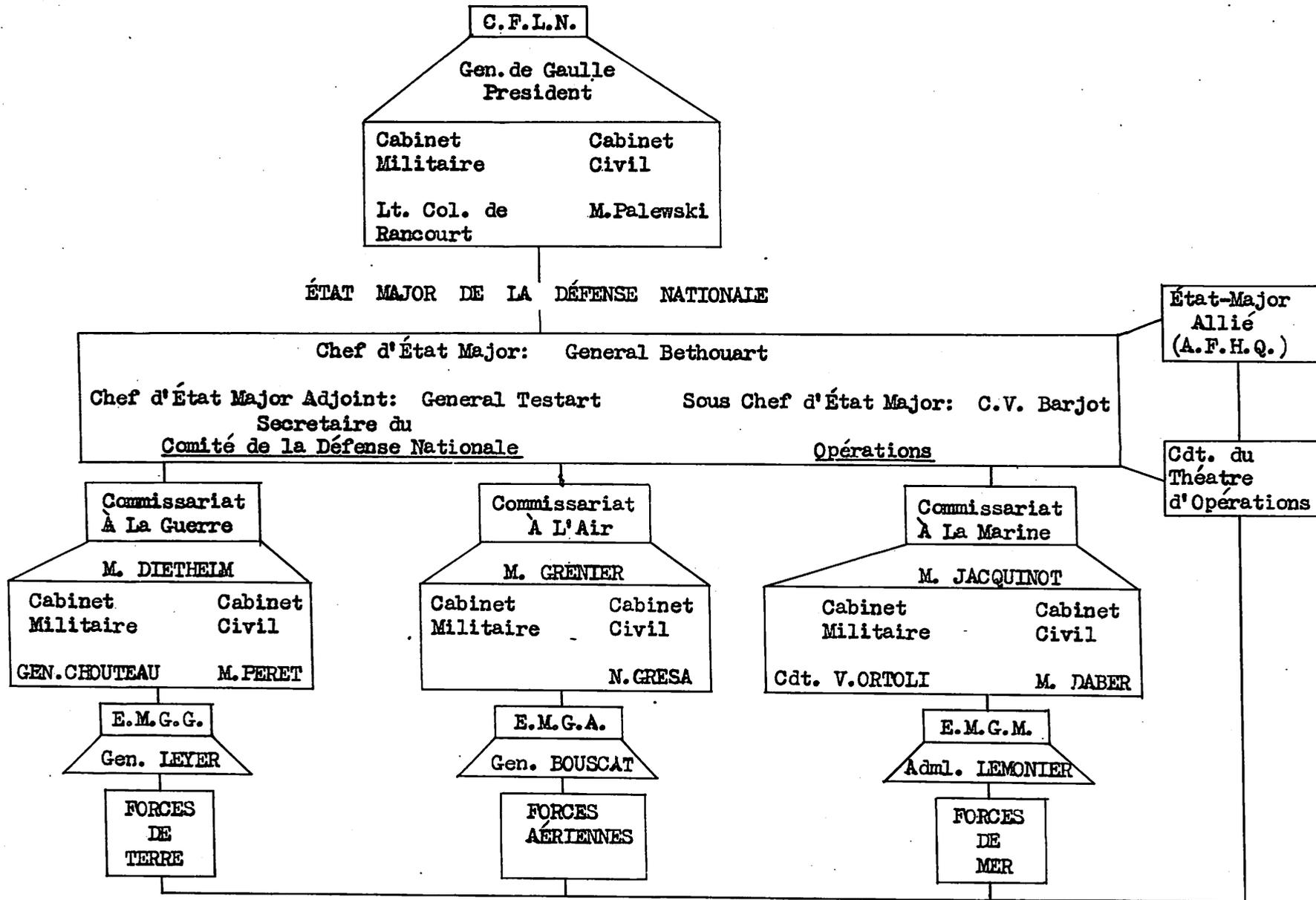
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9. The divisions that were engaged in the battle south of Rome have, in varying degree but in the aggregate to a very large extent, ceased to exist as first-line divisions. Full details of the enemy's losses in heavy equipment are not yet known. But it is known that he was able to extricate only a fraction of his tanks and heavier natures of artillery. His disastrous losses in M/T, amounting to hundreds a day during the crisis of the battle, were such that we know only the most vital supplies - fuel and ammunition - were allowed to be transported, and he cannot possibly have been able to get away more than a small proportion of his stores and heavy equipment. Even had his M/T not been decimated and his road communications dislocated to the extent that they were, no army can advance or withdraw without the extensive use of railways. No appreciable rail movement from the front back to the Pisa - Florence - Rimini area has taken place for weeks. Thus, while it is perhaps rash to end a paper of this sort on a note of prophecy, it is difficult to see how Kesselring's forces can make a stand on the Pisa - Rimini line of a type to necessitate a stated assault on our part without drawing on reserves of tanks, artillery and other heavy equipment which the enemy can ill afford to spare from other points in present circumstances. The moral is that we should continue to exploit the peculiar qualities of the air as the weapon of pursuit, to give the enemy no respite or opportunity to build up stocks of ammunition, fuel and equipment, and thus maintain the impetus of the Army's advance over the Apennines and into the valley of the Po.

(6573)414

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ORGANIZATION OF THE FRENCH HIGH COMMAND - JUNE 1944



NOTES ON HISTORY OF FRENCH AIR FORCE REARMAMENT

The history in brief of the rearmament of the French Air Force is as follows. At the time of the North African invasion, assurances were given on behalf of the United States that the French would be re-armed, a force of eleven divisions and appropriate air forces being envisaged. At the Casablanca Conference in January 1943, President Roosevelt renewed these assurances. Owing to the acute needs of the British and American forces and to shipping difficulties, early promises could not be fulfilled. In January, a squadron of Warhawks was given to the French, which was named the Lafayette Escadrille. In March 1943, the British gave them a squadron of Spitfires. In the following months the French were given ninety-six Airacobras, Vengeances (diverted to training and security operations) sixty Bobcats (Br. Crane) (Co78's) for training and communications, Dauntlesses (A - 245s) for training, a squadron of Marauders and more Spitfires. In September 1943, a co-ordinated plan for rearmament of the French Air Force was prepared, designed to produce a small, well balanced and independent nucleus, around which could subsequently be built a renovated Air Force. The essential elements of a tactical air force were all present in the plan, the key factor on which its scope was based being the actual and potential availability of French Air Force personnel for combat and service units. The French did not have, either then or at the time of the invasion of Elba, any surplus air force personnel beyond those envisaged in the plan. The extent of reasonable demands on U.S. and British resources was considered. General Eisenhower, Air Chief Marshal Tedder and General Spaatz approved the plan and forwarded it to the U.S., where it was approved by General Arnold and submitted to the Combined Chiefs of Staff. They gave their approval, (subject to the reservation that modification might be made when the military situation required), on 29 January 1944.

F.A.N. 330
29 Jan. 1944.
H.Q., M.A.A.F.,
Apps. French
Air Liaison
1944 Annexure
V, p.4.

General Order
No.9 Sept.1943.
M.A.C.
(Foreign
Liaison O.R.B.)

The Joint Air Commission was created early in September 1943 as an organisation of M.A.C. (later M.A.A.F.) to consider and submit recommendations to the Air C-in-C. in all matters pertaining to the French Air Force, with the object of implementing the policy of the C.C.S., the C-in-C. Allied Forces, the U.S. War Dept., the British Air Ministry, and the Air C-in-C. M.A.C. with respect to French air matters. The Joint Air Commission consisted of a Chairman (American), a British member and a French member. The Chairman in June 1944 was Colonel W.T. Gardiner. The British member was Group Captain Rock de Besombes, the French member Lieutenant Colonel Hartemann. The operational commander of the French Air Force was General Bouscat.

The activities of the Joint Air Commission included not only supervision of the implementation of the Rearmament Programme as regards aircraft and supplies, but also training, upkeep of bases, repair depots, schools, meteorological stations and similar installations. It occupied a position in relation to the French Air Force similar to that of the Joint Rearmament Commission to the French Ground Forces. In it were vested responsibilities for overseeing the administrative preparation of F.A.F. air and service units for combat and ensuring that they were adequately trained and equipped before being turned over to M.A.A.F. to take part in operations. The whole plan was issued in comprehensive final form on 7 March 1944.

(6573)417

OPERATION 'OLIVE' (AUGUST - SEPTEMBER 1944)

DISPOSITION OF ALLIED TACTICAL AIR FORCES

Formation or Unit	AIRCRAFT		Location on 9 August	Location on 26 August	Remarks
	Type	Approx. Number			
42nd Bomb. Wing U.S.A.A.F.	Marauder and Mitchell Med. Bombers	150	Sardinia	Sardinia	Under command MATAF
57th Bomb. Wing U.S.A.A.F.	Mitchell " "	150	Corsica	Corsica	" " "
No. 3 Wing S.A.A.F.	Marauder " "	36	Pescara	Pescara	D.A.F.
No. 232 Wing R.A.F.	Boston and Baltimore Light Bombers	48	Cecina	Cecina	Under command XII TAC
No. 15 Sqdn. S.A.A.F.	Baltimore " "	12	Taranto (a)	Falconara	D.A.F.) Later the foundation
No. 454 Sqdn. R.A.F.	Baltimore " "	12	Pescara	Falconara	D.A.F.) members of No. 253 Wing
No. 7 Wing S.A.A.F.	Spitbomber	48	Fbiano	Fbiano	D.A.F.
No. 239 Wing R.A.F.	Mustang, Kittyhawk	72	Crete (Italy)	Iesi	D.A.F.
No. 241 Sqdn. R.A.F.	Spitfire	12	Falconara	Chiaravalle	D.A.F.
No. 244 Wing R.A.F.	Spitbomber	72	Perugia	Loreto	D.A.F.
No. 285 Wing R.A.F.	Spitfire	38	Malignano	Chiaravalle	D.A.F. Tac and Photo R
No. 600 Sqdn. R.A.F.	Beaufighter	12		Falconara	Under command No. 287 Wing (M.O.R.U.) night fighters

(a) Recently arrived in Central Mediterranean

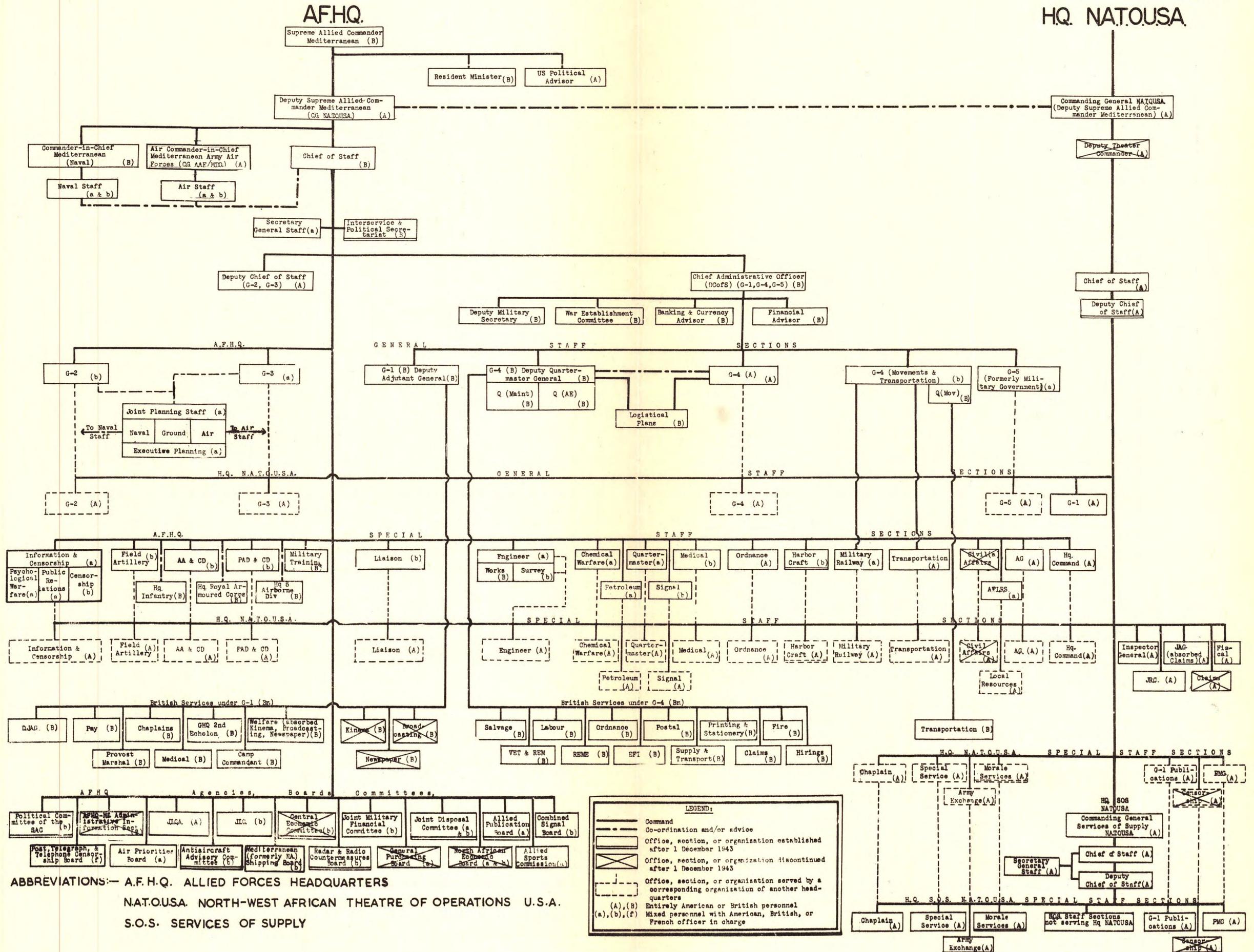
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APPENDIX 9

ORGANIZATION CHART AFHQ-HQ. NATOUSA.

JUNE 1944

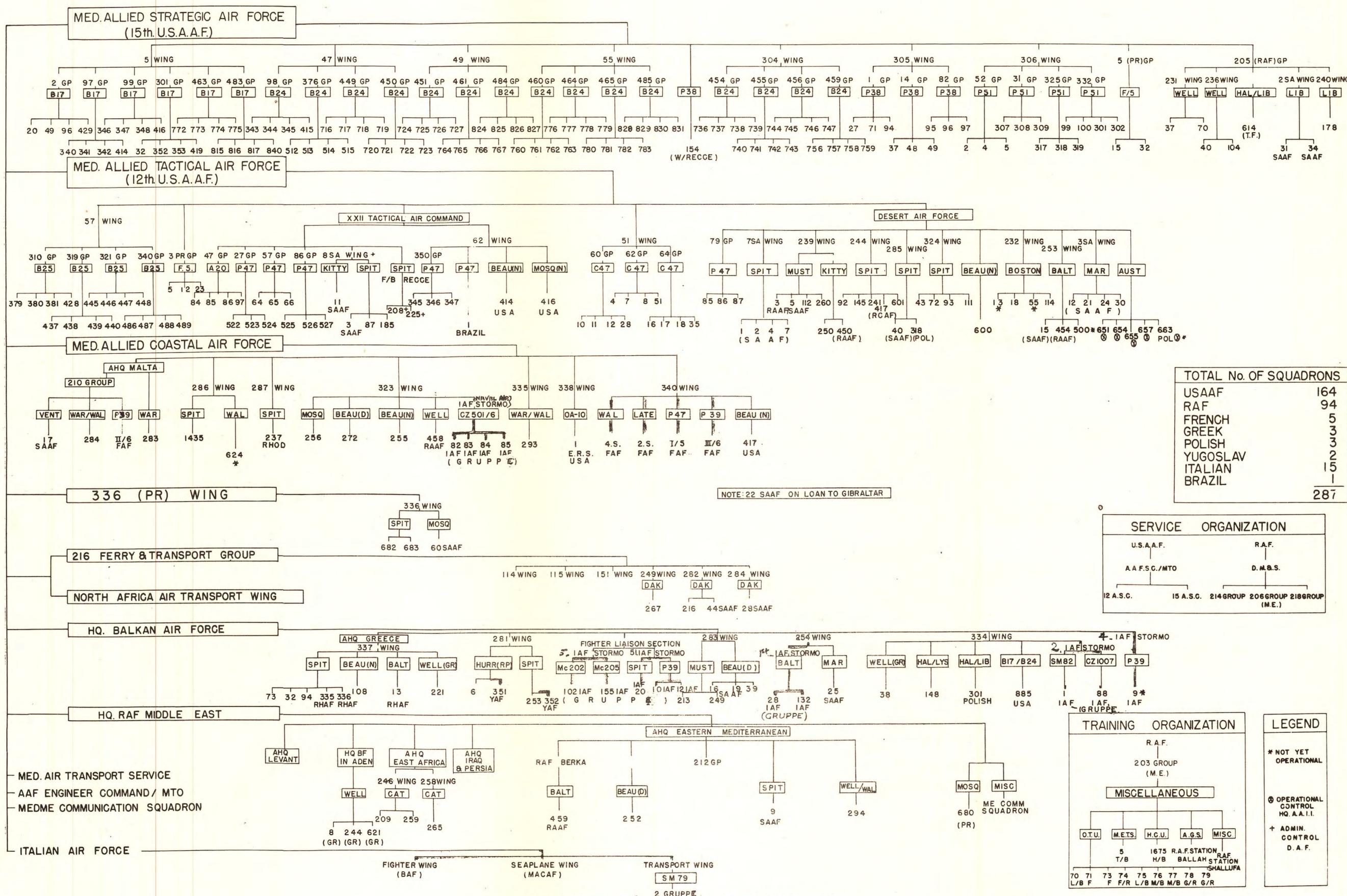
APPENDIX II



ABBREVIATIONS:— A.F.H.Q. ALLIED FORCES HEADQUARTERS
 N.A.T.O.U.S.A. NORTH-WEST AFRICAN THEATRE OF OPERATIONS U.S.A.
 S.O.S. SERVICES OF SUPPLY

OPERATIONAL ORDER OF BATTLE, MEDITERRANEAN ALLIED AIR FORCES

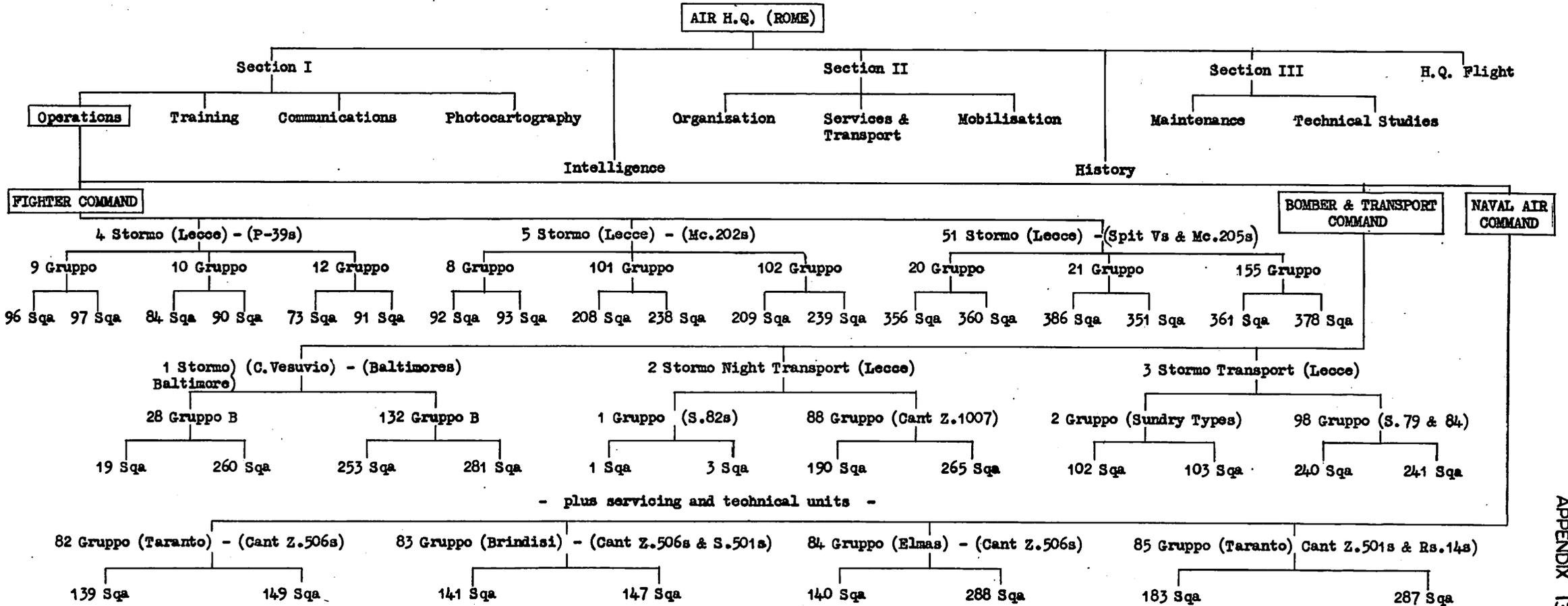
10 DECEMBER 1944



ORGANIZATION CHART

ITALIAN AIR FORCE

OCTOBER 1944



FOREIGN ALLIED AIR FORCES

THE ITALIAN AIR FORCE

The Italian Air Force Re-organization September 1943

No mention has been made, since the record of the armistice, of the Italian Air Force, which had grown from crude beginnings to a force of quite considerable proportions. (1)

S. 1/Air
Report by
A.V.M. R.M.
Foster
(A.H.B./ILJ1/
186/46,
Encl. 5a.)

After the Armistice Meeting on 29 September 1943 on board H.M.S. Nelson, Air Marshal Tedder held an interview with the Italian Air Minister, at which he laid down the principles under which the Italian Air Force was to function. His instructions were to re-organize it in the way best calculated to be of service to the Allied cause: it was to use only its own equipment. The Allies would supply essential stores and fuel; in all other respects the Italians were to be self-supporting. All assistance given to the Allies would be noted and credited to the Italian nation when post-war settlements were made.

The main features of the plan drawn up (2) were the drastic reduction of redundant staffs and general officers, the formation of one fighter, one bomber transport and one coastal wing, a maintenance organization, a comprehensive salvage system and the organization of surplus personnel into units as replacements for Allied personnel.

Brief History of Italian Air Force from Re-formation up to March 1944.

The Italian Air Force was re-formed. Recovering rapidly from its initial state of shock and confusion, it set to work with a will to converting promises into action. In turn, difficulties over accommodation, spares shortages, short rations and poor landing grounds were tackled and the situation improved. Most of the units were allotted, for political reasons, to operations over the Adriatic and Balkans. These became an integral part of the Balkan Air Force on its formation in June 1944. Their operations do not come within the scope of this narrative. Other units were incorporated in Coastal Air Force. (3) The whole came within a national structure under an Italian Air Ministry, (4) subject to the command of Mediterranean Allied Air Forces. Its strength in March 1944 was 108 fighters, 57 bombers, 56 seaplanes, 129 aircraft on transport and similar duties and 73 under rebuild after salvage, a total of 423 aircraft.

After an unsuccessful attempt to relieve the garrisons of Corfu and Kephallonia islands, operations were slowly stepped up. The fighter Wing was based at Palata in the

-
- (1) 15 Squadrons in December 1944.
 - (2) By A.V.M. R.M. Foster, later appointed to the Air Forces Sub-Commission of the Allied Control Commission.
 - (3) For a picture of the elements of the I.A.F. within M.A.A.F. organisation at 10 Dec. 1944 refer to Appendix 12.
 - (4) For the Italian Command organisation refer to Appendix 13.

Foggia plain, the Bomber Transport Wing at Lecce and the Coastal Wing at Taranto, with detachments at Brindisi and Lake Varano. By the end of March, impressive statistics(1) could be pointed to in terms of hours flown and damage to the enemy system; a programme of training for parachute drops, which was to bear good fruit in North Italy later in the campaign, was instituted.(2)

The promise to supply labour had resulted by 20 March 1944 in a total of over 10,000 skilled and unskilled men in the permanent employ of the R.A.F. and U.S.A.A.F.(3) Allied satisfaction to that point with the Italian air effort was expressed in the conclusions of the report to the Air Commander-in-Chief.(4)

The foregoing details give proof that the Heads of the Italian Air Force have taken genuine steps to give their maximum contribution to our war activities. In the execution of these operations, the actual flying units have shown unexpectedly good qualities. Having seen the condition of this force at the time of the Armistice....., I have been frankly surprised at the operational standard produced. I consider, that, as far as their Air Force is concerned, the Italians have met in full the obligation which they undertook at the time of the Armistice.

.....Therefore I consider it only right to remind you of the undertaking given at the time of the Armistice by the then Air Commander-in-Chief who, as General Eisenhower's representative, stated that the extent to which our war effort benefited from Italian co-operation would be taken into full account when settlements were being considered at the close of hostilities. In my judgement, the Italian Air Force has, during the past six months, made a whole-hearted effort to contribute its share in operations against the enemy, and I felt that this fact should be plainly recorded, so that it can be placed to the credit of the Italians when the time for settlement comes.....'

Italian Air Force, March to October 1944. (5)

On 15 June, at the time of the formation of the first Bonomi cabinet, General P. Piacentini became Air Minister and General M. Pezzi, shortly afterwards, Chief of Air Staff. Air Headquarters moved to Rome on 15 July, leaving in Bari only the secretariat and logistics section. Later, in December 1944, in the second Bonomi cabinet, the Air Minister was G. Scialoja and the Chief of Air Staff General M. Aimone-Cat.

(1)	In the six months following the Armistice the I.A.F. flew 9,754 hours in 3,309 sorties, for the loss of 29 aircraft.
(2)	<u>L'Aeronautica Italiana nella Guerra di Liberazione. Historical Office H.Q. Italian Air Force 1950.</u>
(3)	U.S.A.A.F. Skilled men 1,356 Unskilled men 5,675 = 7,031
	R.A.F. Skilled men 375 Unskilled men 298 = 671
	Port Labour 2,083
	Balloon operators supplied by Navy. 500
	Total <u>10,285</u>

(4) 27 March 1944.

(5) Refer to Appendix 13 for organisation October 1944.

The Italian Air Force was rewarded for its loyalty, following a tribute in the House of Commons by the Prime Minister, by a slow but steady accession of Allied aircraft, beginning with Airacobras in June and progressing to Spitfire Vs in September and Baltimores in November.

Fighters operated from Nuova from May to August and from Leverano between August and October, when, owing to the poor state of the landing ground and the heavy rains, they moved to Lecce/Galatina. Their operations over the Balkans may be followed in the History of the Balkan Air Force. The useful efforts of the Naval Gruppo⁽¹⁾ are to be found in the records of No. 323 Wing.

It will be seen⁽²⁾ that by October 1944 the Italian Air Force fighting with the Allies comprised firstly a Fighter Command⁽³⁾ of three Storme flying Airacobras, Mc.202s, Spitfire Vs and Mc.205s;⁽⁴⁾ secondly, a Bomber and Transport Command of three Storme,⁽⁵⁾ one of Baltimore bombers, one night transport Stormo flying Savoia 82s and Cant. Z.1007s and one transport Stormo comprising two Gruppe flying Savoias 79 and 84 and other types: thirdly the Naval Air Command⁽⁶⁾ comprising four Gruppe,⁽⁷⁾ flying Cant. Z.506s and 501s and Rs.14s, based at Taranto and Brindisi and Cant. Z.506s based at Elmas in Sardinia. There were, in addition, civilian aircraft co-operating.

The Clandestine Italian Air Resistance Front.⁽⁸⁾

There was a great deal more behind the Armistice of September 1943 than the tables of surrendered aircraft indicated. All Italian officers became suspect to the Germans and a searching process of weeding out and victimisation began. Many of those Italian airmen, loyal to the Allies, formed in early November the Clandestine Front of Air Resistance.⁽⁹⁾ It operated until the fall of Rome in June 1944, when the number of active members was about two thousand five hundred.

Others had gone underground, organizing sabotage, operating radio sets, supplying information on air matters to M.A.A.F. and holding together the core of the Air Forces until they could rejoin the Allied lines. Many died, some in prison, some in combat, some in the massacre of the Ardeatine Ditch on 24 March 1944. Among the citations for the Italian Gold Medal for Military Valour, the following is chosen at random.

-
- (1) Based in Sardinia under command of Coastal Air Force.
 - (2) Refer to Appendix No.13.
 - (3) Raggruppamento Caccia.
 - (4) Storme Nos.4, 5 and 51, each comprising three Gruppe of two Squadriglie each.
 - (5) Storme Nos.1, 2 and 3, each comprising two Gruppe of two Squadriglie each.
 - (6) Raggruppamento Idro.
 - (7) Nos.82, 83, 84 and 85.
 - (8) L'Aeronautica Italiana nella Guerra di Liberazione Ufficio Storico Aeronautica Militare Rome 1950 Air Ministry and Il Fronte Clandestine di Roma Rome 1946, Italian Air Ministry (A.H.B.1. translation) and refer to Appendix 15.
 - (9) Il Fronte Clandestino di Resistenza dell' Aeronautica.

'Airman Angelo Ricapito, after the disbandment of his unit following the armistice of 8 September 1943, left the airport of Zemonico (Dalmatia) and took part in the formation of a battalion for the defence of Zara. On the collapse of the affair, he was captured by the Germans and entrained for deportation to Germany, but at Venice succeeded, with some companions, in escaping, reaching the Tuscan Apennines and joining the partisan formations being set up.

Then began his activities in recruiting and training of volunteers, eluding brilliantly the keen searches of the German police: he thus succeeded in organising, in the Monte Favalto sector alone, over three hundred partisans.

Elected by his men for his gifts of leadership, he commanded a combat unit for ten months of intensive guerilla activity in which many of them fell. When on 1 May 1944 the XXIII Brigade 'Pio Porri' was formed, he became its Vice-Commandant.

During operations in the enemy's lair on 1 July, he remained isolated with ten men to take the shock of a German attack supported by artillery and armoured cars. After an uneven struggle, with the enemy sweeping the zone from the rear, Ricapito managed to disengage with the few survivors and crossed the front line with prisoners and arms.

The Allied command requested two men to cross the front line on a task of capital importance affecting co-ordination of operations with the partisans of XXIII Brigata. He insisted and obtained permission to execute the task personally. This mission completed, the partisan units found themselves under threat of an enemy column marching against them. He decided to remain with the Brigata H.Q. which was unable to sustain itself against the weight of numbers.

On 14 July 1944, during an enemy attack, he was captured by the Germans, who, recognising him, subjected him to atrocious treatment in order to obtain the precious military information in his keeping. But torture could not bend his spirit, not even when they buried him alive near San Polo di Arezzo.' (1)

The Italian Air Service of Information

Ibid

After the Armistice, the Italian Air Force furnished to the Allied Force H.Q. the elements of an information service for operations on both sides of the front line and it was these elements that provided the sources referred to in this narrative from time to time. The work was co-ordinated between Italian Air Force H.Q. and A.F.H.Q., the former providing, during the twenty months the Italians were at war with the Germans, 265 elements for mission work, all composed of men picked for their personal qualities and technical skill.

(1) Refer also to 'Occarde Tricolore' - Documentazioni Sul Contributo dell' Aeronautica Italiana Alla Guerra Di Liberazione. Air Ministry - Ufficio Stampa - Rome 1946. Supplemento straordinario del 'Giornale dell'Aviatore'.

These men, dropped by parachute, landed from submarine or crossing the lines on foot into enemy territory, did much to aid the operations of the Fifth and Eighth Armies. Sixty died in the execution of their duty. The British and American commands gave many signs of grateful recognition and five Bronze Star Medals and numerous awards of merit were bestowed on them. A great deal of information on enemy dispositions was passed to A.F.H.Q., and to Mediterranean Allied Air Forces operational data on airfields, works and public buildings in Germany, Austria and Czechoslovakia. Others who had taken refuge in Switzerland worked on our behalf through the agency of the Allied Information Services in that country.

THE FRENCH AIR FORCE

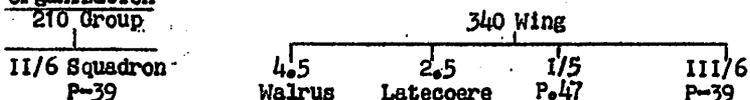
The Five French Coastal Squadrons

Administration
Organisation
O.R.Bs. M.A.A.F.,
Dec. 1944 and
French Air
Liaison
M.A.A.F., O.R.Bs

By December 1944, all that remained of the operational French Air Force under command of Mediterranean Allied Air Forces were five squadrons in Coastal Air Force. (1) The balance had passed to command of First Tactical Air Force and was operating on the northern front. There were, however, a number of other units, some attached to the R.A.F. and others on police and security duties in West Africa, Tunisia and French Equatorial Africa and with the U.S. Navy. The French desire to co-operate in operations and training always exceeded the Anglo-American ability to provide them with the physical means of doing so.

In addition to the units mentioned above, the French maintained, in the Levant, a training school for pupil pilots, (2) a school for wireless operators/air and air gunners (3) and a mechanics training school. (4)

(1) Organization
210 Group



Order of Battle

	Sqn.	Role	Type	U.E.	Location	Remarks
210 Grp F.A.F. Stn. Reghaia	II/6	S.E.F.	P.39	25	Reghaia	'Vendée' Sqn.
340 Wing (3 F.A.F. GP)	I/5	S.E.F.	P.39Q	25	Le Vallon	'Champaign' Sqn.
	III/6	"	P.39N	25	Le Vallon	'Roussillon' Sqn.
	2.5	A/B/R	Latecoere	10	St. Mandrier	
	4.5	"	Walrus	12	Cuers	

- (2) At Rayak in Lebanon
(3) At Damascus in Syria
(4) At Rayak

THE JUGOSLAV AIR FORCE

Jugoslav Squadrons in Balkan Air Force

Under command of Balkan Air Force were two Yugoslav squadrons - No. 351, equipped with rocket projectile Hurricanes, and No. 352, equipped with Spitfires, both in No. 281 Wing. The personnel came from the Middle East. A few R.A.F. officers were, in the early stages, double-banked with the Yugoslav officers. All the Yugoslav personnel had been incorporated into the R.A.F. Volunteer Reserve. After a series of accidents resulting from inexperience and temperament, they carried out their duties with zeal. Their operations do not come within the scope of this narrative.

THE POLISH AIR FORCE

The Three Polish Squadrons

M.A.A.F./S.
1643/1.Org,
10 Dec.1944.
(A.H.B.IIJ1/
150/368B,
Encl.19 a).

In early December 1944, there were only three Polish squadrons under command.(1) One of them was in Balkan Air Force. The other two were under command of Desert Air Force, one of them employed on Special Operations and the other on tactical and artillery reconnaissance. The latter worked with British and South African elements from 4 May 1944 until the end of the campaign and a brief outline of its history will reveal the physical conditions under which the tactical air force personnel laboured and the high degree of mobility that events thrust at times upon them.

Brief History of No.318 Squadron and No.285 Wing
April to July 1944

No.285 Wing
O.R.Bs and
Appendices
May to June
1945.

After the Polish Air Force had ended its share in the defensive phase based in the U.K., the bulk of it was merged into Second Tactical Air Force and fought in many notable actions over North-west Europe. In the Mediterranean, the solitary squadron in No.334 Wing took part in the gallant, abortive and costly effort to relieve the partisan uprising in Warsaw. The Auster Taylorcraft squadron spotted for the Army. It has already been noted how effective these small aircraft were in calling down artillery fire and to what degree they were feared by the Germans.

The remaining squadron - No.318 - was transferred from the Middle East at the end of April 1944. It arrived at Trigno airfield on 30 April (2) and carried out its first tactical reconnaissance sweeps on 4 May. Attached to No.285 Wing at the time was a detachment of Spitfire Squadron No.683, later part of No.336 (Photo Reconnaissance Wing), No.241 R.A.F. Spitfire Squadron and No.40 South African Air Force Squadron. This team continued together until the end of the year.

From the day after the arrival of the Polish Squadron, they began a long trek up the country from one landing ground

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- (1) No.318 Squadron in No.285 Wing of D.A.F., flying Spitfires; No.663 Squadron, in Desert Air Force, but under operational control of Allied Armies in Italy: and, No.301 Squadron in No.334 Wing of Balkan Air Force, flying Halifaxes/Liberators.
 - (2) Replacing No.208 Squadron.

to another, with attendant hardships that have to be lived through to be thoroughly appreciated. In May they moved to Aquino, in June to Orea, Falerium, Tortorello, Fermo and Orvieto. In late July they moved to Castiglione, and a few days later to Falconara and Malignano; 3 August found them at Chiaravalle, 31 August at Piagolino, 17 September at Cassandro, 28 September at Rimini, sown with thousands of enemy mines. Thence they moved to Bellaria. Not until 4 December did they know what it was to have a weatherproof roof over their heads. This was in Forli.

The subsoil of all these landing grounds was clay. This meant clouds of dust as soon as it dried off and, from the early onset of a heavy rainy season, airfields sticky and often unserviceable after a day's downpour. Being a front-line tactical wing, in the open, they experienced the most primitive living conditions, in spite of titanic labours on drainage and clearance. Their tentage was worn and the rain drove through it. The roads, already ruined by heavy lorry traffic, were better suited to pack animals than to the Wing transports units, who carried on with traditional and unceasing ingenuity their fight against the wear and tear of inadequate transport long past its prime, spares and repair shortages and a life of apparently perpetual motion.

History of No. 318 Squadron July 1944 to January 1945

No. 318 had only been based at Castiglione for five days when they were inspected as a unit of the Wing, and with a group from Polish Corps, by H.M. The King.(1) The next day it was foreseen that their stay would come to a sharp end. Air evacuation Dakotas in large numbers had cut up the runway to such an extent that the Poles could no longer take off or land: hence the succession of moves in August. On 25 August, when the Gothic Line battles were developing, No. 318 Squadron was allotted to reconnaissance for Eighth Army.

Important although belated experiments were carried out at this period. The normal last light reconnaissance of road systems was extended by a sortie sent out half an hour later over the same area. It was found that this sortie reported about four times as much movement as the last light one. A retracement of steps produced similar results. Aircraft landed after sundown on a night fighter landing ground, where a flarepath was always available. A similar scheme was tried at first light, with the pilot over the area as soon as it was light, but before the sun was up and throwing long shadows. This sortie reported a little more movement than normal, but was often hampered by early morning mists.(2) No. 318 Squadron, operating on the east coast in July, found that during the rapid advance in that sector they were able to add considerably to the panic and confusion by firing their guns at a safe height into areas where movement was seen or suspected, a practice only possible when an enemy's withdrawal

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- (1) Referred to officially for security reasons as General Collingwood.
 - (2) It may be wondered why none had thought before of such departures from routine, for clearly the enemy had profited by our method while we were decrying them as the slaves of method.

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is too rapid for him to organise his anti-aircraft defence. The photographic reconnaissance detachment was still over 300 miles from its parent unit.

August saw photographic cover of the German Gothic Line defences and road and railway bridge cutting. In September, heavy rains set in and it was decided to fly a bad weather detachment into the all-weather landing ground at Iesi on the 23rd, while the Wing's main field at Cassandro remained unserviceable. The battle area was covered for counter-battery work and reports on defences. A daily demand from Desert Air Force for the state of bridges in the Po Valley and on the Adige river were met.

From then onwards, the weather worsened and their airfields were frequently unserviceable. Lacking the administrative weight enjoyed by units further back, they were at a disadvantage in matters of accommodation and lived in primitive conditions in tented camps until 4 December, when the town of Forli was organised as an Allied base. Even then, it was found necessary for units of the R.A.F. Regiment to move into buildings requisitioned for the use of the Wing and to hold them against the encroachment of other service units and civilians until the air squadrons could move in and enjoy once more the luxury of a roof over their heads through which the rain could not percolate.

Army Recognition of Air Reconnaissance

On 3 Jan. 1945, the Polish Squadron was very short of pilots, so short that some were flying three missions daily. Nevertheless, on 28 January, G.1 of the Eighth Army congratulated them on their excellent co-operation. Again, three days later, the same source recorded that the detailed reports on enemy movement and the build-up of railway trucks had enabled them to assess accurately a movement of enemy forces away from the Italian front.

These services to the Army are evidence of the very close co-operation achieved in several spheres. The possession of the Mediterranean and all France, the capitulation of Rumania and Bulgaria and the Allied re-occupation of Greece had lessened the commitments of the Air Forces as well as the number of fields in which it could lay claim to rendering ground operations possible. At the same time, the shrinkage of the field of operations automatically rendered the degree of air co-operation more intensive and intimate in character.

THE BRAZILIAN AIR FORCE

1st Fighter Squadron

The 1st Brazilian Fighter Squadron was attached at this period to the U.S. 350th Fighter Group in 62nd Wing of XXII Tactical Air Command for operational control. It was a Thunderbolt Fighter Bomber unit. (1)

(1) Commanding Officer - Lt. Col. Nero Moura.

In January 1944, fifteen officers and sixteen enlisted men, all veterans of the First Brazilian Expeditionary Air Force, were sent from Brazil for training in contemporary tactics. They passed to Orlands School of Applied Tactics, thence to Panama for training in Warhawks, and from there to Suffolk Army Air Base, (1) for two months' training in tactical operations while changing over to Thunderbolts. Since reaching Italy, the unit had already flown several missions over the German lines, destroying a bomber aircraft and a number of motor vehicles, railway trucks and bridges. The majority of pilots had more than 600 hours flying time and a few, including their Commanding Officer and Flight Leaders, had from 2,500 to 3,500 hours.

Like the R.A.F., the Forca Aeria Brasileira was a separate service branch, independent of the Army. Their symbol was the ostrich; it appeared on the cowls of their aircraft, armed with the Southern Cross as a shield, and a huge weapon symbolising the heavy fire power of the Thunderbolt. They had adopted the motto 'Senta Pua', which may be freely translated 'Up and at them!'.

THE ROYAL HELLENIC AIR FORCE

Greek Spitfire Squadrons

By mid-Summer of 1944, the two squadrons of the Royal Hellenic Air Force incorporated in the R.A.F. were very restive and homesick. With the example of a mutiny in the Greek Brigade to stimulate them to action, the Foreign Office considered it, at the close of August, to be a serious mistake to keep the two Greek squadrons in the Middle East any longer than necessary. (2) The general morale of these squadrons was being affected by their comparatively inactive employment and only the prospect of more active operations was holding them together. The mutiny in the Greek Brigade would probably never have occurred if the unit could have participated in active operations in Italy: this should be borne in mind in the case of the two squadrons, who were carrying out routine coastal and convoy protection tasks in an area long freed of enemy submarines and surface craft and only lightly threatened from Aegean air bases. It was hoped that it would prove possible to transfer them to a more active role.

They were not transferred to Italy. Events in Greece made it possible to employ them in their own country. On 25 September, British airborne forces landed in the Peloponnesus, Greece, followed by seaborne Forces. Patras was occupied on 4th, Corinth on 9th and Athens on 14 October. By 2 November, the Greek mainland was clear of German forces. Air H.Q. Greece was created early on, with No. 337 Wing under command. The two Greek Spitfire Squadrons - Nos. 335 and 336, joined by No. 13 Baltimore Squadron, became part of this wing.

AX.432
Air Ministry
to M.A.A.F.,
23 Aug. 1944.
(A.H.B./ID7/
329A, Pt. 1).

Chronology of
Principal Events of
the Second World War
A.H.B. Nov. 1948.

MAAF/S.1643/1/0126,
10 Dec. 1944.
(A.H.B./11J1/150/
368(b), Encl. 19a).

- (1) On Long Island, New York.
- (2) Reported by H.M. Chargé d'Affaires to the Greek Government in Cairo.

THE ITALIAN RESISTANCE MOVEMENT (1)

An Estimate of the effect which our support of Italian resistance has so far achieved in terms of military results and force now available. G(Special Operations) 15th Army Group, 14 Jan. 1945. (A.H.B./IIJ1/58/14, App. G-1).

Growth and Allied Assistance

The Italian Partisan movement owed its origin to Italian initiative, but was carefully watched and fostered by Allied H.Q. Staff branches for the encouragement of partisan activity, its direction into channels useful to the Allied war effort and the supply of arms etcetera to the partisans existed at A.F.H.Q., at 15th Army Group and at H.Qs of Armies. A great deal of the executive side of this work was, however, carried out by two centralised British and American organisations, Special Operations Executive and Office of Strategic Services.

BHS. Records File No. 1002/40/260
8th Army

Operations in Italy
Pt. IV, Section B.
Brit. Hist. Sec.
C. Med. A.H.D./
IIJ1/58/24A-B

In its inception and early development the Partisan movement was a spontaneous expression of anti-Fascist and anti-German opinion. Drawing its strength from bands of ex-Italian Army and Air Force personnel and the underground parties of the Left, and being reinforced from time to time by young men determined to evade calls for forced labour in Germany, it was entirely unco-ordinated and its concrete manifestations only sporadic. It is doubtful if at the end of 1943, its strength exceeded a few thousand. Two irregular units were formed, one by XIII Corps (2) and the other by 78th Division on the Sangro (3) and these two fought with distinction until the end of the war. Their work was largely regional reconnaissance in difficult terrain and their members were often dropped by air. (4) They also fought in several notable actions, the former, for example, with the 1st British Division outside Florence.

It became obvious by the beginning of 1944 that the movement was a potential weapon which, if adequately exploited, could at the least cause much inconvenience and annoyance to the enemy. First, Special Operations Executive began to deliver warlike stores by parachute to bands whose numbers were evidently increasing. Deliveries were gradually stepped up, in spite of the claims of other theatres. The total dropped to Italian Partisans up to mid-January 1945 was rather more than 2,600 gross British tons. From the turn of the year 1943/44, all Italy was brought within range of our Special Operations by the move of aircraft to Brindisi.

Air Supply to Partisans

History of Special Operations (Air) in the Mediterranean Theatre A.F.H.Q. - G-3 (S.O.) (A.H.B./IIJ/81).

Until August 1944, the main units employed on operations to Italy were No. 148 R.A.F. Squadron, No. 1586 Polish Flight and No. 267 R.A.F. Transport Command Squadron. After the liberation of Southern France in September 1944, No. 885 American Squadron was moved from North Africa to Brindisi, with a priority commitment to supply the Italian Resistance movement.

- (1) A good collection of stories of the Partisan movement, written in Italian by various persons, nearly all prominent leaders of the movement, is contained in a volume 'Anche L'Italia Ha Vinto' ('Italy, too, has conquered!'), being the December 1945 number of 'Mercurio', a periodical published by Gianni Darsena, Rome, Via Savoia 27, and Milan, Via Meravigli 7.
- (2) 'F' Reconnaissance Squadron.
- (3) La Banda Patriota Maiella, later passed to command of Polish Corps.
- (4) There is an interesting English translation of a book by one of the members of F Reconnaissance Squadron - Carlo Bonciani published by Dent London 1947, entitled ' "F" Squadron'.

SECRET

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In addition, No. 205 Heavy Bomber Group was made available, when priority called for it, for mass supply dropping operations in Northern Italy. In December 1944, American Dakotas of the 51st Troop Carrier Wing, based at Rosignano, were also made available. During the same month, U.S. Squadron No. 859 arrived in the Mediterranean from U.K. It then decided that the best policy would be for the American aircraft to take over the Italian commitment, while the R.A.F. aircraft would cover that of the Balkans.

In the early stages, success was limited because of the extremely bad weather and the poor field organisation of the Partisans. Little imagination was used in the choice of landing grounds, then usually prepared on the sides of mountains or at the bottom of steep valleys. This, coupled with the fact that there were only very small recognition signals, made it extremely difficult to find the dropping zones. To improve this situation, a number of Allied officers were parachuted in. Thereafter field reception improved considerably and the number of failures was reduced. (1)

Grounds became available in late 1944 for the Lysander aircraft, the best adapted for 'pick-up' operations. The first operation, a successful one, was carried out in the Udine area in November 1944. A repeat was attempted in the same month, but unfortunately, after having picked up three of our agents, the Lysander was, on its return flight to Rosignano, shot down by an Allied fighter and the pilot and agents killed. Five other Lysander operations were successfully carried out in Italy before the end of hostilities. Besides taking in and bringing out important personnel, these operations were instrumental in delivering into Allied hands documents concerning the V.1 and V.2 missiles, as well as dispositions and intentions of enemy forces. 169 gross tons of leaflets were dropped. (2)

Allied Missions

Ibid

Allied missions, consisting at first of Italian personnel only, began to be placed with the Partisans, by the three methods recorded above, at the beginning of 1944. In the Spring, the first Allied personnel were put in. By January 1945, the total number of O.S.S. (3) and S.O.E. (4) working behind the enemy lines in Italy was 22 Americans, 37 British and 108 Italians as well as representatives of other organisations.

The Problems of the Partisans

As a direct result of the delivery of weapons, missions and propaganda, in which the Air Forces co-operated generously, the strength and efficiency of the Partisans increased notably.

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- (1) During the period Special Operations were carried out in Italy 4,278 sorties were flown, of which 2,652 were successful. 5,907 gross tons of supplies were delivered. 538 personnel were parachuted into Italy by aircraft of Nos. 148, 301 and 624 Squadrons and No. 2641 Bombardment Group. 24 personnel were brought out by Lysander operations.
 - (2) On behalf of the Political Warfare Bureau.
 - (3) Office of Strategic Services.
 - (4) Special Operations Executive.

The peak was reached at the end of the Autumn of 1944, when the total strength was estimated at 120,000 active armed men, with a potential, given sufficient deliveries of stores, of at least a further one hundred thousand.

They laboured under great difficulty and their discipline was often poor by our standards. One cannot compare their movement with that of the F.F.I in France or the Partisans in Yugoslavia, both of which countries were united in favour of their active patriots. In North Italy there was a still strong hostile Fascist party and Italian Army units, such as Army Liguria, (1) all effective weapons against the Partisans. The size and deployment of these forces prevented the Partisans from ever gaining that control of large liberated areas which proved so valuable in other countries as bases for operations, delivery of stores, the establishment of a G.H.Q. with a reasonable prospect of security and for resting and reorganisation.

Growth of the Partisans in 1944

Ibid

It had been hoped at one time, as recorded, that with the coming of winter, the Allies would have cleared the enemy from N.W. Italy and stand on the Adige River. It was assumed that in that case only those Partisans in the extreme North-east would have to face another winter in the field. On the strength of this assumption, the orders and stores given to the Partisans were based. These had to be changed when the impossibility of even taking Bologna under existing tactical policy became apparent. The Partisans were directed to eliminate useless mouths, call off ambitious plans, restrict activity to small-scale sabotage and perfect their intelligence, forming an efficient nucleus for expansion in the Spring.

In general this policy was carried out, but in some areas men left their villages, took to the mountains and were unable to return home. There food was desperately short and most of the potential refuges systematically burned by the enemy. Rigorous inquisitions throughout whole provinces left them 'wanted men'. Then the return of the front to static conditions released enemy forces for mopping-up operations. It was thought there were about 60,000 Partisans in the mountains and an indefinable number in clandestine groups in the cities and plains.

A careful assessment was made by 15th Army Group of the Partisan claims over the period 1 September to 30 November 1944. The figures, carefully screened, were derived mostly from allied personnel and omitted the very numerous cases when enemy casualties could not be assessed and were reported as 'several' 'heavy', etcetera. They amounted to the appreciable total of 6,538 enemy killed, wounded and captured. (2)

(1) Under Marshal Graziani. Refer to the R.A.F. Narrative on the Campaign in Southern France, Appendix 5.

(2)	<u>Killed</u>	<u>Wounded</u>	<u>Captured</u>	<u>Totals</u>
Germans and Volksdeutsch	1,792	714	164	2,670
Italians	1,673	867	1,328	3,868
Totals	3,465	1,581	1,492	6,538

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The aggregate credible claims of sabotage should also be noted. (1)

Ibid

Summary of the Contribution of the Partisans

The main value to the Allies of this movement was considered to be the serious security problem it presented to the enemy, the physical annoyance and the psychological factor of fear of violence and absence of ease. Some German divisions found it necessary to form special anti-Partisan platoons. One first-grade German formation was always maintained in the Udine - Belluno area because of the powerful Partisan groups in the mountains to the North. Furthermore, they provided much direct and indirect intelligence information of a reliable nature, gave wide and generous help to escaped prisoners-of-war and grounded aircrews, (2) stimulated and brought about enemy desertion, provided guides, reported on minefields, troop dispositions and defences, and prevented enemy demolitions.

(1) 1 Sept - 30 Nov. 1944.

Trains derailed	19
Locomotives destroyed	41
Rail trucks destroyed	71 plus
Rail bridges blown	30
Rail cuts	528 (mostly of short duration)

Rail & road bridges blown	2
Road bridges blown	75
M/T destroyed or captured	258

(2) As I.S.9 and Air Corps Escape and Evasion Sections could testify.

THE AIR DIRECTIVE OF 3 NOVEMBER 1944

Headquarters,
Mediterranean Allied Tactical Air Force

3 November 1944

OPERATIONAL DIRECTIVE
NUMBER 21

1. Apart from close support of the Armies and counter air force operations, the principal task of the Tactical Air Force during the present phase of the Italian campaign is to destroy and disrupt enemy lines of communication with the object of:-

- (a) Denying all movement by rail to and from Italy (isolation of Italy).
- (b) Reducing the flow of supplies by rail and road from existing dumps in Italy to enemy forces on the Italian front.
- (c) Destroying the enemy's means of transport, including fuel supplies, wherever possible.

2. The second priority task for the Tactical Air Force is the destruction of objectives in the Balkans, with the object of creating maximum disruption and destruction of enemy forces attempting to withdraw from the Southern Balkan areas. To accomplish this task, higher authority has directed that the following effort from Desert Air Force be made available for employment, against Balkan targets on first priority basis:-

No. 3 (S.A.A.F.) Wing

No. 253 Wing

No. 232 Wing

4 Squadrons Fighter-Bombers

When the above effort cannot be utilized in the Balkans it will revert to its normal role. However, this should not be considered as a rigid allocation of the effort to be employed in the Balkans, as the weight of effort in excess of the above largely depends upon weather conditions in Northern Italy. On days when non-operational weather prevails in Northern Italy and suitable conditions exist in the Balkans, the entire M.A.T.A.F. force, in so far as it is practicable, may be utilized in this area.

3. Bomber targets will be nominated by this Headquarters based on priorities as established by the Balkan Air Force. Targets of opportunity will be forwarded direct from Balkan Air Force to Desert Air Force and met by Desert Air Force in so far as it is practicable with the fighter-bomber force available for Balkan operations.

4. To accomplish our primary objectives, 42nd Bombardment Wing and 57th Bombardment Wing will be directed to effect and maintain lines of interdiction and to destroy specialised items of supply and transport in the following priority:

- (a) Brenner Pass
- (b) North-East Italian lines
 - (1) Piave River line
 - (2) Brenta River line
 - (3) Tagliamento River line
- (c) Po River and Adda River
- (d) Fuel, M/T and locomotives, including repair and maintenance depots.

5. The primary task of the fighter bomber forces of XXII Tactical Air Command and Desert Air Force in their attacks on communications in Italy is to completely disrupt rail communications between the Po River and the battle area, extending from the Adriatic coast on the east to Piacenza on the west, and to impose maximum interference to alternate means of enemy transport in this area, both road and water.

Commanding General, XXII Tactical Air Command, and Air Officer Commanding, Desert Air Force will be responsible for arriving at an arbitrary line of demarkation between areas of responsibility for interdiction of communications south of the Po River subject to current developments in the battle. This Headquarters is to be advised and kept up to date regarding line of demarkation as agreed between commanders.

6. Second priority task of the fighter-bomber forces of XXII Tactical Air Command and Desert Air Force is to disrupt enemy movement in Italy north of the Po River by destruction of locomotives, trains, motor transport and coastal craft; and to interdict rail lines whenever profitable targets of opportunity are not presented. Normally, XXII Tactical Air Command will be responsible for the area west of a line running south from Verona along the Adige River to Legnago thence due south to the Po River. Desert Air Force area of responsibility will be east of this line.

This dividing line is not to be considered as a firm or rigid barrier between Commands. If weather conditions preclude operations in one area, or if more profitable targets are presented in the adjacent area, the dividing line will be disregarded. Close liaison will be maintained between Commands to meet this contingency.

7. When weather prevents medium bomber operations in Italy, and it is considered that the Brenner or north-eastern rail routes are in danger of being repaired, fighter bombers will be directed by this Headquarters against vulnerable targets on these routes until such time as renewed medium effort is possible.

- 8. Acknowledge by signal.

By command of Major General Cannon

THE AIR DIRECTIVE OF 9 JANUARY 1945

Headquarters,
Mediterranean Allied Tactical Air Force

9 January 1945

OPERATIONAL DIRECTIVE
NUMBER 23

1. Apart from counter air force operations, the principal task of Mediterranean Tactical Air Force during the present phase of the Italian campaign will be to maintain the isolation of Northern Italy and to disrupt the enemy supply organisation, in order that his fighting capabilities may be reduced by the time our ground offensive is resumed.

2. To accomplish this aim operations against communications will be intensified with the object of:

(a) Destroying and maintaining destruction of rail communications between Italy and the Reich.

(b) Destroying the enemy's means of transport, including fuel supplies, whenever possible.

3. Since the ground forces will be engaged primarily in holding operations, there will be no requirement for air effort on the fronts of the armies, except in isolated cases when limited air assistance may be required to gain local objectives or to counter a successful thrust by the enemy.

4. The isolation of Northern Italy has been effectively achieved from time to time, but periods of non-operational weather often permit the enemy to effect at least partial repair of his vital lines of communication. It is our intention to disrupt communications to such an extent that the enemy will find it beyond his capabilities to recover during the intervening bad weather periods. Therefore, when weather permits, the bulk of the effort of XXII Tactical Air Command and Desert Air Force (both by day and by night), with the exception of that portion of Desert Air Force effort earmarked for the Balkans, will be employed on first priority areas in Italy. It is realised and accepted that this will permit the enemy a measure of freedom of movement in the Po Valley and a small proportion of air effort must, therefore, continue to be directed against this area where, however, the emphasis will be placed on the destruction of motor transport, locomotives and trains rather than on the interdiction of the enemy's complex communication system.

XXII Tactical Air Command

5. The primary task of XXII Tactical Air Command is to destroy communications in north and north-eastern Italy and to disrupt enemy movement by the destruction of locomotives, trains (particularly repair trains) and motor transport. Priority for attack against rail communications is as follows:-

(a) Brenner line

(b) Vicenza - Casarsa line

(c) Vicenza - Treviso - Casarsa line

(d) Trento - Bassano line

6. The second priority task of XXII Tactical Air Command is to disrupt enemy movement and destroy supply dumps and installations whenever profitable targets are presented in the Po Valley.

Desert Air Force

7. Desert Air Force primary tasks are twofold. Pressure must be maintained against the enemy withdrawing thru Jugoslavia, and the forces previously allocated to this task will continue to operate in the Balkans whenever weather permits. The remainder of Desert Air Force effort will be employed primarily in the destruction of rail communications in north-eastern Italy and the disruption of enemy movement by destruction of locomotives, trains (particularly repair trains) and motor transport. Priority for attacks against rail communications is as follows:-

- (a) Tarvisio line (Gemona - Chiusaforte)
- (b) Piedicolle line (Gorizia - Canale D'Isonzo)
- (c) Postumia line (Latisana - Sesana)
- (d) Padua - Latisana (Major part believed temporarily abandoned).

8. The second priority task of Desert Air Force in Italy is to disrupt enemy movement and to destroy supply dumps and installations whenever profitable targets are presented in the Eastern Po Valley.

9. In the attacks on rail communications, fighter bombers of XXII Tactical Air Command and Desert Air Force will concentrate first on destruction of bridges and diversions of tracks in open country. In the latter case it is important that attacks be pressed against one particular section of line until it is rendered completely unserviceable. Crews will be briefed to be particularly on the alert for repair trains in the vicinity of destroyed or damaged bridges.

10. When weather prohibits attacks on inland targets XXII Tactical Air Command and Desert Air Force effort will be directed against shipping in the Ligurian Sea and Northern Adriatic ports. The object of these attacks will be:

- (a) Primarily to destroy active shipping which continues to make short runs between enemy occupied ports.

(Note: The destruction of five 1000 ton⁺ KT ships in the Ligurian Sea and ten vessels of over 1000 tons in the Northern Adriatic would seriously cripple the enemy's ability to use sea-going craft in any decisive role).

- (b) The destruction of small naval units, i.e. 1 or 2 men submarines, explosive motor boats, escort and minelaying vessels, thus reducing his power to escort any supply craft or carry out offensive action against our shipping or coasts.

- (c) A long term policy is the destruction of other ships, usually inactive vessels, which it is estimated that the enemy will employ as block ships to hinder Allied use of ports after capture.

57th Bomb Wing

11. 57th Bombardment Wing will continue to be directed against lines of communications and specialised items of supply and transport in the following general priority:-

1st Priority

Blockade of Italy

Brenner line

Railroad bridges over the Brenta, Piave, Lavenza and Tagliamento Rivers

Tarvisio, Piedicolle and Postumia rail lines

2nd Priority Communication targets on the Po and Oglio Rivers

These targets will be nominated as weather alternates with the object of destroying or maintaining destruction of permanent railroad bridges over the Po River in order to hamper inter-communications. Attacks on the Oglio River line will interfere with the evacuation of industrial loot from north-western Italy.

3rd Priority

Enemy Supplies

It is appreciated that, during recent periods of bad weather, some of the main international railroads have been open to the enemy, and he has been able to build up in Italy sufficient supplies to carry him over for a considerable period at his present scale of activity. Such supplies are sometimes supplemented by Italian industrial activity, which in general now only operates at a very low level due to the lack of raw material. The object of attacks on 3rd priority objectives, therefore, will be a long term destruction of all known enemy dumps, including industries and storage dumps known to be active.

4th Priority

Communication targets in the Balkans

When weather prohibits attacks on Italian objectives, effort will be diverted to communication targets in Jugoslavia weather permitting.

12. This Headquarters will continue to co-ordinate effort and nominate special targets in the daily bombing directive.

13. This directive supersedes M.A.T.A.F. Operational Directive No. 21 of 3 November 1944, except for that part which refers to Balkan operations.

14. Acknowledge by signal.

By command of Major General Cannon

WEATHER CONDITIONS IN THE BRENNER LINE AREA AND
M.A.T.A.F. METEOROLOGICAL ORGANISATIONWeather Conditions

Accurate weather forecasting was one of the most important features in air operations along the Brenner route by the medium bombers. The problem had to be studied in terms of base, route and target conditions, for if any one or any combination of the three were unfavourable or doubtful, a mission might be hampered or become abortive.

The route from the air bases in Corsica led over the Gulf of Genoa, over the Apennines and the Po Valley into the Alpine country of the Brenner. Although the same overall pattern of weather might prevail, local characteristics of terrain or bodies of water might determine specific conditions. For example, within the same overall pattern, the weather over the Corsica bases, where 57th Bombardment Wing was stationed until 7 April 1945, may have been favourable, while that over the sea to Italy, the Apennines, the Po Valley, the Alps, the Brenner Valley of the Adige and Isarco Rivers, might have been unfavourable. The abrupt surface changes between mountainous continental terrain and sea determined some of these conditions. The Alps, the Po Valley, the Apennines and the Gulf of Genoa were weather 'catchalls', that is, areas of convergent weather elements peculiar to both sea and land. They were at the same time 'breeders' producing their own weather elements. Frontal areas might be created or broken up in them. Fronts, anticyclones (high pressure cells) or cyclones (low pressure cells) might stagnate in them.

The delimiting considerations for take-off from base were usually cloud ceiling and coverage. Ceiling was defined as the altitude of the lowest cloud layer, below 10,000 feet, which covers 5/10 or more of the total sky as seen by a ground observer. So long as a ceiling is not more limited than 3,000 or 4,000 feet, twelve or more aircraft can form with room to spare. Visibility must be 3 miles, i.e. sufficient to allow single aircraft to see the others while joining. Occasionally strong airfield surface winds had to be considered, as well as, on occasions, the condition of the airfields after prolonged rains.

After take-off and joining, the formation needed the same ceiling over the sea route to Italy as at base. Thereafter, an overcast cloud layer below the levels of the east-west range of the Apennines, south of the Po Valley, had to be surmounted either before or just after reaching the coast, so as the formation could clear the mountains safely. On reaching a safe altitude, it was necessary that no cloud layer should have a solid top at 13,000 feet or over, as fully loaded Mitchell bombers began to strain at those altitudes and personnel without adequate oxygen suffer ill-effects after flying for any appreciable period of time. The bases of a complete overcast had to be 14,000 feet or over, for the Alps ranged up to 10,000, 12,000 and even 15,000 feet along the approaches to our targets. Likewise, a formation had to be able to top a cloud layer of 5/10 or more at 12,000 feet. Over a Brenner target it was necessary that cloud cover be not more than 5/10 if it were approximately 5,000 feet below the formation, or 3/10 or less if it were nearer the altitude of the formation.

Apart from cloud ceiling and coverage, the most influential factors bearing on our missions' operations were severe turbulence and heavy haze, which might arise from the following causes. With the passage of a cold or occluded (limited or confined) front across the Alpine barrier, winds use to veer into the northerly quadrant and much dense air was banked up in Southern Austria. The pressure gradient thus created between Southern Austria and the Po Valley, augmented by the existing circulation,

produced wind speeds across the mountains in excess of 40 miles per hour. These high winds, coupled with the irregularity of the terrain, set up large-scale eddy currents or turbulence of especial danger to aircraft particularly in formation.

But when a dry, stable air mass subsided over the Alps, winds were reduced, especially in the enclosed Brenner valley to near calm. This produced heavy haze layers, mostly concentrated close to the ground but sometimes extending vertically, even up to bombing altitude. This was one of the reasons why identification of targets on the approach was so difficult. Even vertical visibility, aircraft to-ground, was sometimes so restricted that from two to four bomb runs had to be made. It is made clear in the text how the enemy used the conditions of marked stability, light valley winds and the actual confinement of the valley itself to employ his smoke pots to thicken the normal haze.

Occasionally favourable sun altitude had to be coordinated with favourable weather. Targets close to ledges or confined in narrow stretches of the pass, with mountains rising steeply on either side, received direct light from the sun for only a few hours of the day. It was not always possible to coordinate minimum cloud cover with the last sun light. Under operational necessity, when both considerations were critical, favourable weather dictated the time of attack.

The play of these variable weather factors on operations may be gauged by examining the proportion of operational to non-operational days. From 6 November 1944 to 2 May 1945 the period over which 57th Bombardment Wing was engaged in the Battle of the Brenner, was 178 days. The Mitchells were able to bomb on only 118 of these. On 85 days, i.e. 72 per cent of the 118 days, they dropped bombs successfully.

The M.A.T.A.F. Weather Sections

The American detachment of the 12th Weather Squadron and a British Meteorological Office functioned in parallel and coordinated their facilities. Each morning there was a weather briefing of the Commanding General of T.A.F. and his staff, at which the expected weather for the balance of the day and all of the next day was presented. In the evening another briefing was held at which the weatherman summarised the weather which had occurred during the day and presented his forecast for the next two days. Special briefings were given when need arose. The American and British Sections handled these briefings alternately.

In addition, the Weather Sections issued five scheduled written forecasts daily, three of which went to H.Q. Allied Armies in Italy (later 15th Army Group). There were also special written forecasts as requested and a daily series of verbal forecasts given on request. Both Sections issued their own forecast, but gave a unified idea of synoptic and expected weather.

Data was collected from most of the Allied and neutral countries, the Balkan areas as they were liberated and from surface ships in the Atlantic. There was a network of mobile weather stations along the front lines in France and later in Germany. Reports were also received from observers parachuted into Partisan-controlled areas behind the front lines.

The basic forecasting tools were the weather maps, completely analysed in accordance with existing theories and regulations and showing the locations of all stations from which data were received. There were also auxiliary charts showing pressure distribution at approximately 9,000 and 19,000 feet, as well as graphs of upper air soundings showing vertical distribution of temperature and humidity at selected stations. From the basic weather map and the two upper air charts, forecasters computed movements of pressure centres, fronts and air masses. From the graphs of upper air soundings they determined the types of air masses involved. With a general understanding of the weather conditions associated with each air mass, it only remained to determine the effects of local influences, such as mountain ranges and bodies of water, to arrive at a forecast for any specific area.

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AIR EFFORT ON BRENNER ROUTE
by
Mediterranean Allied Tactical Air Force

MONTHLY SORTIES FLOWN (1 Nov. 1944 to 28 Apr. 1945)

MONTH	NOV.	DEC.	JAN.	FEB.	MAR.	APR.
Medium Bombers	661	536	923	1,045	1,535	1,044
Fighter Bombers	168	619	639	1,117	1,148	532
Light Bombers	-	46	55	67	121	107
TOTAL	829	1,201	1,617	2,229	2,804	1,683

MONTHLY TONNAGE DROPPED

MONTH	NOV.	DEC.	JAN.	FEB.	MAR.	APR.
Medium Bombers	1,425	1,026	1,725	1,661	2,095	1,779
Fighter Bombers	98	332	340	554	660	252
Light Bombers	-	69	82	98	181	162
TOTAL	1,523	1,427	2,147	2,313	2,936	2,193

SORTIES BY SECTION (1 Oct. 1944 to 28 Apr. 1945)

Zone 1 - Verona to Ala excl. Zone 3 Trento to Bolzano excl.
" 2 - Ala to Trento incl. " 4 Bolzano to Innsbruck

PERIOD	1-14 Oct.	15-28 Oct.	29 Oct 11 Nov.	12-25 Nov.	26 Nov. 9 Dec.	10-23 Dec.	24 Dec 6 Jan.	7-20 Jan.	21 Jan 3 Feb.	4-17 Feb.	18 Feb. 3 Mar.	4-17 Mar.	18-31 Mar.	1-14 Apr.	15-28 Apr.
ZONE 1	18	52	244	59	107	167	163	118	11	67	51	418	203	364	192
ZONE 2	-	-	280	114	181	208	558	303	416	525	518	555	311	220	137
ZONE 3	-	-	41	33	27	24	97	209	338	496	493	453	563	449	102
ZONE 4	-	-	-	-	-	-	8	-	-	56	94	68	227	106	95
TOTAL	18	52	565	206	315	399	826	630	765	1144	1156	1494	1304	1139	526

Source: 23rd Statistical Control Unit, M.A.A.F.

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APPENDIX 19

THE BATTLE OF THE BRENNER

by Oberst Schnez,

formerly General des Transportswesens Italien.

The Brenner Line was the most important supply route for the Italian front. Its importance increased particularly in the final stage of the war, after January 1945, when Switzerland, which had hitherto prohibited all military transport through its territory and only allowed industrial traffic under certain conditions, now completely banned all traffic. The other routes, i.e. via Tarvisio, Piedicolle and Ljubliana were indeed together capable of handling the traffic, but proved to have too many tunnels, bridges etc., the repair of which demanded a vast amount of time and trouble. At the beginning of 1945, these routes, which hitherto had been able to carry essential supplies to the front when the Brenner line was blocked, were practically put out of commission by partisan activity and air bombardment. The high command of Army Group therefore concentrated its defence and constructional forces more and more on the Brenner line, a decision taken not only on constructional grounds, but for the added advantage that the Brenner line ran down to the centre of the Apennine positions and formed the middle axis of the North Italian supply area.

The Allied air force recognized the importance of this supply line, and after preliminary nuisance raids, began, at the beginning of November 1944, the systematic creation of a 'devastation zone' in the area of the line. The attacks were concentrated on the southern sector of the line between Bolzano and Verona. For this reason the German supply depots in the northern sector of the Brenner line could be fed by rail right up to the end. The air attacks were aimed primarily at bridges; but also at open stretches of the line, particularly at embankments; and at shunting yards and ancillary installations (transformer plants). As termini, Verona and Innsbruck were especially hard hit. At certain periods those stretches of the line running alongside the road were daily targets for attack.

At the beginning, damage to bridges could be quickly put right, since an adequate supply of bridge building material was on hand in dumps, and speedy repairs were ensured by the provision of already assembled bridge supports and pillars. In addition, by-pass lines were built round important objectives such as the Lavis viaduct and the bridges, at Mezzocorona, Ora and Bolzano (by-pass line Mezzocorona - Ora was 25 kilometres long). During the first phase of the heavy attacks, almost every bridge was repaired within three days, so that supplies could always be got through in the intervals when bad weather prevented sorties. Furthermore the problem was eased by the use on a large scale of transloading round cuts, and M/T columns.

In later phases of the bombardment, however, the attacks on the bridges were more permanently destructive, especially when the heavier calibre bombs caused the complete pulverisation of bridges, bridge piles and buttresses, and loosened up the surrounding soil. It became increasingly difficult to bring up sufficient bridge building material, since some bridges were attacked and destroyed altogether over 200 times. The number of personnel engaged on bridge repair could not be increased as would have been desired, since ten corps (operational strength varying between 150 and 200 men) representing more than a third of the railway engineer personnel in Italy, were already working on the Brenner line.

The attacks on the transformer plants and on the power and overhead cables were not regarded as of decisive importance, since a systematic destruction of the electrical installations occurred only on the relatively level stretch between Verona and Trento. In this instance it was comparatively easy to change over to steam locomotion, particularly as it had been prepared for. The same concentration of effort on the steep slope between Bolzano and the Brenner would have produced disastrous effects much more quickly, since steam locomotion would have been of very little use on this stretch.

The rapid repair of the line and embankments was chiefly a problem of organisation and manpower. Following the invention of a simple crater bridge (1) (construction time 6 hours) plus the necessary buttressing, and the setting up of filler material dumps and numerous construction yards, the destruction of the line and railway stations was from a technical point of view no longer a decisive hindrance to the maintenance of traffic. The use of delayed action bombs, however, in the last phase of the attack and the continual bombing of certain vital spots, interrupted even this repair work more and more, and caused heavier losses. Towards the end the following personnel were employed on line and station repairs. About 5,500 workers of the OT. (2), the Regierungstruppe Boehmen - Mahren (3). German and Italian construction battalions (4) with a total strength of about 1,500 and about 2,000 miscellaneous personnel. After heavy attacks sections of the civilian population were brought in to assist with the work.

The German command did not, however, limit itself purely to repair work but attempted, by means of technical measures, to protect all important installations as much as possible from the effects of enemy attacks (e.g. splitting up, and camouflage of material dumps and repair shops, providing underground rooms for electrical installations, locomotives, repair shops and material dumps etc.) It was, furthermore, attempted to deceive the Allied aerial reconnaissance by means of artificial bomb craters, by rebuilding installations in such a way as to give the impression that they had been destroyed and left unrepaired, or by rebuilding them on different stretches of the line, by disseminating false information and by other camouflage methods. In addition, as elsewhere in the Italian theatre, the fact that bridges had been repaired was concealed by putting them into position at night and removing them by day to give the impression that they were still destroyed (night bridges) e.g. the bridges at Parona and Mezzocorona. The whole work and driving force of the organisation were conditional on the creation and maintenance of a well functioning signals communication system.

Apart from these passive defence measures, weapons for active defence were strongly concentrated in the Brenner line. As far as can be remembered, there were throughout the length of the Brenner Line, in addition to four and a half smoke batteries (5) for putting up smoke screens round important bridges, and a number of light A.A. batteries, altogether 88 Heavy A.A. batteries between Verona and Innsbruck. In general, throughout the whole Italian theatre, defence was concentrated along the railways and above all along the Brenner line. In addition to the static A.A. defence, trains were protected against fighter bomber attacks by the mobile flak cars attached to them.

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- (1) Trichterbrücke
 - (2) Organisation Todt
 - (3) Bohemian and Moravian State Troops
 - (4) Of the Railway Pioneer Regiment etc.
 - (5) Nebelbatterien

ek: Due to the length of the attacks (in good flying weather the Brenner line was attacked by at least 200 and usually more aircraft at a time), the increasingly greater calibre of the bombs used, the continual fighter bomber activity which restricted traffic to the hours of darkness, and the danger of delayed action bombs, repair times were continuously increasing in the last months, despite the strong and well-run organisation. It was with increasing rarity and at ever greater intervals therefore, that trains could be run right through from the Brenner to Verona without a diversion at some points. The line was never completely and finally cut, however, up to the very end. That supplies were cut off was much more due to the conditions obtaining in Germany than to the state of the railway on the Italian side. So. e.g., it proved impossible to despatch 60 train loads of valuable material over the Brenner into Germany, since the railway directorates at Innsbruck and Munich, which on a material and personnel basis were much less prepared for the forthcoming attacks on lines and bridges, could not accept them.

Theoretically, the Brenner could handle 60 trains daily in both directions, but in practice only 48 could be sent through before the attacks began. In October 1944, it was still possible to send between 24 and 28 trains daily to Germany, and between 12 and 16 South to the front. These figures fell very soon after the beginning of the heavy attacks in November 1944. By transloading in the northern sector of the Brenner line and the use of diversions, it was still possible for a long time to run about 10 - 15 trains daily in both directions over the border. At the end these figures were greatly reduced, and in April 1945 there were many days on which no trains at all crossed the border, largely due to the conditions in Germany.

For supplies alone the Army Group needed over 9 trains of 450 tons net weight each daily, without considering the supplies of coal for Service and industrial needs and for troop reinforcements. This figure was reduced to $4\frac{1}{2}$ trains (excluding coal and reinforcements) in the last months of the war, when the effort to achieve self sufficiency in the Italian theatre had made some progress. It was possible to keep up this minimum throughout the last months by the use of transloading and M/T columns. It was very evident, however, that as a result of the sustained attacks, this achievement could not have been continued for a long period. The chaotic transport situation in Germany and the final collapse prevented it from being put to the test.

The battle of the Brenner has shown that, when the enemy has a clear supremacy in the air, a railway line cannot be maintained, even with the strongest A.A. defence, the greatest concentration of specialist and constructional strength and the cleverest camouflage, deception and security methods. Apart from this, it will only be possible in any country to provide the necessary concentrations of strength, especially such highly qualified personnel, for very few sections of line. The attack on traffic installations, therefore, can have decisive influence on the country or the front affected by it. The attacks themselves will be all the more effective the more exactly the technical grounds on which they are based are established and worked out.

MAINTENANCE OF ITALIAN RAILWAY COMMUNICATIONS
(Translation of captured German Document)

Ref: 4488/44, Geheimkommandosache (Top Secret) 29 December 1944.

CONCERNING: Experience gained in the Maintenance of Railway Communications in the Italian Theatre.

TO: Director of Transportation of the Wehrmacht (Armed Forces).

The experience obtained from the reconstruction of railway communications in the Italian theatre is especially extensive, since for some time the enemy has concentrated the considerable offensive strength of his force almost exclusively against our system of communications in the rear areas.

Defensive measures and expedients are naturally dependent upon the enemy's method of attack. In the Italian Theatre, railway bridges constitute especially favoured objectives of attack; on an average eight railway bridges per day are destroyed. However, the larger objectives are almost always chosen, and the enemy methodically carries out simultaneous interdictions of all railway bridges along the lines of the larger rivers, thereby paralysing the communications network of whole areas. Recently attacks on railway embankments have been carried out, both by formations and by single bombers and these have been on the increase, especially at places where road and railway lines are close together, so that both can be hit. In addition, as many railway yards, tracks, beds and stations as possible are simultaneously and systematically hit, especially at important junctions. Occasionally attacks occur against the entrances to tunnels. Also there are fighter bomber sorties against locomotives and trains, and locomotives dispersed during air raids, on the tracks leading to the Reich are favourite targets.

Partisan activity is coordinated with the air effort. The Partisans carry out demolitions, but they are perhaps even more of a menace through their close signal network and frequent W/T communication with the enemy. A very exact knowledge of the North Italian communication network at all times is proving to be very useful to the enemy.

Together with the concentration of flak along the main communication routes, as ordered by higher authority, and in which the General Commanding Transport in Italy acted in an advisory capacity, the following methods have proved effective against enemy attack.

Camouflage and Deception

As applied to railways, the methods employed are still rather rudimentary; however, the following have been developed in this theatre:

(a) Organisation: Every constructional order must contain the works 'Camouflage and Deception'. This is vital and will cause due thought to be given to the subject. Every Railway Pioneer Company has been allotted an expert on this subject. Each Railway Pioneer Company, has a camouflage squad, just as the Todt Organisation has a special camouflage squad. There are collective training courses, run by the Transport Section of the Wehrmacht, the Railway Pioneer and the Todt Organisation, with the cooperation of the German Air Force.

(b) Practical Camouflage Measures. Colour painting camouflage nets to blur the contours and camouflage tunnels for parking trains. Permanent smoke screening of particularly important targets. Devising of new installations - e.g. railway diversions through country districts and wooded areas to blend in with the type of

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countryside and the soil. Camouflage siting of transshipment points and cable railways in forested areas or farm buildings.

(c) Practical Deception Measures: Assembly and disassembly of bridge sections, so that at night and in bad weather the bridge can be made passable, but during the daytime it appears to enemy aircraft to be unserviceable. (At the moment there are four such bridges in Northern Italy). In this respect, close cooperation with the Meteorological Service has proved helpful.

Simulated reconstruction of bridges by the use of scaffolding, when reconstruction is not contemplated. Distortion of contours of the reconstructed auxiliary bridges by the addition of portions of wrecked bridges. Use of decoys so that the bridges appear to be destroyed to aerial reconnaissance. Use of smoke screening of single spans to give the effect of continuous stretches of water. Leaving wreckage and damaged superstructure to feign an interdiction. Partial restoration of buildings, while maintaining the general picture of destruction.

Overcoming of River Barriers

(a) Rivers near the Front (Po): Reconstruction of bridges is only possible with permanent smoke cover, or occasionally by outwitting the enemy with the measures outlined in Para (c) above.

Railway ferries have proved a success; their daily capacity is about two trains per ferry. It is important to camouflage the connecting rails, and to place the loading berths oblique to the river bank so that they are not conspicuous. They must be worked only by night, or by day in bad weather. Camouflaged berthing of railway ferries and tugs is essential by day. The use of cable railways (at present four are in use across the Po and one is under construction) adds about 120 to 150 tons per day to the total of supplies crossing the river.

(b) Measures against simultaneous Cutting of all Railway Bridges along the Line of Rivers (Ticino, Brenta, Piave, Tagliamento etc.): The building of diversion tracks on the higher part of the flood bed, with under-water bridges and concrete approach ramps, if necessary. Periodic flooding must be reckoned with. To date, nineteen diversions have been completed in Italy, nine are under construction and five more are planned. Reconstruction of reserve bridges on branch lines, but without girders, so that the bridges appear to be destroyed. In case the permanent bridge is rendered unserviceable, a reserve can be made operational very quickly.

(c) Building Methods for Bridge Reconstruction: In reconstruction the quickest method is used, which is often at variance with regulations and established usage, and is mainly in the form of temporary, or auxiliary bridges. In order to avoid time-consuming pile-driving, the supports are based on the stumps of piers, the ruins of piers capped with concrete, boxes of stone, etc. If the bridges are high, light bridge support equipment is used to cope with the weight of normal loads. This light support equipment is very resistant to blast and bomb splinters, and its use is shown in the accompanying nine photographs of the reconstruction of the bridge over the Mincio River at Peschera (reproduced in the original).

Suggested preparatory Measures for the Acceleration of Reconstruction Work

(a) Bridges: Removal of sheeting from steel bridges in order to lessen the effects of blast. Building of intermediary supports

of concrete piles of stone caissons, in order to prevent the collapse of the superstructure during attacks, and for the rapid construction of an emergency bridge amidst other types of supports near bridges which are continuously attacked.

(b) Bomb Craters: On high embankments, where it is impossible to use the surrounding soil, the use of crater bridges, with spans about four metres long and consisting of mass-produced light supports, is recommended. Each support weighs at most 400 kg. and is, therefore, transportable over any type of country. Also bundles of rails each four metres long, previously out of damaged rails. Erection time, for a length of about sixteen metres and a depth of three metres - 8 to 10 hours.

Measures for the Protection of important Installations

For the protection of important installations, the following measures are recommended: (a) Building railway workshops in tunnels, or galleries (on mountain railways). (b) Building of as many reserve workshops as possible at inconspicuous points (c) Conversion of electrically or petrol-driven water points to steam, in order to guarantee power in the event of current failure or fuel shortage. (d) Storage of reserve supplies near railways (Fischer pumps, storage batteries and transformers) for emergency use. (e) Increase in the number of repair trains by employing industrial and railway repair facilities. Creation of motorised workshops to facilitate concentration of assistance when required, as well as to repair and service locomotives not accessible by rail, e.g. 'shuttle service.' (f) Blast walls around vital objectives (transformers, telephone exchange etc.) (g) Dispersal of locomotives within station and railway yard areas. Erection of blast and splinter-proof shelters must be provided. Damping of fires and lowering of steam pressure when locomotives are stationary, to avoid creating signs which are conspicuous over long distances. Camouflage of parked locomotives in tunnels, foliage and under nets. Decoys by the positioning of stationary, heavily damaged locomotives in close proximity to flak units (A.A. trap). Camouflage of locomotives by modifying them to resemble freight cars. (h) Deployment of special A.A. Units in the Railway Service for the active defence of the tracks leading into the Reich.

Organisation for the quick Repair of Railway Installations

(a) Personnel: Formulation of plans for the recruitment of civil and military labour. Obligating of the population close to the railway lines to assist in immediate repairs. Creation of militarily-organised construction units, to be billeted in camps along stretches which experience has shown to be endangered. Employment of armament firms as self-contained working squads. Deployment of Todt Organisation Units (if possible with special technical personnel). Deployment of technical personnel for the supervision and allocation of manpower.

(b) Material: Conversion of construction units to as high a degree of motorisation as possible, or partial motorisation. Preparation of construction squads, with special equipment for duty along vital stretches of line. Disposition of rail bed material along the sides of the track. Preparation of lighting equipment for night work. Disposition of fill and rubble for filling craters (partly loaded on trucks). Locating and opening up scree slopes, sand pits and quarries near the railway line as sources of ballast. Organisation of air raid precautions near construction points (air raid alarm, slit trenches and galleries).

Protection of Power Supply Systems

Camouflage of fixed installations by painting. Preservation of emergency fixed and movable installations by: (a) Camouflaged siting (in the wreckage of previously destroyed installations, away from railway stations, etc.); (b) On mountain routes accommodations in tunnels and galleries; and (c) Boxing-in transformers in blast-proof walls.

Signals Organisation

- (a) Establishment of field line and cable repair squads, and their deployment along the railway line. Formation of reserves of personnel and materials at the largest junctions. Complete motorisation of the units, or their equipment, with bicycles.
- (b) Setting up a ground radio network, and the reinforcement of it with mobile radio units.
- (c) Using foresight by the re-grouping of communications to less endangered routes away from the railway tracks. Avoid railway stations which are very probably targets of air attack. Creation of overhead routes for cable lines. Use of beamed wireless equipment.
- (d) Thorough control of the issuance of orders and reports to prevent duplication of messages. Use of motor cycle and bicycle squads.

Night Work

- (a) In many parts of Italy as the result of long air raid warnings and continued fighter-bomber attacks, railway repair and construction work by day during good weather is definitely out of the question, on account of the temperament of the Italians. The shift of working time from day to night in transport organisation, railway construction and all labour connected with repair work is therefore unavoidable.
- (b) For night work the provision of hand lamps and light batteries is vital for lighting purposes. Hand torches to be used only in exceptional circumstances since they cannot be extinguished at a moment's notice on the approach of aircraft.

Transshipment of Traffic

On vital strategic routes, transshipment of traffic must be so thoroughly organised that, in co-operation with the Quartermaster General, it operates automatically when traffic is delayed, due to an interdiction. Waiting for orders from higher authority, or for a track to be repaired, always results in the loss of valuable time.

Together with off-loading into trucks, all locally available means, such as narrow-gauge railways, tramways, inland shipping (Lake Garda), rivers and canals must be utilised.

Defence of Trains

- (a) Moving Trains: Flak has proved very effective against fighter bomber attacks. Since these aircraft are constantly on the hunt for locomotives and trains, every train must have at least three quadruple and one single gun, especially on lines where traffic is heaviest, and where travel by day is absolutely essential.

(b) Stationary Trains: All possible precautions must be taken for the protection of munitions and fuel trains if possible by halting them in tunnels, on spurs, branch lines, in tunnels of camouflage, and in other well-concealed places. Above all, avoid embankments, especially with ammunition trains. Uncouple ammunition and fuel cars and disperse them into several groups.

Formation of Concentration Areas

Top priority lines (for example the Branner Pass Route), on which fall the main weight of the enemy's attack, require the most substantial structural reinforcement against air attack, and the most skilled personnel, as well as the most lavish reserve of building materials, must be concentrated there. Along this line, in particular the construction of diversionary lines for all targets which will be difficult to repair is vitally necessary. Also, thorough organisation of all works personnel, the conscription of local labour during emergencies, the concentration of Pioneer Construction Detachments, especially trained railway engineers, and the Todt Organisation. In addition to distributing substantial stocks of all types of repair materials the supply of machinery such as cranes, prime movers, conveyor belts, excavators for the bulk removal of gravel, etc. should be expedited.

Conclusion

Even when all possible precautionary measures are taken the repair work will naturally take time. The shortening of this time is the object of this memorandum. Many of the measures recommended require much labour, time and resources. At present they have not been applied in sufficient measure in the Italian theatre.

The problem of providing rapidly erectable supports for emergency bridges, which must be available in large numbers, has not yet been fully solved. Also the design of new emergency bridging equipment, easy to assemble and less vulnerable to air attack, still awaits solution.

The successful and rapid completion of all specified tasks depends entirely upon the support of the higher command. In this respect, the great understanding of the C.-in-C. and the Chief for all Transport matters, have brought about a particularly satisfactory situation in this theatre.

GLOSSARY OF RAILWAY BRIDGE CONSTRUCTION AND REPAIR TERMS

Structural Members: Those parts of a bridge whose function is to support a load.

Piers: The vertical support of a bridge.

Intermediate Pier: A pier erected between two existing piers to reduce the required length of replacement girders.

Auxiliary Pier: A pier erected under a span to provide additional support.

Span: The distance between two piers. Also used as a general term to designate the horizontal structural portion of the bridge between two piers.

Arch: The curved structural member that acts as the span of a masonry bridge.

Truss: A latticed steel girder consisting of many light structural members. Used in place of an I-beam or girder in bridge construction and is generally used to span a distance of over 100 feet, more often over 200 feet. A very permanent type of structure.

Plate Girder: A member having the same shape as an I-beam, but of heavier construction and used to support heavier loads. It is made of heavy steel plates which form what is called the web of the girder, and angles which are connected to the upper and lower edges of the web and called the flanges.

Replacement Girder: Either an I-beam or a plate girder used to replace destroyed spans.

Cribbing: Round or square timbers built in courses, with pockets filled with rocks or rubble. A method by which the base of the pier or the entire pier can be built.

Mud Sill: The place where girders or trusses bear upon the abutment or masonry piers.

Fill: A low area that has been filled with earthwork in order to obtain the desired grade for the railway line.

Abutment: A structural support for the two ends of the bridge. Also acts as a retaining wall for the fill at the end of the approaches.

Trestle Bent: A pier consisting of timber posts held together by diagonal cross-bracing, with a sill on top. Can be pre-assembled and set in place as a complete unit to form a pier.

Pre-assembled Span: A span made up of girders, railroad ties and rails, assembled before being set in place in order to speed up installation.

Pre-assembled Pier: A trestle bent fully assembled before being set in place on a previously constructed base.

Night Operational Bridge: This term is used to include those bridges from which a span or spans are removed to make them appear unserviceable, and which are quickly made serviceable again at night, or when desired, usually with the use of a crane.

Deck: The finished surface of a bridge. On a concrete railway bridge it can be considered to be the concrete rail bed upon which the railroad

ties are set. Replacement or diversion bridges using steel girders, as a rule, did not have decking.

Diversion Bridge: A bridge that by-passes the original bridge and is generally built several hundred yards from it.

Replacement bridge: A newly-erected bridge immediately alongside a destroyed bridge.

Spandrel Arch: Arches which bear on the back of larger or main arches.

Culvert: A drainage tunnel under a road or railway.

Cut: An area which has been excavated in order to secure the desired gradient for the railway line.

(Source - D Section 3rd Photo. Technical Squadron)

The Four Types of Railway Line as Targets

Type A: Lines without any vulnerable targets with only open tracks to be bombed.

Type B: Lines with fills and short bridges.

Type C: Lines with masonry bridges of medium or large size, or with steel bridges of short, separate spans.

Type D: Lines with large steel bridges such as continuous trusses or suspension bridges.

AIR EFFORT ON NORTH EASTERN FRONTIER AREA
by
Mediterranean Allied Tactical Air Force
November 1944 to April 1945

MONTH	A/C CATEGORY	U.S.A.A.F.		R.A.F.		TOTALS	
		Sorties	Tons	Sorties	Tons	Sorties	Tons
November	MB	-	-	-	-	-	-
	LB	-	-	-	-	-	-
	FB	-	-	79	33	79	33
						<u>79</u>	<u>33</u>
December	MB	186	370	-	-	186	370
	LB	-	-	-	-	-	-
	FB	-	-	-	-	-	-
						<u>186</u>	<u>370</u>
January	MB	136	272	-	-	136	272
	LB	-	-	-	-	-	-
	FB	252	199	131	57	383	256
						<u>519</u>	<u>528</u>
February	MB	396	706	61	119	457	825
	LB	-	-	-	-	-	-
	FB	164	62	228	117	392	179
						<u>849</u>	<u>1,004</u>
March	MB	86	171	219	429	305	600
	LB	-	-	20	18	20	18
	FB	222	174	324	173	546	347
						<u>871</u>	<u>965</u>
April	MB	33	59	98	195	131	254
	LB	10	12	66	47	76	59
	FB	151	80	213	137	364	217
						<u>571</u>	<u>530</u>
GRAND TOTALS		1,636	2,105	1,439	1,325	3,075	3,430

Source: 23rd Statistical Control Unit, M.A.A.F.

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APPENDIX 24

AIR EFFORT ON VENETIAN PLAIN
by
Mediterranean Allied Tactical Air Force
November 1944 to April 1945

MONTH	A/C CATEGORY	U.S.A.A.F.		R.A.F.		TOTALS	
		Sorties	Tons	Sorties	Tons	Sorties	Tons
November	MB	718	1,429	-	-	718	1,429
	LB	11	15	-	-	11	15
	FB	46	23	22	7	68	30
						<u>797</u>	<u>1,474</u>
December	MB	238	454	255	505	493	959
	LB	8	9	214	184	222	193
	FB	685	371	403	220	1,088	591
						<u>1,803</u>	<u>1,743</u>
January	MB	101	195	62	115	163	310
	LB	9	6	178	153	187	159
	FB	1,426	813	717	346	2,143	1,159
						<u>2,493</u>	<u>1,628</u>
February	MB	78	148	67	134	145	282
	LB	103	120	150	138	253	258
	FB	1,685	935	1,006	378	2,691	1,313
						<u>3,089</u>	<u>1,853</u>
March	MB	260	510	263	516	523	1,026
	LB	236	271	77	65	313	336
	FB	1,318	956	1,933	798	3,251	1,754
						<u>4,087</u>	<u>3,116</u>
April	ME	66	129	61	116	127	245
	LB	97	116	249	203	346	319
	FB	575	337	580	240	1,155	577
						<u>1,628</u>	<u>1,141</u>
GRAND TOTALS		7,660	6,837	6,237	4,118	13,897	10,955

Source: 23rd Statistical Control Unit, M.A.A.F.

(6573)457

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THE RUSSIAN AIR FORCE AND THE RESCUE
OF MARSHAL TITO

The Russian Air Group at Bari

Cosmed 96 and
JCS.732 2 May Deputy
Air C.-in-C. to
V.C.A.S.
(A.H.B./11J1/273/7/
24(B), Encls. 29a
and 36a).

AX.992 6 June
V.C.A.S. to Dep. Air
C.-in-C.
(A.H.B./11J1/273/7/
24(B), Encl. 57a).
JCS.987 8 June
H.Q., M.A.A.F. to
Air Ministry
(A.H.B./11J1/273/7/
24(B), Encl. 63a).

In 1944/45 a Russian Air Group was based in Italy. In the Spring of 1944, Air Marshal Slessor discussed with General Vassiliev the conditions of operational control if the establishment of a small Russian unit up to eight aircraft at Bari should be agreed to. The British and American governments duly agreed to the idea and their decision was communicated to the Russian Ambassador in Algiers on 29 April 1944. This authority, which came through the Combined Chiefs of Staff, did not specifically cover the use of Russian aircraft for supplies to Marshal Tito from Italian bases, but the Russians were given to understand that this idea was welcome, provided they agreed to 'co-ordination' of their units by the newly-formed Balkan Air Force.

There was some delay in the issue of permission for the detachment to proceed to Bari due to the failure on their part to make the contacts requested by M.A.A.F. for the necessary reception arrangements. In due course they left Teheran and arrived at Caserta on 9 June, having meanwhile, in true Tartar fashion, obtained our consent to an increase of the group to a figure of twelve Yak fighters and twelve Dakota transports.

As a concession to our doctrinaire allies, the term 'under operational control of' was softened to 'in co-ordination with' the M.A.A.F. organization. This suited the Russians, to whom real co-operation came hardly. M.A.A.F. control remained from the outset more nominal than real. The Russians always took an independent line. Their mission in Italy worked in liaison with their mission in Yugoslavia under orders from Moscow. It cannot be said that there was no parallel to such a state of affairs, as reference to the activities of No. 51 Mission to U.S.S.R. will confirm.

Operations

History of
Special
Operations
(Air) in the
Mediterranean
A.F.H.Q./
Appx.0

The group concentrated on drops and landings.⁽¹⁾ Living and operating in comparative isolation, except for social occasions in the messes at lower levels, they left virtually no records on which to base any realistic account of their activities. As had been universally experienced, they asked much and gave little. We have a record of their participation in one notable event - the evacuation of

(1) Total effort from Bari - 1944/45	
Sorties made	390
" successful	315
Tonnage dropped	630
Sorties made (landings)	220
" successful	198
Tonnage delivered	396

(Source: History of Special Operations (Air) in the Mediterranean Theatre, p.15. Appendix A. - A.F.H.Q.)
(A.H.B./11J/81)

SECRET

2

Marshal Tito and the British and Russian military missions from Yugoslavia, between 3 and 5 June 1944.

Evacuation of Marshal Tito

The bombing of Drvar, Tito's headquarters in Yugoslavia, was the prelude to the opening of the German seventh major offensive at first light on 25 May 1944. It was followed by the dropping of 750 paratroopers and some glider troops. Tito and his staff were encircled as a result of three separate offensive movements. He broke out with the co-operation of a small British force and parts of the British and Russian Military Missions to Yugoslavia.

Marshal Tito informed Lieutenant Colonel Street (of Special Operations Executive), when they had crossed to the south over the Prekaja mountains, that the position was so serious that to retain contact with his widely dispersed units he would have to leave the country and would like the British and Russian Missions to be evacuated also. The two missions signalled for aircraft.

At 2200 hours on 3 June, a Russian Dakota based at Bari landed at Kupresko Polje. The crew evacuated Tito, Lieutenant Colonel Street and some personnel and returned for a second load the same night. In all, sixteen U.S. Dakotas also operated on that and the following two nights and evacuated staff and wounded Partisans. This dangerous and vital series of missions was completed in the nick of time, for at 0400 hours on 6 June, just after the last aircraft was airborne, enemy attacks rendered Kupresko Polje airfield untenable.

BOMBING THROUGH OVERCAST AND RADAR AIDS TO NAVIGATION

D.A.F/Sigs.
O.R.Bs

The Introduction of 'Shoran' (1) into Medium Bomber Operations

M.A.T.A.F.
Intelligence
Bulletin
Nov. 1944 to
May 1945.
(A.H.B./IIJ11/
18).

Although introduced late into the theatre, the device known as Short Range Air Navigation, or 'Shoran', was developed in the end to a point proving its superior accuracy for bombing over the visual method, and in time for a good deal of successful and accurate bombing in weather conditions normally prohibitive. In mid-September 1944, a 'Shoran' airborne set was installed in a Fortress aircraft and two ground stations assigned to 57th Bombardment Wing. From September to December, training continued. Four new sets were installed in Mitchells of 310th Bombardment Group. The first operation was carried out on 10 December 1944, when four boxes of six Mitchells, each led by a 'Shoran' aircraft, bombed Fidenza railway bridge. The operation was a failure, on account of overcast at target and human errors in calculation. By the time the next 'Shoran' operation was staged, all errors had been discovered and corrected.

The next attack, which took place on 14 December on Parma/West railway bridge, was a success and demonstrated more closely what was expected. With an equally-sized mission flew four 'Shoran' aircraft, all of which functioned accurately. Visibility over the target varied as the attack proceeded, but pinpoint precision was proved by the cutting of four spans at the western end of the bridge. Further successes followed. On 15 December, an ammunition dump at Bologna was hit by an extremely accurate and well concentrated dropping of bombs through 10/10ths overcast. The attack of 31 December (2) on the Canale D'Isonzo bridge in north-eastern Italy was a serious test. Theoretically, range should not materially affect accuracy, but in practice there was found to be a maximum. On this occasion, the 175 miles between aircraft and stations proved to be within the limit. Bombers of the 310th Group flew over 300 miles to cut the approach and completely destroy one span of this strategically important bridge.

The Outlook for 'Shoran' in Operations by Medium Bombers in 1945.

Ibid

The outlook for 1945 was promising. Six points had become apparent. The engagement of pinpoint targets was independent of target visibility; the method forced the enemy flak defences on to radar controlled fire, less accurate than visual; under overcast conditions, close support could be given and a degree of inactivity forced on the enemy; accurate night bombing was possible; navigation was simplified; target mis-identification was minimised. But the method was limited to four routes, a fact which rendered flak evasion more difficult; many more sets were needed.

'Shoran' proved more accurate than visual Methods

Ibid

By the time the ground offensive was launched in April 1945, 57th Bombardment Wing had made effective strides with

-
- (1) Short Range Air Navigation.
(2) By 18 aircraft.

its 'Shoran' technique; in a series of battle area attacks between 9 and 18 April, some 70 'Shoran' aircraft led a total of 443 sorties in a series of co-ordinated ground/air attacks with every reasonable prospect and safeguard. These were repeat attacks, made shortly after other attacks in conditions either when dust and smoke raised by these latter rendered further visual aiming extremely difficult, if not impossible, or when normal haze conditions were prevalent. Undue risks were avoided by planning attacks no nearer than two miles from our troops. The policy was to bomb on excellent runs only. Norden bomb sight equipped aircraft stood by. The attacks were made through overcast often up to 10/10ths. There were no incidents.

An analysis of results comparing the 378 effective 'Shoran' mission sorties with the 886 visual mission sorties pointed clearly to the superiority of 'Shoran' in these particular operations in several important respects. Apart from the higher percentage of effective sorties attained⁽¹⁾ and some surprising facts in the failure analysis,⁽²⁾ the figures for the average percentage of bombs within 600 feet of the target were the most revealing. For the 'Shoran' missions it was 80.1 per cent; for the visual missions only 72.1 per cent. Even considering the whole phase of the battle as a set piece - and it might well be of wider application in tactical policy - the increase in the scope of operations it suggested was even more stimulating than the figures in themselves. With 'Shoran', aiming points could be selected solely for their value as targets, without regard to problems of identification: accurate bombing could be carried out on occasions when previously air conditions had ruled them out. This meant that the enemy would be immune from attack, and so free to manoeuvre, for shorter periods of time: heavy and accurate drops of fragmentation bombs through complete overcast had, it was thought, too, done nothing to improve German morale.

Late Development of 'Shoran' in Desert Air Force

Adv.H.Q.
D.A.F/Sigs.
O.R.Bs, Jan-
Apl. 1945.

'Shoran' had only a brief operational life in Desert Air Force. On 4 January, H.Q. Mediterranean Air Forces gave the first ruling on the installation of 'Shoran'. Various plans for its extensive use were cut to the equipment of No.3 S.A.A.F. Wing's Marauders. The wing linked up with 57th Bombardment Wing in Corsica for training and on 2 April was transferred to its operational control. Two days later, Jubuka Island in the Adriatic was suggested as a bombing range for both wings. All the essential liaison and installation was proceeding between these dates. Three and one half months after the first ruling, i.e. on 16 April 1945, the first operational 'Shoran' mission was flown by No.3 Marauder Wing. It was only partially successful, but on 17 April the aircrews of the second operation scored direct hits which, it was reported by Desert Air Force, totally destroyed the target. It was a small mission in the Eighth Army area at a period when the hard

-
- (1) 'Shoran' 85.3 per cent: Visual 80.8 per cent.
(2) Weather - 'Shoran' 8 Visual 41.
Dust, haze, smoke etc. - 'Shoran' 0 Visual 41.
Personnel - 'Shoran' 32 Visual 59.
Enemy opposition - 'Shoran' 3 Visual 18.
Aircraft equipment - 'Shoran' 0 Visual 27.
Shoran equipment - 'Shoran' 22 Visual 0.

front was beginning to crack and the battle moving round Argenta. On 19 April, four 'Shoran' Marauders straddled a road bridge with fourteen 250-lb. bombs. Again, on 23 April, twelve Marauders used 'Shoran' against Sandon road bridge, but missed it; another mission guided by 'Shoran' aircraft had to resort to visual bombing when the 'Shoran' failed. There the record of 'Shoran' in Desert Air Force ends, inconclusively. By 28 April, all radar control stations were declared unable to follow the rapid retreat of the enemy. The front line was too dangerously fluid for bombing close to troops. Two days later, the Senior Air Staff Officer forbade any further crossings of the Po by radar stations until the front became less fluid or the congestion at the crossings ceased. When the fluidity of the front ceased, the campaign was ended.

SCR.584 in XXII Tactical Air Command

Use of SCR.584
in battle area
attacks by XXII
T.A.C.
M.A.T.A.F.
Monthly Air
Intelligence
Bulletin Jan-
May 1945
(A.H.B./ILJ11/
18).

Whatever the British laboratory contribution to the development of radar, it is a fact that in Italy credit for the solution to accurate night bombing is due to the Americans. Just as 'Shoran' was developed and put into operational practice by the U.S. medium bomber wing, so was its companion device, the Signals Corps Radio (S.C.R.) - 584 device brought more quickly into effective use by an American radar platoon controlling U.S. night-flying Bostons.

In October 1944, this radar platoon, (1) part of a Signal Air Warning battalion, (2) had the SCR.584 equipment it had been using for auxiliary height finding converted into a radar control station. (3) 'Shoran' equipment was not available, the few sets obtained from the U.S. being immediately acquired, as has been recorded, by 57th medium bomber Wing. The harassing problem of night bombing precision was still unsolved and it was decided to concentrate on the elaborate SCR.584, which used a radar beam in the fixing of position. On 19 November 1944, U.S. 7232, located 8 to 10 miles behind the bomb safety line, began close support operations on the Fifth Army front; it worked only at night with U.S. Boston aircraft on level bombing work - one aircraft being run at a time. It was found so accurate in range that it was used to bomb as close as one kilometre from the bomblines. From then on to the end of the campaign, aircraft of the 47th Bombardment Group operated under its control against targets unseen, or difficult to see from the air. In the Fifth Army's April push south of Bologna, it was used to crater enemy supply roads leading to the front and to drop guiding flares for heavy bombers. It handled up to 32 sorties one night. Its total record was 860 sorties without loss of a single aircraft. (4)

From January 1945 onwards, it was also found practicable to use it for level bombing on days of overcast etcetera when 'Shoran' also applied, and as an aid to navigation for fighter-bombers; but for technical reasons it would not fully function. During March and April 1945, Black Widow night fighters running into difficult cloud conditions used

-
- (1) U.S. 7232.
 - (2) 561st.
 - (3) Referred to as C.S.B.
 - (4) Total bomb load 892½ tons (short).

SECRET

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to call on the station for a target. All three categories mentioned attained satisfactory results by replacing the beam, which did not function, by voice corrections.

Weighing up the results achieved by XXII Tactical Air Command, it was agreed that the SCR.584 station could be used with advantage and good effect for the control of level bombing against targets invisible from the air, provided the target covered an area comparable to a 250-yard diameter circle and was not more than about 35 miles from the station. Suitable for use against dumps, factory buildings, railway yards, bivouac areas and similar targets, it was not at that period considered sufficiently accurate against quite small targets such as bridges or houses. Unless a breakdown in communication occurred, it could, unlike 'Shoran', keep up with a fast-moving front at a rate of about 30 miles a day. Here, then, was yet another really significant advance created out of the stress of chronic shortages, not in the experimental hothouses of the home bases, but under battle conditions: yet it was too late and too limited in volume to be decisive.

SCR.584 in Desert Air Force

The growth of SCR.584 in Desert Air Force began with experiments from October 1944 onwards. Two Air Ministry Experimental Stations⁽¹⁾ endeavoured to control daylight attacks from near Cesena. Results were still poor in December. They decided to concentrate on SCR.584 and began by controlling single Bostons of No.232 Wing (R.A.F.). Pilots, under radar control, bombed blind on area targets. More accurate was the system of dropping flares under radar control and bombing visually. They never succeeded, as far as can be traced, in controlling more than one aircraft at a time at about 26 miles range. Their work was not ample enough to be decisive, but they, too, left valuable clues for subsequent development.

D.A.F./Sigs

O.R.Bs

Night intruders

in support of

the armies in

Italy -

No.232 Wing

R.A.F.

(1) Nos.15052 and 14025.

STATISTICAL DIGEST OF TACTICAL AIR FORCE EFFORT IN 1944EFFECTIVE STRENGTH OF TACTICAL AIR FORCE ON D DAYSOF MAJOR OPERATIONS IN 1944

Period	1 Jan.	19 Mar. Strangle	12 May Diadem	12 July Malloy Major	15 Aug. Dragoon	6 Nov. Bingo	31 Dec.
Medium bombers	252	258	370	439	487	463	325
Light bombers	103	90	112	113	108	117	129
Fighters and) Fighter bombers)	699	702	777	839	1,017	742	717
	1,054	1,050	1,259	1,391	1,612	1,322	1,171

SORTIE EFFORT OF TACTICAL AIR FORCE IN 1944

Since formation of T.A.F. in Tunisia 18 Feb. 1943	<u>168,079</u>
<u>1944</u>	
January	24,292
February	18,649
March	21,447
April	23,234
May	39,915
June	31,443
July	29,328
August	38,147
September	25,779
October	15,567
November	19,405
December	21,486
Total sorties for 1944	<u>308,692</u>

SECRET

STATISTICAL RESUME OF TACTICAL AIR FORCE EFFORT

Month	Sorties Flown	Tons of Bombs dropped	Enemy aircraft claims in air and on ground			Losses due to enemy action
			<u>Des.</u>	<u>Prob Des.</u>	<u>Dam.</u>	
Jan.	24,292	8,476	143	30	106	114
Feb.	18,649	4,808	133	23	101	100
Mar.	21,447	8,093	70	14	38	96
Apr.	23,234	10,888	101	9	42	72
May	39,915	20,274	94	13	62	150
June	31,443	16,353	54	1	19	111
July	29,328	14,877	104	17	64	61
Aug.	38,147	19,625	118	26	149	140
Sept.	25,779	16,361	28	0	75	117
Oct.	15,567	8,222	15	10	18	59
Nov.	19,405	10,671	25	6	17	66
Dec.	21,486	10,105	56	3	28	58
Total	308,692	148,753	941	152	719	1,144

RESULTS

Month	Armoured Vehicles, M/T and Tanks Claims		Rolling Stock Claims		Locomotives Claims
	<u>Des.</u>	<u>Dam.</u>	<u>Des.</u>	<u>Dam.</u>	<u>Des. & Dam.</u>
Jan.	477	726	60	285	25
Feb.	367	475	11	71	15
Mar.	233	303	43	67	42
Apr.	555	503	226	356	85
May	2,768	2,427	391	694	42
June	3,318	3,002	589	1,126	88
July	491	325	1,026	707	52
Aug.	1,641	1,381	632	921	196
Sept.	1,732	1,128	1,454	1,954	748
Oct.	423	290	645	1,384	356
Nov.	644	416	997	1,800	665
Dec.	792	5589	739	1,936	469
Total	13,441	11,565	6,813	11,301	2,783

STATISTICAL DIGEST - 1944 (contd)

DISTRIBUTION OF TACTICAL AIR FORCE BOMBING EFFORT IN 1944

Tons of Bombs

U.S.A.A.F.

Month	Enemy Conc	Comm. Lines	Supply Dumps	Ports & Bases	Airfields	Other	Total
Jan.	1,681	4,850	-	228	485	133	7,377
Feb.	2,103	1,746	-	90	169	7	4,115
Mar.	2,043	3,523	101	534	68	17	6,286
Apr.	530	6,728	522	284	197	81	8,342
May	1,854	12,439	474	333	109	106	15,315
June	549	10,900	430	276	9	53	12,217
July	316	8,257	842	71	7	301	9,794
Aug.	4,228	6,805	236	204	321	348	12,142
Sept.	2,210	5,260	538	4	-	568	8,580
Oct.	1,341	3,798	574	3	4	230	5,950
Nov.	1,119	6,416	359	66	16	618	8,594
Dec.	1,313	4,748	488	18	19	705	7,291
Total	19,287	75,470	4,564	2,111	1,404	3,167	106,003

R.A.F.

Jan.	329	525	17	34	-	194	1,099
Feb.	200	293	30	11	-	159	693
Mar.	412	1,051	60	187	6	91	1,807
Apr.	194	1,474	305	144	37	191	2,345
May	1,211	2,787	192	176	-	93	4,459
June	304	2,713	69	154	16	18	3,274
July	1,370	2,092	192	291	29	2	3,976
Aug.	2,740	2,966	180	178	6	89	6,159
Sept.	4,716	2,104	49	7	-	139	7,015
Oct.	1,345	822	53	42	-	10	2,272
Nov.	1,316	595	57	83	6	20	2,077
Dec.	1,224	1,205	121	30	14	220	2,814
Total	15,361	18,627	1,325	1,337	114	1,226	37,990

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Tons of Bombs

FRENCH AIR FORCE

Month	Enemy Conc	Comm Lines	Supply Dumps	Ports & Bases	Airfields	Other	Total
Jan.	-	-	-	-	-	-	-
Feb.	-	-	-	-	-	-	-
Mar.	-	-	-	-	-	-	-
Apr.	-	177	-	-	-	24	201
May	34	414	-	46	-	6	500
June	11	795	46	6	4	-	862
July	6	954	103	-	-	44	1,107
Aug.	501	802	-	3	-	18	1,324
Sept.	178	440	128	-	-	20	766
Oct.	-	-	-	-	-	-	-
Nov.	-	-	-	-	-	-	-
Dec.	-	-	-	-	-	-	-
Total	730	3,582	277	55	4	112	4,760

M. A. A. F. AIRCRAFT STRENGTH

At 26 October 1944, 1 March and 26 April 1945

Command	26 October 1944										1 March 1945										TOTALS		
	U. S. A. A. F.			R. A. F. (excluding M. E.)			F. A. F.			TOTALS	U. S. A. A. F.			R. A. F. (excluding M. E.)			F. A. F.			I. A. F.			
	Oper.	Non-Oper.	Total aircraft	Oper.	Non-Oper.	Total aircraft	Oper.	Non-Oper.	Total aircraft		Oper.	Non-Oper.	Total aircraft	Oper.	Non-Oper.	Total A/C	Oper.	Non-Oper.	Total A/C	Oper.		Non-Oper.	Total A/C
M. A. S. A. F.	1755	293	2048	141	37	178	-	-	-	2226	1504	597	2101	121	49	170	-	-	-	-	-	-	2271
M. A. T. A. F.*	1139	370	1509	715	66	781	-	-	-	2290	856	267	1123	704	75	779	-	-	-	-	-	-	1902
M. A. C. A. F.	-	-	-	201	56	257	59	65	124	381	-	-	-	239	105	344	73	39	112	33	10	43	499
336 WG	-	-	-	34	7	41	-	-	-	41	-	-	-	40	10	50	-	-	-	-	-	-	50
B. A. F.	-	-	-	243	58	301	-	-	-	301	-	-	-	155	65	220	-	-	-	132	73	205	425
Repair Units	280	903	1183	639	3118	3757	-	-	-	4940	297	1136	1433	583	3042	3625	-	-	-	-	187	187	5245
Misc.	154	41	195	48	14	62	-	-	-	257	85	28	113	12	5	17	-	-	-	73	34	107	237
TOTAL	3328	1607	4935	2021	3356	5377	59	65	124	10436	2742	2028	4770	1854	3351	5205	73	39	112	238	304	542	10629

* 51 T. C. WG and Brazilian A. F. included. All Gliders excluded.

26 April 1945

Command	U. S. A. A. F.			R. A. F. MED.			R. A. F. ME.			F. A. F.			I. A. F.			TOTALS
	Oper.	Non-Oper.	Total A/C	Oper.	Non-Oper.	Total A/C	Oper.	Non-Oper.	Total A/C	Oper.	Non-Oper.	Total A/C	Oper.	Non-Oper.	Total A/C	
M. A. S. A. F.	1693	178	1871	129	31	160	-	-	-	-	-	-	-	-	-	2031
M. A. T. A. F.*	940	157	1097	665	79	744	-	-	-	-	-	-	-	-	-	1841
M. A. C. A. F.	-	-	-	241	72	313	-	-	-	67	25	92	29	15	44	449
336 WG	-	-	-	31	9	40	-	-	-	-	-	-	-	-	-	40
B. A. F.	-	-	-	155	41	196	-	-	-	-	-	-	131	78	209	405
R. A. F., M. E.	-	-	-	-	-	-	118	51	169	-	-	-	-	-	-	169
Repair Units	714	968	1682	389	2002	2391**	146	1379	1525***	-	-	-	7	142	149	5747
Trng & Misc.	95	14	109	57	31	88	882	461	1343	-	-	-	48	58	106	1646
TOTAL	3442	1317	4759	1667	2265	3932	1146	1891	3037	67	25	92	215	293	508	12,328

** 603 R. A. F. Aircraft in Repair Units Awaiting Salvage or Strike-off.

* 51 T. C. WG & Brazilian A. F. included. All Gliders excluded.

Source: Statistical Control Unit Aircraft Status Reports.

(6573)471

RAILWAY TARGETS IN NORTHERN ITALYMEDIUM BOMBER EFFORTDECEMBER 1944 to APRIL 1945

Lines or Zones	December		January		February		March		April	
	Sorties	Tons								
Brenner Pass Line	534	964.6	950	1,737.6	1,155	2,073.2	1,602	2987	1,065	2075.1
Livenza River Zone	45	96	79	157	52	104	108	204	-	-
Piave River Zone	56	108.4	-	-	18	36	60	118.5	-	-
Brenta River Zone	84	168	18	36	-	-	73	146	-	-
Mincio River Zone	37	75	33	65.5	40	79	49	98	-	-
Oglio River Zone	20	40	86	171.5	41	82	206	411	-	-
Adda River Zone	33	65.5	15	30	41	81.5	127	249.5	18	36
Po River Zone	73	122	66	132	41	77.8	39	78	51	102
Tagliamento River Zone	-	-	3	6	-	-	94	156.1	-	-
Northeast Frontier Zone	-	-	128	256	362	674.9	9	17	27	51.3
Panaro River Zone	-	-	-	-	-	-	-	-	34	66.5
Adige River Zone	-	-	-	-	37	68	29	58	3	6
Isonzo River Zone	-	-	-	-	18	35	18	36	-	-
Reno River Zone	-	-	-	-	-	-	-	-	66	131.5
Miscellaneous Rail Targets	391	908	73	143	114	227.3	417	825.5	210	401.2
GRAND TOTALS	1,273	2,547.5	1,451	2,734.6	1,919	3,538.7	2,831	5,384.6	1,474	2,869.6

Note: All tonnages are given in short U.S. tons (2,000 lb).

SECRET

SECRET

APPENDIX 29

ALLIED NAVAL OPERATIONS IN THE ADRIATIC AND LIGURIAN SEAS AND THE GULF OF GENOA, JANUARY TO MAY 1945

General Survey

The naval forces under the Supreme Commander included four cruisers of the 15th Cruiser Squadron, R.N., one American, five French and four Italian cruisers, six destroyer flotillas of the Royal Navy, twelve American, nine French, seven Greek and seven Italian destroyers. From these vessels was formed a Flank Force which operated in the Gulf of Genoa and Ligurian Sea, continually harassing enemy shipping and carrying out coastal bombardments. Their targets included marshalling yards, bridges, batteries, enemy strongpoints, road junctions, railways, vehicles and personnel. Naval port parties opened up Naples, Leghorn, Spezia and Genoa, thereby enabling supplies to reach our forces without interruption.

The work of the naval forces in the Adriatic, which were mainly composed of coastal craft, was of great value, consisting of the mopping up of enemy shipping and assistance to the Yugoslav Partisans with operations in the Dalmatian islands. After recognition of the Yugoslav Government under Marshal Tito early in March 1945, a naval officer was appointed to Belgrade as a representative of the Commander-in-Chief, Mediterranean with the Chief of the Yugoslav Naval Staff. On 25 February 1945, Combined Operational Headquarters were established at Zadar for the purpose of planning and executing Combined Operations in the Northern Adriatic.

Naval Aid on the Eastern Flank

The only practicable way of outflanking the German defensive position in Italy was to force the Argenta Gap. Since a seaborne landing was not feasible, it was decided to outflank this position by carrying troops in amphibian 'Fantails'.⁽¹⁾

Naval aid was obtained for training the crews, assisting in the operations and providing beach parties. On the night of 11 April, the first successful 'Fantail' operation was launched. At dawn on the 11th, two battalions landed near Menate, which, with Longastrina and the important bridge over Scolo Menate, were captured. Gaps were blown in the banks of Scolo Menate on the night of the 12th/13th to enable 'Fans' to pass through and land one Commando and one battalion east of Argenta. This landing was supported by guns mounted in 'Fantails', and the Commando was landed behind our own forward line, while the Buffs were put ashore at the landward end of Canelette di Bando. Twelve 'Fans' were knocked out by gunfire, but most of the infantry got ashore, and, as a direct result of these operations, the Argenta Gap was forced.

On the night of 23/24 April, 'Fantails' were used at four places in the crossings of the River Po. The Royal Navy was concerned in only one of these crossings, that at Gaida, near Occhiabello, where nine 'Fans' carried an assault force of the 6th Armoured Division. The crossing was begun at 0100 hours on the 24th. No casualties were suffered by our force, and by noon nearly all the Brigade was across. The Royal Marines also assisted in the crossing of the River Po. On 25 April, nine L.C.As and crews were loaded on tank transporters at Ravenna, and the following morning the flotilla arrived at the River Po at a point ten miles N.W. of Ferrara; here they offloaded and began ferrying stores across the river. This ferry service continued to the end of the month, supplies,

(1) Landing Vehicles Tracked, Mark IV

ammunition and POL being ferried across on the outward journey, and casualties brought back.

Earlier in the month, the Royal Marines had carried out a useful operation preliminary to the Army launching the main offensive. On the night of 1st/2nd April, Royal Marine Commandos landed from storm boats on the east shore of Lake Comacchio and, after capturing their initial objectives, proceeded up the coast north of Reno. The following day they continued their advance towards Port Garibaldi, capturing one bridge intact and taking prisoners. By the 4th, they had reached a line 2,000 yards short of the Garibaldi Canal.

Adriatic Naval Operations

Apart from the direct assistance given by the Royal Navy to the Eighth Army in the Argenta Gap and River Po, many other operations in the Adriatic helped the campaign ashore. January 1945 opened with the Yugoslav ports of Split and Zadar (formerly Zara) in the hands of the Partisans, with British Naval forces operating from those places and the islands. H.M.S. Delhi was stationed at Split and H.M.S. Colombo at Zadar. Relations at this period between the British naval authorities and the Partisans were not good, the latter adopting a distinctly non-co-operative attitude, although a Naval Agreement had been signed on 17 January between the Supreme Allied Commander and Marshal Tito.

During January, bad weather considerably hampered coastal craft operations in the Northern Adriatic, but a number of brisk engagements took place with E-boats(1) and small destroyers. For example, on the night of the 18th/19th two of our M.L.'s intercepted and engaged two large and six small enemy M.T.B.'s off Uljan Island. All except two of the enemy vessels retired at high speed and these two tried to close Zadar Harbour, but were intercepted by one of our Harbour Defence M.L.'s, which destroyed one and drove off the other. Minesweepers established the southern approach to Zadar, cleared an area for a cable ship to work on the Ancona-Zadar cable, searched areas in the vicinity of several islands and at the entrance of the canal to Ravenna. One M.L. was blown up with all hands by an enemy torpedo, and two minesweepers were damaged by mines; but not sunk.

Early in February, Brigadier McClean made representations on behalf of the Supreme Commander, Mediterranean Theatre, to Marshal Tito that the terms of the recent Naval Agreement were not being honoured by the Yugoslav authorities on the Dalmatian Coast. This led to a marked improvement in our relationship with the Partisans. All restrictions on our naval administration at Split and Zadar were removed, and matters were further improved after a meeting of 21 February between the Supreme Commander and Marshal Tito in Belgrade. Combined Operational Headquarters were established on the 25th at Zadar for operations in the Northern Adriatic. Successful attacks were made by our coastal craft against enemy shipping, two large merchant ships and three armed patrol craft being sunk. The port of Karlobag was damaged by shellfire from our coastal craft on the night of the 16/17th, and on the 24th a Partisan attack on Pag Island was covered by M.T.B.'s., M.L.'s and an L.C.G.(2)

On the morning of the 12th, four enemy explosive motor boats attacked the harbour of Split. H.M.S. Delhi's Oerlikons sank one craft, and the Partisans accounted for another. A third hit the breakwater and exploded, but the fourth succeeded in hitting L.C.F.8. (3) and causing damage. There were no naval casualties.

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- (1) E-boats - Enemy motor torpedo boats.
 - (2) Landing Craft, Guns.
 - (3) Landing Craft, Flak.

Minesweeping continued throughout February, channels being swept between Sibenik and Zadar, in the approaches to Ancona, between Ancona and Cesenatico, in the harbour of Porto Corsini and canal from there to Ravenna.

At the beginning of March, the Commander-in-Chief, Mediterranean gave authority for the transfer of certain ships to the Yugoslavs, recognition of the Yugoslav Government having been effected. Both naval elements of the Yugoslavs, the former Royal Yugoslav Navy and the newly formed Yugoslav Navy, were to operate in the Adriatic. On 12 March, H.M.S. Delhi withdrew from Split, the administration of the port being taken over by a British Liaison Officer. The Delhi left for Malta.

The enemy in the Dalmatian Islands were kept very much on the defensive during March. Coastal Craft landed numerous Long Range Desert Group parties and Special Boat Squadron patrols in the islands. At sea constant activity was maintained; actions took place on six occasions, when five merchant ships, six F-lighters and several small craft were destroyed.

On the night of 15th/16th, three L.C.T's and an L.C.I.(L)⁽¹⁾ escorted by two M.L's took 1800 Partisans with artillery from Zada and disembarked them at Baljenica Bay for an attack on Novi Grad.

On 26 March, the millionth ton of cargo, exclusive of bulk POL, since the opening of the port eight months previously, was discharged at Ancona.

Ravenna - Porto Corsini canal was swept clear of mines. The inshore channel from Ancona to Porto Corsini was extended, and a channel swept for an approach to Durazzo. Two M.T.B's were mined and sunk during March, with a loss of seven lives.

April proved to be a particularly active month for coastal craft in the Adriatic. M.G.B's and M.T.B's with motor gunboats of the Royal Yugoslav Navy, were in action with the enemy on at least ten occasions, in the course of which 11 F-lighters, a torpedo boat, the Spica and a heavily laden schooner were known to be sunk, besides damage inflicted on other craft such as E, R and I boats,⁽²⁾ Rhine barges and the like. None of our vessels were sunk, but three suffered considerable damage from gunfire.

At the beginning of the month, enemy midget submarines were active in the Northern Adriatic. One, C.B.6, was sunk by a Wellington aircraft during the night of the 2nd/3rd in a position 40 miles eastward of Porto Corsini. Several other 'midgets' were sighted and attacked by our aircraft and anti-submarine vessels, but no further sinkings were claimed. Their operations were confined, apparently, to landing agents. Attempts were made by the enemy to attack our shipping off Ancona with two-man torpedo boats and one-man explosive motor boats, but they were frustrated by accurate fire from shore batteries.

Landing craft, escorted by M.L's and M.T.B's, gave lifts to the Yugoslav Fourth Army during their advance up the Croatian Coast and in their assaults on enemy-held islands, notably Pag, Rab, Krk, Cherso and Lussino. With the fall of Cherso Island on the 22nd, all the islands in the Adriatic were free of the enemy. The advance of the Partisans up the Croatian coast towards Fiume was materially assisted by the work of our minesweepers.

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- (1) L.C.T. - Landing Craft, Tank.
L.C.I.(L) - Landing Craft, Infantry, Large.
- (2) E-boat - enemy motor torpedo boat.
R-boat - enemy motor gun boat.
I-boat - enemy armed launch.

On the other side of the Adriatic, Fleet minesweepers began to clear a channel northward from Ancona to Venice and eventually Trieste. By the 26th, a channel four miles wide and forty-five in length had been established, some 25 mines having been cut or exploded. Two M.T.B's. and one B.Y.M.S. were blown up by mines with a loss of 27 lives. Naval casualties of 10 killed and 51 wounded, and a considerable number of Army and civilian casualties were sustained on 9 April in Bari, when a serious explosion took place in S.S. Charles Henderson, which was discharging high explosive ammunition and bombs.

At the end of the month, the Supreme Allied Commander intimated to Marshal Tito that he intended to secure the Port of Trieste and lines of communication through Italy leading to that port, also lines of communication from Trieste to Austria via Gorizia - Tarvisio. Further, he would require the use of Pola Harbour for Allied Naval Forces and anchorages on the Istrian coast between Pola and Trieste with lines of communication between these ports.

Naval Support on the western flank

On the western coast, the Flank Force operated continuously in the Gulf of Genoa and Ligurian Sea. On 7 January, U.S.S. Woolsey and H.M.S. Lookout, bombarding enemy-held territory in the Gulf of Magra, scored direct hits on a battery and enemy-occupied buildings. Enemy barges on slips at Pietra Ligure were bombarded on the 11th by the French cruiser Georges Leygues, and on the 15th San Remo and Porto Maurizio harbours were bombarded by the French cruisers Montcalm and Georges Leygues with the British destroyer Lookout.

Numerous minor actions took place between our patrolling forces and those of the enemy, including destroyers, coastal craft and explosive motor boats. Several of these latter were sunk, as well as a number of F-lighters carrying ammunition and troops. Minesweeping progressed during the month westward and northward from Leghorn. On 6 January, the U.S. Liberty ship Isaac Shelby was mined, and went aground in the Gulf of Gaeta.

Outside the Ligurian and Tyrrhenian Seas no threat was offered to our shipping except in the Western approaches to Gibraltar, where three merchant vessels, (one American, one British and one French) were sunk. Cargo, vehicles and personnel were discharged at southern French ports as follows:-

	Dry	Wet	Personnel	Vehicles
Marseilles	344,340 tons	10,445 tons of POL	33,570	3,276
Toulon	17,354 "	130,116 Barrels	800	12
Port de Bouc	41,969 "	987,007 "	-	-

San Remo harbour was bombarded on 6 February by the Jeanne d'Arc, and by the Georges Leygues again on the 22nd. On the 11th, the U.S.S. McLanahan bombarded targets on the Franco-Italian border.

The French cruiser Montcalm, on 14 February, fired over 100 rounds at a battery in Ospedaletti, obtaining many direct hits. British M.T.B's on the night of 5/6 February fired seven torpedoes at an enemy convoy off Mesco Point, blowing up an armed supply vessel, and on the next night.

American and British M.T.B's intercepted three small merchant ships entering Savona and sank two of them.

Minesweeping operations continued off Leghorn. Fresh enemy mine-laying west of Gorgona was detected by radar, and mines were cut by M.L's assisted by American fast minesweepers. French minesweepers widened the Sete-Port de Bouc swept channel, and searches were carried out between Cap Ferrat and Cap d'Aggio.

There was still a little U-boat activity in the approaches to Gibraltar. On 17 February, two ships, the American Liberty ship Michael J. Stone and the British motor tanker Regent Lion were torpedoed ten miles N.W. of Tangier. On the 19th, the German submarine U. 300 was damaged and sunk on the 22nd.

The discharging of war cargoes in Southern French ports continued at a high rate during February.

	Dry	Wet	Personnel	Vehicles
Marseilles	450,109 tons	20,701 tons bulk POL	49,866	14,753
Toulon	11,913 "	50,543 barrels	3,672	7
Port de Bouc	64,491 "	718,000 "	-	-

March proved to be a very active month for the Flank Force of Allied cruisers and destroyers in the bombardment area, where they operated almost daily in support of our land forces. In addition to the general list of targets mentioned earlier, their programme included bombardments of the ports of Genoa, Savona, Porto Maurizio and San Remo.

Three French cruisers shelled Bordighera on 2 March, as it was reported that an armoured train with 6-inch guns was berthed in its tunnel. The Georges Leygues fired on the train berth and obtained several hits on the tunnel entrance, while the Jeanne d'Arc fired on the railway station from which the train was reported to fire. On the night of the 9th/10th, three American M.T.B's., (known as P.T's.) encountered a northbound convoy of eight F-lighters off Mesco Point. Two lighters were sunk and two more damaged. P.T's. on the night of the 13th/14th, were forced to withdraw from the Savona area owing to heavy and accurate radar-controlled fire from that port. On the 18th there was a successful engagement in the Gulf of Genoa with enemy destroyers on a minelaying expedition. The Premuda had laid over 40 German electric mines before being engaged by H.M.S. Lookout.

Minesweeping in the Ligurian Sea was constantly carried out by British, American and French M/S. forces. In an area west of Gorgona Island, 35 mines were cleared with the aid of Walrus aircraft of the 624th Minespotting Squadron. Minesweepers searched areas north of Cape Corse and north of Anzio.

Outside the Ligurian and Tyrrhenian Seas during March, no attacks were made on Allied ships, and there was no conclusive evidence of any U-boat activity in the approaches to Gibraltar. Discharging of war cargoes continued at average monthly level in southern French ports.

Minesweeping in the Gulf of Sanary was carried out by French minesweepers, and in the Gulf of Cagliari, (Sardinia), by American Task Force 81.12. In the latter area some 90 mines and 80 obstructors⁽¹⁾ were cleared.

During April, in the Flank Force bombardment area, there was only one occasion when the enemy attempted an offensive operation on a large scale. Early on the 24th between 0030 and dawn, an attack was made on Leghorn by a number of small battle units, consisting of fourteen one-man explosive boats and three two-man torpedo boats, which had come from Genoa in a final 'all-out' attempt. The operation failed and the enemy paid a heavy price. Four were sunk by coastal artillery, the R.A.F. destroyed a fifth, three more surrendered to the French Navy after scuttling their craft, and the remainder scuttled themselves. A number of running fights occurred between M.T.B's., American and British, and enemy escorted coastal convoys, during which several armed supply vessels were sunk.

On the night of the 16th/17th, the French destroyer Trombe was attacked by two E-boats, one of which was sunk by gunfire; but the other succeeded in hitting the Trombe with one torpedo. She managed, however, to reach Toulon under her own power; her casualties were 19 killed and 12 wounded.

An Allied attack on shipping in Genoa was made on the night of the 18th/19th, when a motor gunboat escorted an Italian minesweeper carrying two Italian-manned human torpedoes from Leghorn to Genoa with the object of sinking the ex-liner Aquila, reported as having been converted as an aircraft carrier and now a potential blockship. One 'chariot' exhausted its batteries before reaching the mole, but the other succeeded in passing over the boom and depositing its warhead 10 feet below the Aquila's keel. The explosion unfortunately only succeeded in holing the Aquila's anti-torpedo bulge; she did not settle on the bottom as intended.

The Army's general offensive began on 9 April, and ships of the Flank Force were fully occupied in answering calls for fire and bombarding each new position taken up by the enemy. Between the 5th and 10th, destroyers fired over 1,100 rounds into enemy strongpoints. Their first mission was against enemy batteries defending the German front line at the Cinquale Canal. On the 26th, in the final stages of battle, the 92nd Division called for naval gunfire to silence gun batteries holding up their advance on Genoa. H.M.S. Orion answering the call, silenced anti-tank guns at Bana and, later, on receipt of a second call, effective fire was directed at enemy strongpoints.

On the 24th, enemy withdrawal from Spezia was announced, and elements of the 92nd Division marched in. The next day, an advance section of the Port Party reached the town and reported that although the entrance to the port was effectively blocked, harbour facilities and docks were not extensively damaged. On the 27th, Fifth Army reached Genoa, closely followed by advance elements of the Port Party, who found all public services functioning normally and many quays intact, with cranes and gantries standing. Outside the bombardment area no incidents occurred during April affecting the movements of our shipping, but an attempt was made on the night of 23rd/24th to stage an assault on the most easterly ports and anchorages on the south coast of France. French Chasseurs and American patrol craft intercepted the enemy and sank six of their coastal craft and an Italian M.T.B. Several Axis vessels

(1) 'Obstructor' is an anti-minesweeping device.

ran aground or were found scuttled, and it is estimated that this sortie cost the enemy 13 or 14 craft.

Prior to 5 April, the commencing date of coastal bombardments, the bombardment area had been cleared of mines. Areas round Gorgona Island, approach channels to Spezia and Genoa and north of Cape Corse were swept, although in the case of Genoa consistent bad weather prevented completion during April. French minesweepers and American vessels carried out high percentage sweeps of large areas in the approaches to Marseilles and Toulon.

Source: Historical Section, Tactical and Staff Duties Division,
Admiralty.

THE BOMBING DIRECTIVE OF 26 JANUARY 1945

H.Q., M.A.A.F.
Operations Instruction No. 101

1. Operations Instruction No. 88, dated 16 November 1944, this H.Q., subject, 'Bombing Directive', is superseded by instructions contained herein.
2. This directive incorporates and co-ordinates the directive of U.S.S.T.A.F. for the 'Employment of the Strategic Air Forces', ~~which is dated~~ 12 January 1945, and the considerations and requirements of the Mediterranean Theater of Operations as outlined in 'Theater Air Directive of S.A.C.M.T.O.' dated 1 January 1945.
3. The overall mission of M.A.S.A.F. remains unchanged and is to carry out its portion of the aim of the Allied Strategic Air Forces, which is the 'Progressive destruction and dislocation of the German military, industrial and economic systems, and the direct support of land and naval forces'.
4. The current primary strategic air objective, to which M.A.S.A.F. will direct its effort, except as otherwise provided in this directive, is the reduction of the enemy's sources of fuel, particularly gasoline - his most critical military supply. This will be accomplished by destruction of synthetic fuel plants, crude oil refineries, stores of refined oil products, and distribution and supply points. Relative importance of specific targets is based primarily on gasoline output, with due weight being given to local capacity. The renewed Russian advance in the East is of great significance to the oil offensive. It promises to deprive the enemy of important sources of production and increase his requirements of P.O.L. In consequence, the immobilisation of the remaining large synthetic plants assumes greater importance than ever before. At the same time, the target value of crude oil refineries and benzol plants has been enhanced. Attacks against these targets shall be intensified by every means available. Following attack, and pending action by this H.Q., you are authorised at your discretion to suspend a target from further attack. The weekly oil cables from U.S.S.T.A.F. constitute the list of oil targets in order of priority for attack. (See Para. 8. Counter Air Force Action wherein attacks on jet a/c system are accorded same priority as oil).
5. The strategic objective next in order of priority to oil is the German lines of communication. Targets in this category will be selected by M.A.S.A.F. co-ordinating with this H.Q.
6. Priority Attacks in Support of Land Operations
 - (a) To meet the needs of an urgent tactical situation, the temporary diversion of the effort of the Strategic Air Forces from their primary function may be ordered by the Supreme Allied Commander. When weather or other conditions prohibit the foregoing priority operations, the heavy bombers will be available to augment the tactical air effort in Northern Italy and Yugoslavia, or to support Russian operations.
 - (b) The area from the High Tatra to the Maritime Alps must be regarded as the Southern front for the enemy. An important object for Strategic, as well as for such Tactical Air Forces as have the requisite range, must therefore be to deprive the enemy of strategic flexibility on this front by making it impossible for him to move reserves rapidly from one threatened point to another. This obviously involves the closest possible co-ordination with the Russian Command in Hungary. Direct support to Russian forces will be rendered at such times and in such manner as may be authorised or directed by this H.Q.

7. Important Industrial Areas

(a) When weather or tactical conditions are not suitable for operations against the systems of objectives mentioned in the preceding paragraphs, attacks are to be delivered on important industrial areas, with blind bombing technique as necessary. As far as operational and other conditions permit, these attacks are to be directed so as to contribute to the maximum destruction of the petroleum industries and the dislocation of the German lines of communication. Targets in this category will be selected by M.A.S.A.F. co-ordinating with this H.Q. Blind bombing attacks on industrial areas in Poland and Czechoslovakia will be made only upon the specific authority of this H.Q.

(b) Targets for blind bombing in Poland and Czechoslovakia will be selected only from particularly important ones well suited to P.F.F. attack. If such installations do not appear on scope, bombs should not be released. Targets of opportunity must conform to this restriction.

8. Counter Air Force Action

(a) Largely as the result of the concentration of our strategic bomber effort on the enemy's petroleum industry and his communication system, and due to our preoccupations on the battle front, we have allowed the G.A.F. to recover a great deal of its fighting strength. Moreover, the enemy has concentrated his efforts particularly on developing his fighter force at the expense of other branches of the G.A.F. In this effort to increase the efficiency of his fighter force, he has turned to the rapid development of jet fighters and there is every evidence of his intention to produce them on a large scale as early as possible.

(b) Already he has a considerable number of these aircraft in operation. They are superior in speed and armament to our conventional fighters. As soon as they are available in sufficient numbers, and as soon as the enemy has developed suitable tactics for their efficient employment, they will doubtless be employed systematically against our strategic day bombers. The conditions which are likely to confront the conduct of our strategic offensive in the near future are therefore serious unless the enemy's production and employment of jet aircraft is checked in some way.

(c) In addition, the employment of these aircraft over the battle front will place our tactical air forces and the armies themselves at considerable disadvantage. This particularly applies to reconnaissance and the employment of these aircraft in a ground attack role. It has therefore been decided that we shall employ the necessary amount of strategic effort to neutralise this grave threat. The G.A.F. and primarily its jet production, training and operational establishments now become primary objectives for attack. Targets will be selected in accordance with current priority lists from U.K. and revised by weekly U.S.S.T.A.F. cable.

9. Remaining effort will be directed against communications targets in the manner, scope and order of priority shown below:

(a) Interdiction and interruption of railroad communications between South east Germany and the Danubian plains. Targets in this category will be selected by M.A.S.A.F. Co-ordinating with this H.Q.

(b) Interdiction of railroad communications between South Germany (including Austria) and Italy. Targets in this category will be selected by M.A.S.A.F. co-ordinating with this H.Q.

(c) Communications in Yugoslavia.

(i) B.A.F. will be responsible for the selection of targets for air operations in Yugoslavia and for maintaining current data as to the status of communications interruption. B.A.F. will maintain and communicate to M.A.S.A.F. a list of targets of this nature suitable for attack by M.A.S.A.F. forces. B.A.F.'s nominations will be repeated to this H.Q. for information, and B.A.F. will in addition, from time to time, provide this H.Q. and M.A.S.A.F. with details of their general plans.

(ii) When M.A.S.A.F. finds an opportunity to operate in Yugoslavia consistent with its strategic priorities it will confirm with B.A.F. that the targets selected are still cleared for attack. Acceptance of nominated targets will be discretionary with M.A.S.A.F.

(iii) In the event that B.A.F. has an unsolicited request for M.A.S.A.F. assistance, B.A.F. will forward such request to this H.Q. for action, repeating to M.A.S.A.F. for their advance information and examination.

(d) Communications in Italy.

(i) M.A.T.A.F. will be responsible for the selection of targets for air operations in Italy.

(ii) No targets in Italy will be attacked by M.A.S.A.F. except upon the request or approval of M.A.T.A.F.

(iii) M.A.T.A.F.'s requests for assistance from M.A.S.A.F. will be forwarded to this H.Q. for action, repeating to M.A.S.A.F. for their advance information and examination.

10. Ground Armaments Targets

In accordance with intent of U.S.S.T.A.F. directive, targets in this category cannot at this time be accorded priority for strategic attacks, except when and as demanded by S.H.A.E.F. and communicated to you by U.S.S.T.A.F. or by this H.Q. Additional targets in this category, selected by M.A.S.A.F. co-ordinating with this H.Q. may be attacked only as filler targets or as targets of opportunity.

11. Co-operation by M.A.T.A.F.

In view of the critical condition of the enemy's fuel supply, M.A.T.A.F. is directed to apply maximum pressure, consistent with its other commitments, upon known or suspected enemy fuel supply points.

By command of the Air Commander-in-Chief.

THE BOMBING DIRECTIVE OF 1 MARCH 1945

H.Q., M.A.A.F.
Operations Instruction No. 109.

1. Operations Instruction No. 101, dated 26 January 1945, this H.Q. subject: 'Bombing Directive', is superseded by instructions contained herein.
2. This directive incorporates and coordinates all directives of U.S.S.T.A.F. to date and the considerations and requirements of the Mediterranean Theater of Operations applicable to Strategic Operations as outlined in 'Theater Air Directive' of S.A.C.M.E.D. dated 1 January 1945. The directive likewise sets forth essential standing procedures for coordination of the several air forces of M.A.A.F.
3. The overall mission of M.A.S.A.F. remains unchanged and is to carry out its portion of the aim of the Allied Strategic Air Forces, which is the 'Progressive destruction and dislocation of the German military, industrial and economic systems, and the direct support of land and naval forces.'
4. The current primary strategic air objective to which M.A.S.A.F. will direct its effort, except as otherwise provided in this directive, is the reduction of the enemy's sources of fuel, particularly gasoline, his most critical military supply. This will be accomplished by destruction of synthetic fuel plants, crude oil refineries, stores of refined oil products, and distribution and supply points. Relative importance of specific targets is based primarily on gasoline output with due weight being given to total capacity. The renewed Russian offensive in the East is of great significance to the oil offensive. It promises to deprive the enemy of important sources of production and increases his difficulties of meeting P.O.L. requirements. In consequence, the immobilisation of the remaining large synthetic plants assumes greater importance than ever before. At the same time, the target value of crude oil refineries and benzol plants has been enhanced. Attacks against these targets shall be intensified by every means available. Following attack of any specific target and pending action by this H.Q., M.A.S.A.F. is authorized at its discretion to suspend such target from further attack. The weekly oil cables of the Combined Strategic Targets Committee (London) constitute the list of oil targets in order of priority for attack.
5. The strategic objectives in second priority are:
 - (a) German lines of communication.
 - (b) Armoured force vehicle production, assembly and repair facilities.

In the absence of priority list provided by higher authority in this H.Q., targets in these categories will be selected by M.A.S.A.F. coordinating with this H.Q.

6. Priority Attacks in Support of Land Operations

- (a) To meet the needs of an urgent tactical situation, the temporary diversion of the effort of the Strategic Air Forces from their primary function may be ordered by the Supreme Allied Commander. When weather or other conditions prohibit the foregoing priority operations, elements of M.A.S.A.F. will be available to augment the tactical air effort in Italy and Jugoslavia, or to support Russian operations.

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(b) The area from the High Tatra to the Maritime Alps must be regarded as the Southern front for the enemy. An important object for Strategic, as well as for such Tactical Air Forces as have the requisite range, must therefore be to deprive the enemy of strategic flexibility on this front by making it impossible for him to move reserves rapidly from one threatened point to another. This obviously involves the closest possible coordination with the Russian Command in Hungary. Direct support to Russian forces will be rendered at such times and in such manner as may be authorized or directed by this H.Q.

7. Important Industrial Areas

(a) When weather or tactical conditions are unsuitable for operations against the systems of objectives mentioned in the preceding paragraphs, attacks are to be delivered on important industrial areas, with blind bombing technique as necessary. As far as operational and other conditions permit, these attacks are to be directed so as to contribute to the maximum destruction of the priority objectives specified above. Targets in this category will be selected by M.A.S.A.F. coordinating with this H.Q. Blind bombing attacks on industrial areas in Poland and Czechoslovakia will be made only upon the specific authority of this H.Q. and then on targets selected only from particularly important ones well suited to PFF attack. If such targets do not appear on scope, bombs should not be released. Targets of opportunity must conform to this restriction. (See paragraph 13 for other restrictions).

8. Counter Air Force Action

Policing attacks against the German Air Force are to be adjusted so as to maintain tactical conditions which will permit of maximum impact upon the enemy. No fixed priority is therefore assigned to policing attacks against the German Air Force. Normally, counter air force action will be limited to attacks on jet propelled fighter installations.

9. Communications Attacks

Attacks against communications targets will include the following, the priority for which will be as determined by reconnaissance and other intelligence and as specified by special instructions from this H.Q.

(a) Interdiction and interruption of railroad communications between Southeast Germany and the Danubian plains. Targets in this category will be selected by M.A.S.A.F. coordinating with this H.Q.

(b) Interdiction of railroad communications between South Germany (including Austria) and Italy. Targets in this category will be selected by M.A.S.A.F. coordinating with this H.Q.

(c) Communications in Yugoslavia.

(d) Communications in Italy.

10. Operations in Yugoslavia

(a) B.A.F. will be responsible for the selection of targets for air operations in Yugoslavia and for maintaining current data as to the status of communications interruption. B.A.F. will maintain and communicate to M.A.S.A.F. M.A.T.A.F. and M.A.C.A.F. a list of targets of this nature suitable for attack by their forces. B.A.F.'s nominations will be repeated to this H.Q. for information, and B.A.F. will, in addition, from time to time provide this H.Q., M.A.S.A.F., M.A.T.A.F. and M.A.C.A.F. with details of their general plans.

(b) When the Air Forces find an opportunity to operate against previously accepted targets in Yugoslavia consistent with their other priorities, they will confirm with B.A.F. that the targets selected are still cleared for attack. Acceptance of nominated targets will be discretionary with the respective air forces.

(c) In the event that B.A.F. desires to solicit additional M.A.S.A.F. assistance, or a higher priority on accepted targets, B.A.F. will forward such request to this H.Q. for decision, repeating to M.A.S.A.F. for their advance information and examination.

(d) The scale of the M.A.T.A.F. effort in Yugoslavia will be in accord with specific directives.

11. Operations in Italy

(a) C.G. M.A.T.A.F. will be responsible for the selection of targets for effective air operations in Italy. He will maintain a current list at M.A.S.A.F. and M.A.C.A.F. from which individual targets may be selected by them when the opportunity for attack occurs.

(b) No targets in Italy will be attacked except upon the request or approval of M.A.T.A.F.

(c) M.A.T.A.F. requests for priority assistance from M.A.S.A.F. will be forwarded to this H.Q. for action, repeating to M.A.S.A.F. for their advance information and examination.

12. Co-operation by Tactical Air Forces in Strategic Program

In view of the critical condition of the enemy's fuel supply M.A.T.A.F., B.A.F. and M.A.C.A.F. are directed to apply maximum pressure, consistent with their primary commitments, upon known or suspected enemy fuel supply points.

13. Attacks on Targets within 100 miles of the known

Russian Front Lines

(a) Intention to M.A.S.A.F. to attack targets within one hundred miles of the known Russian front lines will be forwarded to M.A.A.F. by fastest means; these intentions will be relayed to Military Mission Moscow by M.A.A.F. as soon as received. Changes or cancellations of intent likewise will be forwarded expeditiously.

(b) Except when approved by this H.Q. attacks by Strategic will not be made against targets in this area which have not previously been submitted to Military Mission Moscow by M.A.A.F. or U.S.S.T.A.F. or specifically requested by the Soviets, or in the case of Yugoslav targets, by B.A.F. In Yugoslavia the agreed tactical bomblines with the Soviets will be observed.

(c) No such targets north of an east-west line through Vienna will be attacked as secondary or last resort targets by Pathfinder methods.

(d) No primary targets north of an east-west line through Vienna except oil targets will be attacked by Pathfinder methods.

(e) Subject to positive identification of area by PFF when bombing under instrument conditions, the restrictions in sub-paragraphs 'c' and 'd' above do not apply to targets in, and in the vicinity of, Vienna.

(f) With the exception of Graz, no targets south of the Vienna area may be bombed by PFF.

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14. Special Precautions

When operating near Anglo-U.S., Russian or Yugoslavian lines, or near the Swiss border, special precautions will be taken by the respective Air Forces to avoid endangering friendly forces or violating neutrality.

By Command of the Air C.-in-C.

GERMAN DEFENCE LINES IN ITALYSEPTEMBER 1943 TO MAY 1945FROM SOUTH TO NORTHVolume I of this narrative

Barbara	R. Trigno - M. Massico - Teano - Vairano - northern stretches of R. Volturno - Isernia.
{ Winterstellung (Winter Line) 1943-44.	Vasto - Minturno: based on E. coast on Sangro and on W. coast on Garigliano. Via Aurunci Mountains - Abruzzi. Comprised Bernhardt, Viktor, Gustav and Adolf Hitler (later Dora) lines.
Bernhardt	M. Camino - M. Maggiore - Mignano Defile - Venafro - Isernia - Vasto.
Viktor	Cassino sector.
Gustav	Southern stretches of Winter Line, based on the Garigliano and Rapido Rivers and M. della Meta.
Adolf Hitler (or Fuehrer)	Later changed to Dora when in jeopardy. Switch line tying in to Gustav Line on the upper slopes of M. Cairo, descending to the plains at Piedimonte and crossing the Liri Valley from Aquino - Pontecorvo - Fondi.
Dora	See Adolf Hitler
C or Caesar	Ardea - Colli Laziali - Valmontone - Subiaco - Tagliacozzo - Avezzano.
Campagna	Albano area, shielding Rome, in a N.W. to S.E. direction.
Senger	Minor switch line Fondi - Itri, S. of Rome.

Volume II of this narrative

Trasimene	S.E. of Lake Trasimene.
Arno	River Arno.
Gothic or Gruene	Carrara - Borgo A Mazzano - Poretta - Futa Pass - Il Giogo Pass - Forli - Cesena - Foglia River - Pesaro.
Erika	Savio River.
Christa I	Fiumicino River.
Christa II	Scolo Rigossa (Scolo = drain or ditch).
Hedwig I	Pisciatiello River.
Hedwig II	Cesena.
Doris	Montaletto Canal and Cervia - Cesena road.
Gudrun	Ronco River.

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Gerda II	Forli - Castrocaro road.
Gerhild	Cosina River.
Heidemarie	Lamone River.
Irmgard	Senio River.
Laura	Santerno River.
Paula	Sillaro River.
Genghis Khan	Covering Bologna from the East. It ran east-west, parallel with the Po, along the line of the Savena, Idice and Reno Rivers.
Venedig (Venetian) or Adige	Chioggia to Lake Garda. Ran north of the Po through the Euganean and Berici hills, and the Alpine foothills N. of Verona, based on the line of the Adige River.
Voralpenstellung	The Prealpine Defence Position. Ran E. and W. of Lake Garda. It was based on the Alps and tied in with the river lines of the Brenta, Piave, Tagliamento and Isonzo.

THE MAIN ROADS TO ROME

MODERN HIGHWAY NUMBER	ANCIENT ROMAN NAME	ROUTE
1	Via Aurelia	West Coast to Genoa and Ventimiglia
2	Via Cassia	Siena and Florence
3	Via Flaminia	Fano
4	Via Salaria	Porto D'Ascoli
5	Via Tiburtina	Pescara
6	Via Casilina	Frosinone, Cassino, Capua
7	Via Appia	Capua, Naples, Benevento, Brindisi
8	Via Ostiense	Ostia, Lido Di Roma.

N.B. There were other important roads leading to Palestrina, Frascati and Lake Albano, Anzio and Fiumicino.

GENERAL EAKER ON THEATRE AIR POLICY

H. Q. M. A. A. F.
28 January 1945.

Subject: Subject matter of importance to Mediterranean Allied Air Forces which may be discussed at Combined Chief of Staff's meeting

To: F.M. The Hon. Sir H.R.L.G. Alexander, S.A.C. MED.

1. Piecemealing of Air Forces in Mediterranean Theater

There is a noticeable tendency of late to subtract air units from the forces assigned to the Mediterranean, perhaps on the theory that the Mediterranean theater is of secondary importance and the ground forces therein are now largely static.

It is believed it should be pointed out that when the ground forces are static, the air forces, due to the air superiority they have gained, retain their initiative and continue their pressure against the enemy. It is even more important when the ground campaign is static, that the air forces increase their pressure on the enemy since they are the only forces which can accomplish steady and considerable attrition on the enemy.

Another reason for maintaining the air forces at their present level and at the highest possible operational efficiency in this theater is to delay and cut up the enemy divisions in Italy should they attempt to withdraw. They must also be available to support subsequent ground offensives.

In addition to the tendency to piecemeal withdrawal of the air forces from this theater, there is a possibility that a decision may be made to withdraw all or a large part of the U.S. Twelfth Air Force from their theater for operations in another theater, perhaps in France. It is believed it should be pointed out that this should never be done unless the Combined Chiefs of Staff have decided to remove the Fifth Army from operations in this theater. The Twelfth Air Force, as now constituted and without any serious reduction, is required to support the operations of the Fifth Army. It would be wholly fallacious to assume that there are adequate British air forces in Italy to support the operations of the Fifth Army in addition to the Eighth Army. Numerically, there would, perhaps, be adequate British aircraft to form a tactical air force for the support of both the Fifth and Eighth Armies. However, the British tactical air forces retained in this theater are not properly balanced as to type for this purpose. British aircraft are largely of the interceptor fighter type and the British resources would be wholly inadequate in medium bombers, light bombers and dive bombers to form a tactical air force adequate for the support of offensive operations of both the Eighth and Fifth Armies. In fact, the British air resources in this theater would not be sufficient for the support of the Eighth Army alone. The Twelfth Air Force comprises the vast majority of the striking power of the tactical air forces in Italy, i.e. medium and dive bombers.

Any tendency to further reduce the tactical air force in this theater should be strongly resisted unless there is a prior decision to transfer the Fifth Army elsewhere.

2. Movement of the Fifteenth Air Force

There may be discussion as to the propriety of moving the Fifteenth Strategic Air Force out of Italy to bases in France or in England.

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It is believed that very serious consideration should be given to the following:-

(a) There would be a considerable period of disruption in connection with any such move. It would be several months before the Fifteenth Air Force could be expected to reach its present operational efficiency in any other theater.

(b) All of the reasons which held in originally locating the Fifteenth Air Force in Italy still apply and most of them have been proven to have been eminently sound.

(c) An examination of the targets still available and likely to be available prior to the collapse of Germany indicates that there is still plenty of work for the Fifteenth Air Force to do from its present bases.

(d) In its present location the Fifteenth Air Force is in a different weather cycle from the Eighth Air Force in U.K. and from strategic air forces located in France, since the general weather movement is from West to East. If all strategic air forces were located in England or France there would be many days when they could not operate and when air forces located in Italy could operate.

(e) If there were no strategic air forces located in Italy and all were located on the Western Front, the enemy could collect all of his defences in one area and our losses could be expected to go up appreciably.

(f) The strategic air forces in Italy have expended a good part of their effort in support of the ground campaigns in Italy and the ground campaigns of the Russian armies. If the Fifteenth Air Force was removed from Italy there would be no strategic air forces to support the Russian armies and the Allied Armies in Italy. It has been demonstrated repeatedly, and particularly on the Western Front, that it is of great importance to have a strategic air force available to support ground operations, in addition to the tactical air forces, in emergencies and when conditions are favourable. There are many occasions when this can be done without depreciating the strategic air force program. In times when the weather has covered strategic air targets, or when the Alps have been impassable, the Fifteenth Air Force has done an excellent job in supporting the tactical air forces against enemy installations in Italy, in the Balkans and on the Eastern Front.

(g) The logistic support for the Fifteenth Air Force is now firmly planted in Italy - the repair depots are located here, the stocks of spare parts, ammunition, bombs, and so forth, are built up. It would be possible to move the tactical units to the Western Front if shipping were available, but it would be practically impossible to move these stores and depots in any reasonable time. The Fifteenth Air Force would not, therefore, get the logistic support in U.K. or in France which it is now getting in Italy.

(h) Airdromes - The Fifteenth Air Force now has a system of airdromes which has been proven adequate and with which flying personnel are accustomed from more than a year's operation. There would be a considerable depreciation of efficiency by moving to new airdromes with which the personnel is unacquainted, and there are not sufficient airdromes in any other section of Europe now immediately available of equal quality.

3. We feel that it is most important to have at least two all-purpose fields in the Budapest area by next Spring, if at all possible. They would extend our range, permit our fighters to have more effectiveness in the accompanying role and furnish a harbour for our cripples, saving us many airplanes and crews. It will also be an entering wedge for the eventual redeployment of the Fifteenth Air Force into the Vienna - Budapest area, should the war continue past next summer.

ARMY GROUP CTOTAL COMBINED STRENGTH ON 9 APRIL 1945PersonnelActual Strength

Formation	German	Italian
10th Army	171,829	-
14th Army	114,726	8,927
Army Liguria	47,344	43,139
Army Group C Supply Service	25,543	-
Army Group C Signals	4,123	-
Transport Services	7,050	-
Coastal Artillery	5,976	-
Army Group C Engineers	5,340	-
Flak troops, under G.A.F. General in Italy	28,263	-
Troops under Plenipotentiary General	7,555	-
Police Troops	17,941	108,114
Miscellaneous	2,644	-
Grand Total Army Group C	438,334	160,180

Heavy Weapon Strength

Artillery pieces (all types)	1,429
S.P. Assault Guns (includes Armoured Training School, South)	475
Heavy anti-tank guns	345
Tanks	261
Infantry close support guns	572
Mortars (8 cm)	1,075
Mortars (12 cm)	105
Projector (Nebelwerfer) (15 and 21 cm)	108

Source: Actual strength (Iststaerke) returns captured at Army Group C H.Q.
(A.H.B./IIJ11/58/29)

ALPINE FRONT COMMAND

CHRONOLOGY OF EVENTS

1944

- 15 August 1st Airborne Task Force dropped and landed in S. France.
- 25 September Allied line: Balzi - Rossi - Cima - Pongoira - St. Antonin touching the coastline $3\frac{1}{2}$ miles W. of Ventimiglia.
- 14 November General Juin accepted frontier guard and customs duties by French personnel if the enemy withdrew from N.W. Italy.
- 8 December French order replacement of F.F.I. and 4th Moroccan Division by 27th Alpine Division with H.Q. at Grenoble.

1945

- 13 January 27th Alpine Division controlling frontier N. of St. Etienne de Tinée and 44th Airborne Brigade (6th Army Gp) S. of St. Etienne.
- 23 February Decision to man the frontier with all French units, the 1st Division Marocaine taking over from U.S. Airborne Brigade.
- 26 February Alpine Front Command established (effective 1 March) under command of General de Corps d'Armée Doyen with the mission of insuring the security of French frontier along the Franco-Italian border. The 1st Army French troops and 6th Army Group American troops already located there to pass to the new command.
- During the winter months, snow blocked all the passes except those along the Mediterranean coast. Enemy activity practically nil. With warmer weather in late February situation slowly changed. German patrols becoming more aggressive.
- 28 February 6th Army Group suggested minor Allied operations and raids up to battalion strength up to 5 km. east of border.
- 15 March British and U.S. governments' refusal to depart from defensive policy for political reasons.
- 23 March Supreme Commander Mediterranean called for deception and offensive operations on Alpine Front with object of holding down 2 enemy divisions as part of Spring offensive (Plan 'Jessica').
- 27 March Objection to Alpine Front Command operations withdrawn.
- 6 - 18 April 27th Alpine Division carried out raids.
- 9 April 1st Division Marocaine improved positions.
- 24 April F.M. Alexander requests transfer of 2nd French division of A.F.C. to follow up enemy in Italy under command of A.F.H.Q. Request not allowed by Gen. Eisenhower.

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- 28 April 6th Army Group ordered halt of French troops of A.F.C. as operations no longer had an effect on the military situation.
- 26 May French troops of Alpine Front Command still east of 1938 frontier from Cuneo to the coast and in the Susa and Aosta Valleys, reported carrying on propaganda for transfer of territory.
- 11 June Agreement to withdraw French troops signed.

MEDITERRANEAN ALLIED TACTICAL AIR FORCE ORDER OF BATTLE
AND LOCATIONS OF TACTICAL UNITS
1 APRIL 1945

<u>M.A.T.A.F.</u>		FLORENCE
<u>XXII TACTICAL AIR COMD - ADV.</u>		SAN LUCCA
<u>XXII TACTICAL AIR COMD - REAR</u>		FLORENCE
<u>62nd FIGHTER WING</u>		ANTIGNANO
15th Fighter Control Sq.		CASTIGLIONCELLO
311th " " "		FLORENCE
78th " " "		COLTANO
414th Night Fighter Sq.		PONTEREDERA
416th " " "		PONTEREDERA
<u>350th Fighter Group</u>		Fighter bomber
345th Fighter Sq.		P-47 Thunderbolt
346th " " "		" "
347th " " "		" "
1st Brazilian Fighter Sq.		" "
<u>57th FIGHTER GROUP</u>		Fighter Bomber
64th Fighter Squadron		P-47 Thunderbolt
65th " " "		" "
66th " " "		" "
<u>No. 8 S.A.A.F. WING</u>		Fighter bomber
No. 87 Squadron		Spitfire IX
No. 185 " "		" "
No. 3 (S.A.A.F.) Sq.		" "
No. 11 (S.A.A.F.) Sq.		Kittyhawk IV
<u>No. 208 SQUADRON (TAC/R)</u>		Spitfire IX
<u>No. 225 SQUADRON (TAC/R)</u>		Spitfire V & IX
<u>47th BOMB GROUP</u>		Light Bomber
84th Bomb Squadron		A-20 Boston and A-26 Invader
85th " " "		" "
86th " " "		" "
97th " " "		" "
<u>D.A.F. ADV. H.Q.</u>		FORLI
<u>M.O.R.U. 'A'</u>		BELLARIA
<u>79th FIGHTER GROUP</u>		Fighter Bomber
85th Fighter Squadron		P-47 Thunderbolt
86th " " "		" "
87th " " "		" "
<u>No. 239 WING</u>		Fighter bomber
No. 3 (R.A.A.F.) Squadron		Mustang III & IV
No. 5 (S.A.A.F.) " "		" "
No. 450 (R.A.A.F.) " "		Kittyhawk IV
No. 250 " "		" "
No. 112 " "		Mustang III & IV
No. 260 " "		" "
<u>No. 244 WING</u>		Fighter bomber
No. 145 Squadron		Spitfire VIII
No. 417 (R.C.A.F.) Squadron		" "
No. 92 Squadron		" "
No. 601 " "		" IX
No. 241 " "		" "

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M.O.R.U. 'A' (Contd.)

<u>No. 324 WING</u>	Fighter bomber		RAVENNA
No. 43 Squadron	Spitfire IX		RAVENNA
No. 72 "	"		RAVENNA
No. 93 "	"		RAVENNA
No. 111 "	"		RAVENNA
<u>No. 3 (S.A.A.F.) WING</u>	Medium Bomber	(Passing shortly to operational control of 57th Bomb. Wing)	IESI
No. 12 (S.A.A.F.) Squadron	Marauder III	"	IESI
No. 21 " "	"	"	IESI
No. 24 " "	"	"	IESI
No. 30 " "	"	"	IESI
<u>No. 253 WING</u>	Light bomber		CESENATICO
No. 454 (R.A.A.F.) Squadron	Baltimore V		CESENATICO
No. 15 (S.A.A.F.) "	"		CESENATICO
No. 500 " "	"		CESENATICO
<u>No. 7 (S.A.A.F.) WING</u>	Fighter bomber		RAVENNA
No. 1 (S.A.A.F.) Squadron	Spitfire IX		RAVENNA
No. 2 " "	"		RAVENNA
No. 4 " "	"		RAVENNA
No. 7 " "	"		RAVENNA
<u>No. 232 WING</u>	Light bomber		FORLI
No. 13 Squadron	Boston IV & V		FORLI
No. 55 " "	" "		FORLI
No. 18 " "	" "		FORLI
No. 114 " "	" "		FORLI
No. 256 " (Night Ftrs)	Mosquito XII & XIII		FORLI
<u>No. 285 WING</u>	Reconnaissance		FORLI
No. 40 (S.A.A.F.) Squadron	Spitfire V & IX		FORLI
No. 318 (Polish) "	" "		FORLI
No. 683 Squadron (Det)	" XI		FORLI
No. 600 SQUADRON (Night Ftrs)	Beaufighter & Mosquito XIX		CESENATICO

(15th Army Group)

Nos. 654, 651, 663 (Polish)
655 & 657 A.O.P. Sqdns.
(operated by Corps)

Auster III

57th BOMBARDMENT WING

<u>340th BOMB GROUP</u>	Medium Bomber	PRUNELLI moving to	RIMINI
486th Bomb Squadron	B-25 Mitchell	ALESAN " "	RIMINI
487th " "	"	ALESAN " "	RIMINI
488th " "	"	ALESAN " "	RIMINI
489th " "	"	ALESAN " "	RIMINI

321st BOMB GROUP

445th Bomb Squadron	Medium Bomber	SOLENZARA moving to	FALCONARA
446th " "	B-25 Mitchell	SOLENZARA " "	FALCONARA
447th " "	"	SOLENZARA " "	FALCONARA
448th " "	"	SOLENZARA " "	FALCONARA

(6573)500

SECRET

M.O.R.U. 'A' (Contd.)57th BOMBARDMENT WING (Contd.)

<u>310th BOMB GROUP</u>	Medium Bomber	GHISONACCIA	moving to FANO
379th Bomb Squadron	B-25 Mitchell	GHISONACCIA	" " FANO
380th " "	"	GHISONACCIA	" " FANO
381st " "	"	GHISONACCIA	" " FANO
428th " "	"	GHISONACCIA	" " FANO

51st TROOP CARRIER WING

<u>60th TROOP CARRIER GROUP</u>	C-47 Dakota	SIENA
10 T.C. Squadron	"	POMIGLIANO
11 T.C. " "	"	POMIGLIANO
12 T.C. " "	"	POMIGLIANO
28 T.C. " "	"	POMIGLIANO

<u>62nd TROOP CARRIER GROUP</u>	C-47 Dakota	TARQUINIA
4 T.C. Squadron	"	TARQUINIA
7 T.C. " "	"	TARQUINIA
8 T.C. " "	"	TARQUINIA
51 T.C. " "	"	TARQUINIA

<u>64th TROOP CARRIER GROUP</u>	C-47 Dakota	ROSIGNANO
16 T.C. Squadron	"	BRINDISI
17 T.C. " "	"	ROSIGNANO
18 T.C. " "	"	ROSIGNANO
35 T.C. " "	"	ROSIGNANO

3rd GROUP PHOTO RECCE

5th Squadron		
Photo Rcn.	P-38 Lightning	PERETOLA
12th Squadron		
Photo Rcn.	"	PERETOLA
23rd Squadron		
Photo Rcn.	"	PERETOLA

MEDITERRANEAN ALLIED STRATEGIC AIR FORCEORDER OF BATTLE AND LOCATIONS

1 APRIL 1945

M.A.S.A.F. H.Q.
5th WING (U.S.A.)
2nd GroupBari
Foggia
Amendola

20th Heavy Bomber Squadron	Fortress	"
49th " " "	"	"
96th " " "	"	"
429th " " "	"	"

97th Group

340th Heavy Bomber Squadron	"	"
341st " " "	"	"
342nd " " "	"	"
414th " " "	"	"

99th Group

Tortorella

346th Heavy Bomber Squadron	"	"
347th " " "	"	"
348th " " "	"	"
416th " " "	"	"

301st Group

Lucera

32nd Heavy Bomber Squadron	"	"
352nd " " "	"	"
353rd " " "	"	"
419th " " "	"	"

463rd Group

Celone

772nd Heavy Bomber Squadron	"	"
773rd " " "	"	"
774th " " "	"	"
775th " " "	"	"

483rd Group

Sterperone

815th Heavy Bomber Squadron	"	"
816th " " "	"	"
817th " " "	"	"
840th " " "	"	"

47th WING (U.S.A.)

Mandarone

98th Group

Lecce

343rd Heavy Bomber Squadron	Liberator	"
344th " " "	"	"
345th " " "	"	"
415th " " "	"	"

376th Group

San Pancrazio

512th Heavy Bomber Squadron	"	"
513th " " "	"	"
514th " " "	"	"
515th " " "	"	"

47th WING (contd.)449th Group

Grottaglie

716th Heavy Bomber Squadron	Liberator	"
717th " " "	"	"
718th " " "	"	"
719th " " "	"	"

450th Group

Manduria

720th Heavy Bomber Squadron	"	"
721st " " "	"	"
722nd " " "	"	"
723rd " " "	"	"

49th WING (U.S.A.)451st GroupIncoronata
Castellucio Di Sauri

724th Heavy Bomber Squadron	"	"
725th " " "	"	"
726th " " "	"	"
727th " " "	"	"

461st Group

Torretta

764th Heavy Bomber Squadron	"	"
765th " " "	"	"
766th " " "	"	"
767th " " "	"	"

484th Group

Torretta

824th Heavy Bomber Squadron	"	"
825th " " "	"	"
826th " " "	"	"
827th " " "	"	"

55th WING (U.S.A.)460th Group

Spinazzola

760th Heavy Bomber Squadron	"	"
761st " " "	"	"
762nd " " "	"	"
763rd " " "	"	"

464th Group

Pantanello

776th Heavy Bomber Squadron	"	"
777th " " "	"	"
778th " " "	"	"
779th " " "	"	"

465th Group

Pantanello

780th Heavy Bomber Squadron	"	"
781st " " "	"	"
782nd " " "	"	"
783rd " " "	"	"

485th Group

Venosa

828th Heavy Bomber Squadron	"	"
829th " " "	"	"
830th " " "	"	"
831st " " "	"	"

304th WING (U.S.A.)454th Group

736th Heavy Bomber Squadron	Liberator	
737th " " "	"	
738th " " "	"	
739th " " "	"	

Cerignola
San Giovanni
"
"
"
"

455th Group

740th Heavy Bomber Squadron		
741st " " "	"	
742nd " " "	"	
743rd " " "	"	

San Giovanni
"
"
"
"

456th Group

744th Heavy Bomber Squadron	"	
745th " " "	"	
746th " " "	"	
747th " " "	"	

Stornara
"
"
"
"

459th Group

756th Heavy Bomber Squadron	Liberator	
757th " " "	"	
758th " " "	"	
759th " " "	"	

Giulia
"
"
"
"

XV FIGHTER COMMAND305th WING (U.S.A.)1st Group

27th Fighter Squadron	Lightning	
71th " " "	"	
94th " " "	"	

Torre Maggiore
Lesina
"

14th Group

37th Fighter Squadron	"	
48th " " "	"	
49th " " "	"	

Triola
"
"
"

82nd Group

95th Fighter Squadron	"	
96th " " "	"	
97th " " "	"	

Vincenzo
"
"
"

306th WING (U.S.A.)31st Group

307th Fighter Squadron	Mustang	
308th " " "	"	
309th " " "	"	

Fano
Mondolfo

52nd Group

2nd Fighter Squadron	"	
4th " " "	"	
5th " " "	"	

Madna
"
"
"

SECRET

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306th WING (U.S.A.) (contd.)

325th Group

317th Fighter Squadron

318th " " "

319th " " "

Mustang

"

"

Rimini

"

"

"

332nd Group

99th Fighter Squadron (coloured)

100th " " "

301st " " "

154th Weather Recce Squadron

"

"

"

Lightning

Ramitelli

"

"

"

Bari

5th Group

15th Photo Recce Squadron

32nd " " "

37th " " "

Lockheed F-5

"

"

Bari

"

San Severo

"

No. 205 Group (R.A.F.)

No. 231 Wing (R.A.F.)

No. 37 Heavy Bomber (Night) Squadron

No. 70 " " " "

Liberator

"

Foggia

Tortorella

"

"

No. 236 Wing (R.A.F.)

No. 40 Heavy Bomber (Night) Squadron

No. 104 " " " "

Liberator

"

Foggia

"

"

No. 240 Wing (R.A.F.)

No. 178 Heavy Bomber (Night) Squadron

Liberator

Amendola

"

No. 2 Wing (S.A.A.F.)

No. 31 (S.A.A.F.) Heavy Bomber (Night) Squadron

No. 34 (S.A.A.F.) Heavy Bomber (Night) Squadron

Liberator

"

Celone

"

"

No. 614 Target Finder Squadron

Liberator

Amendola

MEDITERRANEAN ALLIED COASTAL AIR FORCE,
NO. 336 PHOTOGRAPHIC RECONNAISSANCE WING AND
AIR OBSERVATION POSTS

ORDER OF BATTLE AND LOCATIONS
1 APRIL 1945

<u>COASTAL AIR FORCE</u>		Caserta
<u>No. 287 WING (R.A.F.)</u>		Falconara
No. 272 Fighter Squadron	Beaufighter X.R.P.A.S.V.	"
No. 1435 " "	Spitfire IX	" (Detachment) (VIS)
 <u>No. 323 WING (R.A.F.)</u>		Foggia
No. 38 MR/General Reconnaissance Sqn.	Wellington XIV	" (Det. Rosignano)
No. 293 Air/Sea Rescue Sqn.	Warwick & Walrus	Foggia (Detachments) Borgo, Cesenatico and Pisa)
No. 624 Mine Sweeping Sqn.	Walrus	Foggia (Detachments Falconara, Hassani, Herakleion, Rosignano and Syme)
1 (U.S.A.)) Air/Sea Rescue)		
(2 Flights only) (Emergency Sqn.)	Catalina and Fortress	Foggia (Detachment Falconara)
 <u>No. 335 WING (R.A.F.)</u>		Pomigliano
No. 284 Air/Sea Rescue Sqn.	Warwick and Walrus	Bone moving to Pomigliano) Dets. Elma, Istres,) Pomigliano) ElmaS,) Loughorn
 <u>No. 338 WING (R.A.F.)</u>		Rosignano
No. 237 (Rhod.) Fighter Sqn.	Spitfire IX	Rosignano (Detachments Falconara, Istres)
No. 255 Night Fighter Sqn.	Mosquito XIX-A.I.X.	Aix-En-Provence Le Vallon
 <u>No. 340 WING (R.A.F.)</u>		St. Mandrier
(II/6 (French) Fighter Sqn. (Vendée)	Airacobra	Cuers
2S (French N.A.F.) Mine Spotting Sqn.	Latecoere	
4S Sqn. " " "	Walrus	
<hr/>		
<u>No. 336 WING (R.A.F.)</u>		San Severo
No. 60 (S.A.A.F.) Photo. Recce Sqn.	Mosquito	"
No. 682 " " "	Spitfire XI and XIX	" (Det. Florence, Peretola)
No. 683 " " "	"	" (Det. Forli)
No. 680 " " ") ('A' Flight Det. only)	Mosquito XVI	"

AIR OBSERVATION POSTS - Operational control 15th Army Group.
Administrative Control of Desert Air Forces

No. 651 Squadron	Auster III, IV and V	Russi
No. 654 " "	" "	Rimini
No. 655 " "	" "	Borgo San Lorenzo
No. 663 (Polish) Squadron	" "	Forli area
No. 42 Flight (S.A.A.F. Sqn.)) (Forming, not yet operational))	Auster V	Lucca area

SECRET

APPENDIX 4a

THE AIR DIRECTIVE FOR OPERATION GRAPESHOT

Operations Instruction:
Number 112

H.Q., M.A.A.F.
2 April 1945.

1. The coming offensive by the 15th Army Group bids fair to mark the final destruction of the enemy forces in Italy. The might of the Mediterranean Allied Air Forces is to be employed in full array to speed the progress of the Allied ground armies by shackling and battering the defensive forces of the enemy in the Po Valley.
2. The Mediterranean Allied Tactical Air Force will continue its assigned role in Italy. The tempo of Mediterranean Tactical Air Force's attack will be increased to the highest pitch to pave the way for the advance of the Allied troops into the Po Valley and beyond. The detailed employment of the Air Forces as set forth in Mediterranean Allied Tactical Air Force Operation Instruction Number 17 dated 30 March, 1945, and amendments thereto, subject: Operation 'Wowser' is approved. This Headquarters will be advised immediately by C.G. M.A.T.A.F. of any changes in Operation 'Wowser'.
3. Certain targets in the path of the offensive require the employment of the Strategic Air Force. The Commanding General, Mediterranean Tactical Air Force will nominate the targets to be attacked by the Strategic Air Force. To insure complete coordination of effort and the maximum efficiency of the forces, direct liaison between the Mediterranean Allied Tactical Air Force and the Mediterranean Allied Strategic Air Force is authorized and enjoined.
4. To preclude any chance of injury to our advancing troops the attack of the close support targets nominated by Mediterranean Allied Tactical Air Force for the Mediterranean Allied Strategic Air Force will require the utmost care and finesse in planning and execution. All signal aids, personnel, and equipment necessary to furnish route markings to the bomber forces and to positively define the target area will be assembled and operating. Crews will be thoroughly briefed and furnished all information and aids to insure no unforeseen incident can occur to mar the perfection of the attack. Liaison, as authorized by C.G. M.A.T.A.F., with the ground forces and visual reconnaissance of the target areas by key crew members will be employed as a means to guarantee the safety of the Allied ground forces and the success of the mission.
5. Every experience gained throughout the battles of Africa and Italy, every aid placed at your disposal to make your attacks more effective, all the power of a well-balanced and co-ordinated air-ground team will be employed to have this all-out attack against the enemy in Italy be one of complete annihilation and destruction from which he can never recover.

By command of the Air Commander-in-Chief.

THE 33 PLANS FOR AIRBORNE OPERATIONS
BY 2ND INDEPENDENT PARACHUTE BRIGADE GROUP

Serial No.	Approx. date planned	Codename of Operation	Object of Operation	Remarks
1	6 Mar.	-	To drop in the Filo area due E. of Bastia, as reinforcements to forces advancing W. towards Bastia bridge.	This was not considered the best employment of the brigade in the area.
2	6 Mar.	-	To capture Bastia bridge.	Intense flak concentration in the area.
3	6 Mar.	-	To block the N. end of the Argenta Gap and prevent enemy reinforcements moving through it.	Country extremely thick and unsuitable for glider landings. The task was a large one for so small a force.
4	10 Mar.	-	To seize a bridge half way up the Spit and prevent enemy reserves moving S. to stem the Commando attack.	The DZ area was extremely small. One unit only was required for the operation, which threatened to split up the Brigade Group.
5	12 Mar.	-	To occupy a ridge of hills N. of Vergato and assist 5th Army in the initial attack.	Decided that Brigade should not operate with 5th Army.
6	18 Mar.	Earlsdon/Helen	To seize the bridge on N. to S. canal E. of Ostellate to assist the further westward advance of the forward forces.	The forward forces from Porto Garibaldi were unable to advance westwards until the Argenta Gap was cleared.
7	18 Mar.	Earlsdon/Daphne	To seize crossing between Medelena and Ponte Azzana and assist forward forces to drive N.E. across them.	Enemy resistance in Argenta area too strong to allow forward forces to drive with any speed to this area.
8	18 Mar.	Earlsdon/Mary	To seize brs. across the Scolo Pero and Fossa Benignante and act as right flank guard to forces advancing on to Argenta from E.	Enemy sent considerable number of armed reinforcements into area just before operation was due to take place. Increased conc. of A.A. in area.
9	18 Mar.	Earlsdon/Jane	To operate in area of Portomaggiore and assist forward forces in capture of town.	Enemy resistance in Argenta area too strong to allow forward forces to drive with sufficient speed to this area.
10	29 Mar.	Schooner	To assist pursuit forces breaking out of Argenta Gap.	No break out was achieved by forward forces.
11	29 Mar.	Frigate	To assist advance to Po by seizing canal bridges crossing in Ostellate area.	Difficulty in locating DZs sufficiently near objectives resulted in early cancellation.
12	29 Mar.	Cutter	To assist advance to Po crossings by capture of Copparo.	Town not considered in front of likely line of advance of main thrust.
13	29 Mar.	Cruiser	To assist pursuit forces in reaching S. bank of Po N.W. of Ferrara.	Not required.
14	29 Mar.	Trawler/Worm	To seize crossings site on Po S. of Ficarola.	The only practicable LZ was several miles away from the objective. The operation was later not required, but would have helped 6th Armoured Division very much if it had taken place.

THE BOMBING DIRECTIVE OF 23 APRIL 1945

Headquarters Mediterranean
Allied Air Forces
Operations Instruction:
No. 115

1. Operations Instruction No. 109, dated 1 March 1945, this Headquarters, subject: 'Bombing Directive' is superseded by instructions contained herein.

2. This directive incorporates and coordinates all directives of USSTAF and Air Ministry (for MASAF) to date, and the considerations and requirements of the Mediterranean Theatre of Operations applicable to strategic operations as outlined in 'Theatre Air Directive' of Supreme Allied Commander, Mediterranean Theatre of Operations, dated 1 January 1945. The directive likewise sets forth essential standing procedures for the coordination of the several air forces of MAAF.

3. The principal mission of MASAF is now to assist the advance of the ground forces.

4. Priorities of Objectives

In furtherance of the general mission, strategic effort, subject to the exigencies of weather and tactical feasibility, will be directed as follows:

(a) First Priority

Battlefield Objectives. When evaluated by MATAF as being essential targets, nominations in this category will be forwarded to MAAF for action, repeated to MASAF for information and advance planning.

(b) Second Priority

Oil supplies with special emphasis on petroleum (gasoline), including storage. Targets in this category will be selected by MASAF coordinating with this Headquarters.

(c) Third Priority

Railway communications targets on the Brenner Route north of Trento except for the following targets in that area which will be the responsibility of MATAF:

- (1) Salerno Railroad Diversion Fill.
- (2) San Michele Railroad Diversion Bridge.
- (3) San Michele North Railroad Bridge.
- (4) Matrei Railroad Bridges.
- (5) Steinach Railroad Bridges and Tunnels.
- (6) Ora Railroad Diversion Bridge.
- (7) Colle Isarco Railroad Bridges.

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(d) Fourth Priority

The northeastern rail routes into Italy. Targets for bombing attacks will be nominated by MATAF to MAAF for action repeated to MASAF for information and advance planning.

(e) Fifth Priority

(1) Communications targets in central and northwest Italy. Targets in this category will be nominated by MATAF to MAAF for action repeated to MASAF for information and advance planning.

(2) Ammunition and supply dumps, MT parks and depots, and certain ammunition plants in Italy. When targets in these categories have been nominated by MATAF and approved by MAAF, they will thereafter be a continuing MASAF responsibility for development as objectives and maintenance of information concerning them.

(NOTE: Subpara. (1) and (2) above are not necessarily in order of priority).

(f) Sixth Priority

Interdiction and interruption of railroad communications between southeastern Germany and Austria and the Danubian plains. Targets in this category will be selected by MASAF coordinating with this Headquarters.

(g) Seventh Priority

Communications in Yugoslavia. Although there are at present no targets for heavy bombers in Yugoslavia, if targets become available they will be nominated by BAF to MAAF for action repeated to MASAF for information and advance planning.

5. Operations in Italy

(a) CG MATAF will be responsible for offensive air operations in Italy except as otherwise provided herein.

(b) No targets in Italy will be attacked except upon the request or approval of MATAF unless otherwise directed by this Headquarters.

(c) MATAF's request for assistance from MASAF or other Air Force will be forwarded to this Headquarters for action, repeated to the other Air Force for information and advance planning.

(d) Areas considered by MATAF as most important for armed reconnaissance by fighter elements of MASAF and MACAF will be designated by MATAF daily or as often as necessary. These areas will be designated by signal directly to MASAF and MACAF with information copy to this Headquarters. MASAF and MACAF will not have exclusive rights in the specified areas, therefore other friendly aircraft may be expected. The same procedure will apply to operations in Italy by BAF at such time as may be directed by this Headquarters.

6. Operations in Yugoslavia

(a) BAF will be responsible for offensive air operations in Yugoslavia.

(b) In the event that BAF desires to solicit MASAF or other Air Force assistance, BAF will forward such request to this Headquarters for action, repeating to the other Air Force for information and advance planning.

7. In view of the critical condition of the enemy's fuel supply, MATAF, BAF, and MACAF are directed to apply maximum pressure, consistent with their primary commitments, upon known or suspected enemy fuel supply points.

8. Policing attacks against the GAF will be continued to the extent necessary to insure tactical conditions which will prevent effective interference with our ground or air operations.

9. Operations in support of the Russian Armies will be conducted only when specifically requested by the Russian High Command and so directed by this Headquarters.

10. The direct support of Naval Operations when necessary remains a continuing commitment.

11. Forces operating in Italy and Yugoslavia are cautioned regarding the necessity for safeguarding civilian lives and property. In this connection objectives in heavily built-up areas will be attacked only when approved by this Headquarters.

BY COMMAND OF THE AIR COMMANDER-IN-CHIEF:

SELECTION OF GERMAN DOCUMENTS

RELATING TO

THE LAST PHASE OF THE CAMPAIGN

The following documents, translated by A. H. B. 6 from original Oberkommando Luftwaffe files, are presented as illustrations of three important themes in the last phase of the Italian campaign.

- Annexes A to C. Preparations against Allied Adriatic landings.
- Annexe D Aviation fuel shortage.
- Annexes E to G. Lower Alpine Position and National Redoubt.

Impressed by the success of a series of Allied amphibious landings, the Germans believed, until the last days of the campaign, in further attempts, in particular in the Adriatic. This belief, fostered assiduously by Allied deception plans, involved extensive preparations. As can be seen from Annexes A to C, chosen from a large number of similar orders, the Luftwaffe was involved in the general state of alarm, which undoubtedly made concentration on the main effort more difficult, although suggested reinforcements were refused.

Although the Luftwaffe in Italy included a high percentage of experienced aircrews and the aircraft reinforcement situation was well maintained, the increasing shortage of aviation spirit, due to Allied air attacks on the whole fuel production system, prevented them from using their air force to the best advantage.

The line of thought leading through the idea of a Lower (or Pre-Alpine) Position to the National Redoubt is indicated by Annexes E to G. The last item shows that the National Redoubt plan was a reality, although events prevented its implementation. The indicated need for maximum flak defence is of particular interest.

LUFTWAFFE PLANS IN THE CASE OF THE GENERAL 'HERBSTNEBEL'
WITHDRAWAL

Top Secret

24 September 1944

To:- OKW/Armed Forces Operations Staff op (Air)

Ref:- OKW/Armed Forces Operations Staff op (Air)
Top Secret No. 773484/44 of 22.9.44

OKL views are as follows:-

- (1) In the event of an outflanking landing OKL will implement the plan 'Imminent Danger South', which provides for the dispatch of the following maximum reinforcements to the Commanding General, G.A.F. in Italy:

One bomber Geschwader comprising two Gruppen,
one torpedo-bomber Geschwader comprising two Gruppen and
one single-engined fighter Geschwader comprising four Gruppen.
- (2) If the movement to 'Herbstnebel' is carried out voluntarily, the Commanding General, G.A.F. in Italy will provide support with the forces at his disposal at that time. The dispatch of Luftwaffe reinforcements as mentioned in para.1 will depend on the situation.
- (3) The employment of AA formations - for protection of river crossings, particularly on the Po, routes to be used, passes and confined areas and lines of communication in the rear - has been determined and prepared in agreement with and according to the instructions of G-in-C. South West.
- (4) Demolition has already been carried out at some airfields in northern Italy. All other airfields have been prepared for demolition, and this work will be carried out during the period planned for the withdrawal.

Sgd. V. Greiff
OKL Operations Staff (Robinson)
Top Secret No. 10223/44 (op) ?
28 X - 6 (172)

LUFTWAFFE PLANS IN THE CASE OF AN ALLIED ADRIATIC LANDING

Top Secret

28 February 1945

To:- Adjutant to Reichsmarschall

Subject:- Defensive Measures in the event of an Enemy Landing in the Adria Area.

I The following proposals will be submitted to OKW:

- (1) In the event of an enemy landing in the Adria area the following reinforcements will be sent to the Commanding General, G.A.F. in Italy:

One bomber Geschwader comprising two Gruppen and one pathfinder Gruppe,
one single-engined fighter Geschwader comprising four Gruppen and
one ground attack Geschwader comprising three Gruppen.

- (2) (a) Available stocks of fuel in Italy amount to

551 tons.

With an average daily consumption of flying formations (including the proposed reinforcements) of 300 tons, there is hardly sufficient fuel for two days' operations. Each formation will therefore carry out only one operation per day.

- (b) If the principal consumers (the bombers) are not used or bomber operations are carried out by Luftflotte Reich from southern Germany, average daily fuel consumption will amount to 128 tons, thus enabling operations to be flown for a period 4.3 days.
However, operations cannot be continued for the full period as, for example, reconnaissance flights cannot under any circumstances be discontinued after the four-day period has passed.
Thus, it appears that fuel supplies will be consumed if flying formations carry out three or four sorties in one day.
- (3) In the event of an enemy landing it must be assumed that the transfer of reinforcements would not be ordered until the day of the landing. In view of present difficulties regarding weather and terrain, it is estimated that the transfer would take two or three days. The reinforcements would thus arrive too late for the decisive task of preventing the actual landing. Moreover, the amount of fuel available is totally inadequate for operations in support of an Army counter-attack aimed at pushing the enemy back into the sea.
The transfer will require a great deal of fuel without providing the Army with the support which it expects.
- (4) Readiness for the 'Adria' plan compels the Commanding General, G.A.F. in Italy to keep serviceable a number of airfields which could otherwise be demolished. In addition, personnel will also be tied down.
- (5) Formations in the Reich and in the East are so heavily engaged at present that the transfer of units to other fronts is not possible.

ANNEXE B (Contd.)

- (6) It is therefore suggested that Luftwaffe formations in Italy should not be reinforced and that, in the event of an enemy landing, operations be carried out with the forces at present available to the Commanding General, G.A.F. in Italy.
A decision is requested.

II Approval is requested

Sgd. Koller
OKL Operations Staff (Robinson)
No. 10626/45 - Top Secret - (op)
28 X - 6 (241)

THE END OF LUFTWAFFE REINFORCEMENTS

Top Secret

9 March 1945

To:- Commanding General, G.A.F. in Italy, Colonel Gottschling
Headquarters Luftflotte 4, Major-General Schulz
Headquarters Luftflotte Reich, Major-General Nielsen

for information to:-

Adjutant to Reichsmarschall, Colonel Con Brauchitsch
OKW/Armed Forces Operations Staff op (Air), Lieut-Colonel
Boehm-Tettelbach

Luftwaffe forces in the Reich and on the Eastern Front are so heavily engaged owing to the present situation that the transfer of units to other fronts is no longer possible. Moreover, transfers on any appreciable scale could not be carried out owing to the difficult fuel situation.

The plan to dispatch reinforcements to the Commanding General, G.A.F. in Italy in the event of an enemy landing must therefore be cancelled. Defensive operations will be carried out with the forces at present available to the Commanding General, G.A.F. in Italy.

Sgd. Christian
OKL Operations Staff
Top Secret No. 10644/45 (op)
28 X - 6 (245)

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APPENDIX 44

ANNEXE D

FUEL SHORTAGE

OKL
Chief of Staff

21 February 1945

No. 10609/45 Lw. Ops. Staff Ia (Air)

Top Secret

(Sections not dealing with Italy have been omitted)

The Luftwaffe is being assigned a large number of tasks on all fronts. If these are carried out in their entirety air activity will soon come to a complete standstill as, in view of the difficult fuel situation, all reserves will be expended.

Small-scale air operations will be carried out on the Italian front, the average daily fuel consumption amounting to nine tons.

Sgd. Koller

28 X - 6 (234)

EARLY PLANS FOR THE PRE-ALPINE POSITION

Top Secret

27 August 1944

To:- Headquarters Luftflotte 2, Colonel Christ
Q.M.G., Lieut. General Von Criegern

- (1) The weakening of the front caused by the release of fast-moving formations to C-in-C. West may necessitate a withdrawal into the Gothic Line. However, the withdrawal to this line must take place when there is no pressure on the front if the enemy carries out a landing operation behind the Apennine position.
- (2) The area primarily threatened by an enemy landing is the Adria district, where the Apennine foothills can be overcome most easily and where landing operations could turn some of the switch lines under construction, thus cutting off the retreat of both Armies from the switch line and lower Alps position.
- (3) C-in-C. South-West is instructed to assist in every way the construction of the switch line and lower Alps position. It should be remembered that the general situation may compel a withdrawal into the switch line and lower Alps position before winter comes. The construction of these positions must therefore be pressed forward as quickly as possible and all available personnel and material resources must be employed.
- (4) H.Q. Luftflotte 2 will comply with C-in-C. South-West's requests regarding the provision of labour and will release all labour no longer required for airfield construction - or not engaged on preparatory demolition work or the erection of obstacles at airfields - to assist in the construction of these positions.

Sgd. Kreipe
OKL Operations Staff Ia/Air (Robinson)
Top Secret No. 10055/44 (op)
28 X - 6 (150)

DIRECTIVE ON ORGANIZATION AND CONDUCT OF OPERATIONS IN
THE PREALPINE OR LOWER ALPS AREA

Top Secret

17 September 1944

To:- Luftwaffe Command, South East, Major-General Wilke.
HQ Luftflotte 2, Colonel Christ
HQ Luftflotte 4, Major-General Schulz

I

- (1) (a) The situation in Italy may necessitate a withdrawal to the Lower Alps position, even if no pressure is exerted on the Apennine position. (Outflanking landing on the eastern coast of Italy or an enemy thrust from the south of France into the Po Valley).

II

- (2) Following the occupation of this line, German air operations will be limited mainly to reconnaissance and fighter sorties. Day and night ground attack operations will be carried out only against concentrations and in critical situations.

- (3) The following maximum strength will be available:

(a) Luftwaffe:

- 1 - 2 long-range reconnaissance Staffeln
- 2 - 3 close-range reconnaissance Staffeln
- 2 - 3 single-engined fighter Gruppen

According to the situation, reinforcements comprising approximately one ground attack Geschwader and one night ground attack Gruppe will be made available in the concentration area.

(b) AA Artillery:

- 1 Flakdivision comprising about 60 heavy and 40 medium and light Batterien.

III

- (4) Chain of Command:

(b) Commanding General, G.A.F. in Italy

will exercise direct (tactical) control of flying formations.

Flak formations will be controlled by 25th Flakdivision.

- (5) The approximate line Fiume - Ljubljana will separate the areas controlled by the Commanding General, G.A.F. in Italy and the Commanding General, G.A.F. in Northern Balkans.

III (Contd.)

ANNEKE F (contd:)

(6) Battle Headquarters:

Luftflotte 2 battle headquarters in the Baden area (near Vienna) (alternative headquarters in the area of Bruck a. d. Mar).

Commanding General, G.A.F. in Italy will suggest a battle headquarters with suitable communications facilities in the area of the Alps by arrangement with G-in-C, South West.

(7) Ground Organisation:

One Airfield Regional Command Headquarters subordinated to the Commanding General, G.A.F. in Italy.

Feld Luftgau Kommando XXVIII and the Staff of the Commanding General, G.A.F. in Central Italy to be amalgamated with the Staff of Commanding General, G.A.F. in Italy.

IV

(9) Preparations will be implemented immediately, particularly the following:

- (a) Reconnaissance for an installation of communications facilities in Battle Headquarters.
- (b) Establishment of ground organisation.
- (c) Reconnaissance and construction of position for AA artillery.
- (d) Reconnaissance and construction of positions for the aircraft reporting service.

(10) OKL will issue orders (in good time) regarding any changes in organisation which become necessary.

Sgd. Kreipe
OKL Operations Staff (Robinson)
Top Secret No. 10191/44 (op)
28 X - 6 (169)

THE NATIONAL REDOUBT

OKL/Luftwaffe Operations Staff

27 April 1945

Top Secret No. 10726/45

- I. After the splitting of the territory still held by German forces between Berlin and Leipzig, the bulk of the Wehrmacht is in the southern sector. Within this area the Alps, bounded by the area Lindau - along Swiss frontier as far as Stilfser Jach - Ortler - Adamello - Lake Garda - Feltro - Caporetto - Karawanken - Graz - Bruck on Mur - Mariazell - northern edge of Salzburg and Bavarian Alps constitute a central fortress, strong by virtue of its terrain and the dense fortifications in the south, although weak economically.

This fortress must be regarded and prepared as the final bulwark of fanatical resistance.

Details regarding the fortress perimeter will follow.

- II. To this end OKW and the senior Reich authorities will implement the following necessary measures:

No further German or foreign civilians will be allowed to enter this area;

all foreign nationals not required will be evacuated;

maximum stocks of war material of all types, particularly for mountain warfare, will be built up;

auxiliary plants will be set up for the production of the most vital war materials;

- III. The C-in-C. of this area, who has yet to be appointed, will have the duties and authority of a fortress commander.

The Party and State will be represented by the Gauleiter of Tyrol, Franz Hofer, who will have the authority of a Gauleiter and Reich Defence Commissar in the fortress zone.

- IV. Headquarters Luftflotte 6 will be in charge of preparations for the Luftwaffe.

Officers with special knowledge of this area and of mountain territory will be assembled to assist in the preparations.

The following formations will be provided:

(a) Luftwaffe:

Bases will be provided for two or three single-engined fighter Geschwader (F.W. 190's if possible), one of each to be located in the western, eastern and southern sectors, for a few reconnaissance Staffeln (including one or two Staffeln of Me. 262's and Ar. 234's if possible) and, in particular, for the maximum number of transport aircraft, Fieseler Storch aircraft and helicopters (the latter by arrangement with the Chief of Air Transport).