REPORT ON OPERATIONS BY

NORTHWEST AFRICAN TACTICAL AIR FORCE

IN THE CAPTURE OF

SICILY.

SECRET.

C O N T E N T S

CONTENTS (contd).

LIST OF APPENDICES.

REPORT ON OPERATIONS BY NORTHWEST AFRICAN TACTICAL AIR FORCE IN THE CAPTURE OF SICILY.

PART I - PREPARATORY MEASURES.

1. On completion of the TUNIS campaign preparations were put in hand immediately for the assault on SICILY (Code Name - Operation "HUSKY"). There was much to be done.

2. Major planning for the operation had been going on during the battle for North Africa and was completed, but there was now the urgency of translating the planning into executive action.

ARRANGEMENTS FOR PLANNING.

3. Briefly, the arrangements for planning the operation were that a main joint planning centre for all services was established at ALGIERS with subsidiary planning staffs at ORAN and CAIRO for 7th (U.S.) Army and British 8th Army respectively, and with representatives at the home Ministries. The air forces associated with those armies were fully committed in operations in Tunisia and were unable to send actual members of their staffs to undertake planning. Consequently, separate small air planning staffs were found from outside these Commands and attached to the army staffs concerned. to represent the Air Commanders. This arrangements was not ideal, but it was the only practicable solution to provide the broad structure of the plan, with detailed planning remaining until the operational commands were freed from operations.

On cessation of hostilities in Tunisia, the Air Officer Administrative, Senior Air Staff Officer, Chief Signals Officer, Tactical Air Force, moved to the main joint planning centre at ALGIERS and initiated executive action with the subordinate formations.

The directives issued to Air Officer Commanding, Desert Air Force, Commanding General, XII Air Support Command, Air Officer Commanding, Malta, and Air Officer Commanding, Tactical Bomber Force, are attached at Appendices "A", "B", "C" & "D" respectively.

OUTLINE OF PLAN - OPERATION "HUSKY".

4. The broad outline of the operational plan was as follows:-

(i) Preparatory phase.

Sustained air operations to neutralise the enemy air forces in SICILY.

This task commenced on cessation of hostilities in Tunisia and was sustained throughout the whole operation.

(ii) Pre-assault stage.

Air escort of convoys to assault areas.

(iii) Assault stage.

Eight pre-dawn landings on the southwest corner of SICILY:-

(a) In the AVOLA area - 2 landings by British 8th Army with the task of capturing the port of SYRACUSE. Known as ACID NORTH and ACID SOUTH landings.

(b) Either side of CAPE PASSERO - 3 landings by British 8th Army with the task of capturing the airfield at

PACHINO and supporting the ACID assaults. Landings known as BARK NORTH, SOUTH and MIDDLE.

(c) Near CAP SCARAMIA - 1 landing by the U.S. 7th Army with the task of capturing COMISO airfield. Landing at CENT beach.

(d) Near GELA - 1 landing by the U.S. 7th Army with the task of capturing the airfields of PONTE OLIVO, BISCARI and GELA. Landing at DIME beach.

(e) At LICATA - 1 landing by the U.S. 7th Army with the task of capturing the port and nearby landing ground. Landing at JOSS beach.

In this stage the main task of the air forces was the protection of shipping and assault beaches by night and day with a subsidiary task of attacking enemy movement towards the assault areas.

(iv) The advance of the land forces from the bridgehead to capture the island of SICILY. Air forces operating in direct support.

COMMAND.

5. The Air Commander-in-Chief controlled all air forces taking part in the operation.

6. This control was exercised from a Command Post established at LA MARSA. Here Mediterranean Air Command Headquarters and Northwest African Air Forces Headquarters fused to form the main control formation. Convenient to this Headquarters and within 5 - 10 minutes by motor-car, the subordinate Commands, viz., Tactical, Strategic, Coastal, and Troop Carrier, established Command Posts.

Therefore, there was at LA MARSA virtually one large Headquarters embodying all Commands.

TACTICAL AIR FORCE ORGANISATION.

7. Tactical Air Force Headquarters continued to form a joint Headquarters with 15 Army Group, which was also located at LA MARSA, but retained an operational echelon at HAMMAMET, which was centrally situated in relation to all operational units and linked by telephone to these units. This split Headquarters was necessary as adequate telephone communications to permit the operation of the force could not be established from LA MARSA with the bottle-neck of communications through TUNIS; moreover, with the large number of W/T stations established in the area the interference was considerable.

FORMATIONS UNDER COMMAND OF TACTICAL AIR FORCE.

8. Under command of Tactical Air Force for the operation were Desert Air Force, XII Air Support Command and Tactical Bomber Force, while Air Officer Commanding, Malta, controlled all elements of the Tactical Air Force located in MALTA, PANTELLARIA and GOZO under the direction of Air Officer Commanding, Tactical Air Force.

The responsibilities allocated to each individual Command are included in the directives to Commanders at Appendices "A", "B", "C" & "D".

In addition, two P-38 Groups of Strategic Air Force were placed under operational control of Tactical Air Force for the assault stage.

LOCATIONS OF HEADQUARTERS.

9. Desert Air Force maintained a joint Headquarters with 8th Army near TRIPOLI during the preparatory period, later at MALTA for the assault stage, and finally in SICILY.

XII Air Support Command provided a split Headquarters, having an advanced echelon with Headquarters, 7th Army, in the assembly area, moving later to the H.Q. Ship and finally to SICILY, and a Rear Headquarters at KORBA on the CAPE BON peninsula for the control of its units based in Tunisia and moving to SICILY to join with Advanced Headquarters on units being located in SICILY.

Tactical Bomber Force was located near NABEUL on the CAPE BON peninsula and convenient to the bomber airfields.

DISPOSITION OF TACTICAL AIR FORCE OPERATIONAL UNITS.

10. On cessation of hostilities in Tunisia, the initial task of Tactical Air Force was to dispose units at suitable airfields for Operation "HUSKY".

The primary step was to build up MALTA as soon as possible with high performance fighters so that a strong fighter force would be established on the island prior to the operation to provide, the protective cover required eventually for the shipping and beaches, and in the intervening period, a force capable of dominating the enemy in air fighting and giving escort to bomber formations attacking SICILY. Consequently, two Spitfire Wings ex-242 Group (Nos. 322 and 324) were moved from North Africa to MALTA at the beginning of June and was followed by No. 244 Spitfire Wing of the Desert Air Force. These squadrons provided the full complement of MALTA airfields with a total of twenty fighter squadrons.

11. The task of protecting eight beach landings was most formidable for this force against a resolute scale of enemy air attack, and it was desirable to bring additional fighter squadrons within range. Airfield space was the bottle-neck. The capture of PANTELLARIA on 11th June was a very great assistance and permitted an American Group of P-40's (No. 33 Group) being located there to cover the two Western assaults; during the preliminary phase these fighters were also available to escort bombers based in Tunisia and to give shipping protection. As a second measure, a new airfield was constructed within 20 days on the island of GOZO, which was made capable of housing a further American Group. Thus, the fighter strength which could be brought to bear to cover the assault was very greatly increased. The moves of these Groups with ancillary units to PANTELLARIA and GOZO took place at the end of June and were well bedded down at these new locations prior to the opening phase.

12. Equally urgent was the location of units which were to operate from bases in Tunisia. The CAPE BON peninsula provided the nearest point to SICILY and incidentally brought units close to the sea for recuperation. Hence, in this area, and extending south as far as HERGLA, a total of 12 airfields were either newly constructed or Axis airfields improved for units of XII Air Support Command and Tactical Bomber Force which would be operating from Tunisia. By the end of June, these airfields were fully stocked for intensive operations and linked by telephone to control Headquarters.

13. Meanwhile, the Desert Air Force had been withdrawn for rest and re-fit to the TRIPOLI area, except the bomber component which was attached to Tactical Bomber Force. No. 244 (Spitfire) Wing moved almost immediately to MALTA, leaving No. 239 Wing, 57 and 79 U.S. Groups - all Kittyhawk Fighter-Bombers - in the TRIPOLI area. It was the intention that this fighter-bomber force would be held at immediate readiness for the direct support of ground forces, and would move into MALTA when airfields were vacated by the Spitfires moving to SICILY. The requirement to maintain a high state of operational readiness with this fighter-bomber force was most important, but the resources for fighter escort for the Tactical Bomber Force operating by day were very restricted and, therefore, plans were made for the movement of 57 and 79 U.S. Groups to the CAPE BON area in emergency. This plan is attached at Appendix "E". Fortunately, it was not found necessary to put the plan into operation. Events proved later that with the lack of enemy air opposition, MALTA airfields were able to accommodate fighter-bombers in addition to Spitfires, and consequently these units were moved forward to MALTA for operations immediately the landings were completed and the bridgehead was being enlarged.

14. In summary, therefore, the disposition of Tactical Air Force operational units was:-

(i) The main fighter force located at MALTA, GOZO and PANTELLARIA.

(ii) A small fighter force, under XII Air Support Command, retained for tactical bomber escort and located on airfields onnthe eastern side of the CAPE BON peninsula.

(iii) Tactical Bomber Force located at airfields on CAPE BON peninsula.

(iv) Fighter-bomber force under Desert Air Force retained in the TRIPOLI area.

(v) P-38 Groups of Strategic Air Force temporarily allocated to Tactical Air Force at MATEUR (North Africa).

The detailed disposition of units is given at Appendix "A" to Tactical Air Force Operation Instruction No. 4, attached at Appendix "F".

SIGNALS ARRANGEMENTS.

15. The vital importance of a sound and fully comprehensive communications system for the operation was fully appreciated.

In consequence, full guidance to subordinate formations was given on all aspects of communications in Tactical Air Force Signals Instruction No. 1 (Operation "HUSKY"). This instruction is attached at Appendix "G".

READINESS FOR OPERATION "HUSKY".

16. The beginning of July found the Tactical Air Force fully ready for Operation "HUSKY". Morale of units was extremely high and despite the apparently formidable task ahead there was every reason for confidence.

The operation was made known to subordinate commanders on D - 4, and these officers were then restricted from flying over enemy territory until D - 1; all pilots and squadron personnel were informed on D - 1.

The assault was, therefore, commenced with the object known to all members of the force and with this came a common inspiration to achieve success.

PART II.

PREPARATORY PERIOD - 3rd to 9th JULY.

16. Strategic Air Force had maintained attacks against the enemy airfields and terminal ports in SICILY spasmodically since the close of the TUNIS campaign. From 20th June, the scale of attack was increased to sustained effort, with heavy and medium bombers, and the plan to neutralise the enemy airfields in SICILY was begun. The Ninth Air Force, based in CYRENAICA, assisted with occasional attacks, and MALTA provided fighter escort for either or both formations as occasion demanded. This scale of attack was most substantial, and with the high accuracy of bombing achieved by these formations the results were devastating. The offensive against the enemy air forces never relaxed throughout the operation while a potential threat existed, and consequently these attacks represent a consistent effort throughout all phases of the operation.

17. From 3rd July, Tactical Bomber Force added their effort to that of Strategic Air Force in a fully co-ordinated programme. For day attacks the range factor limited the bulk of Tactical Bomber Force to the Western airfields, using fighter escort based in Tunisia and Pantellaria, and the attack of airfields in the Central area was restricted to the B-25 Groups, with escort provided from MALTA. In essence, therefore, Tactical Bomber Force, concentrated mainly on the Western and Central group of airfields by day, leaving Strategic Air Force to concentrate against the main enemy airfield area at GERBINI - CATANIA while still carrying out intermittent attacks on other airfields reported active by reconnaissance. By night, with a waxing moon, all airfields were harassed on an increasing scale by Tactical Bomber Force supported by Wellingtons of Strategic Air Force.

18. Tactical Air Force Operation Instruction No. 4 is attached at Appendix "F", showing the full background of tactical bomber operations scheduled for this period.

19. During this phase also, the two A-36 Groups were used in small formations against selected objectives in Western SICILY. The objectives included road and rail movement, R.D.F. stations and camps; the main object was to give training to these comparatively inexperienced groups and to familiarise them with the country without prejudicing surprise for the operation. Judging on results, these attacks had obviously very great nuisance value and were undertaken without casualties. In consequence, the confidence of these groups grew apace and their bombing skill increased enormously. As "D" Day approached, they were sent wider afield and the numbers of aircraft employed was increased so that all pilots in the Groups had a good knowledge of the main road systems in the island. This preparation proved extremely valuable as the operation developed.

20. Fighters located at MALTA continued to press the enemy to combat but rarely was the challenge accepted, unless when threatened by bomber formations. At these times the MALTA fighters were most successful and inflicted many casualties on the enemy and certainly dominated the air in the region of SICILY within range.

ENEMY AIR OPPOSITION.

21. At the outset, the enemy strongly opposed the attacks by Tactical Bomber Force against the Western airfields, and virtually each raid suffered casualties from fighters or flak. The strength of the fighter defence, however, decreased rapidly as attacks continued by Strategic Air Force and Tactical Bomber Force, and on the 9th July only two airfields (SCIACCA and MILO) were in use on the Western end of the island; intermittent use only was being made of COMISO in the Central area, and of the numerous GERBINI satellites, Nos. 13 and 15 still showed slight activity, as also did CATANIA Main. New strip airfields were found at ENNA and near BORIZZO and these accommodated a few fighters.

As the numbers of airfields used by the enemy were reduced the concentrations of flak increased in proportion at the active airfields; attacks on these objectives by Tactical Bomber Force invariably resulted in flak damage to aircraft.

In the main, the enemy air force had been broken and required little more only to effect complete neutralization.

SUMMARY OF TACTICAL AIR FORCE AIR EFFORT IN PREPARATORY PERIOD.

22. During this period the following air effort was undertaken by Tactical Air Force units:-

TOTAL SORTIES.

Tactical Bomber Force (Operating from Tunisia).

Day	563	
Night	233	

XII Air Support Command (Operating from Tunisia).

Fighters ..	576	(includes 47 sorties by 325 Group, N.A.S.A.F.)
Fighter-bombers ..	487	
Tac/Recce ..	18	

Desert Air Force (Located at Malta).

Fighters ..	1206	(included 31st U.S. Group at GOZO and 33rd U.S. Group at PANTELLARIA).
Fighter-bombers ..	34	

Malta.

Night fighters ..	6	

LOSSES.

9 Bostons (A-20)
6 Baltimores
2 B-25's
13 Spitfires
3 A-36's
13 P-40's

CLAIMS.

	Destroyed.	Probables.	Damaged.
FW.190	1	2	2
Me.109	21	6	11
Me.202	2	-	-
Me.210	1	-	-
Misc. E/A	16	2	17

THE ASSAULT STAGE - 10th to 12th JULY.

23. "D" Day for the operation was the 10th July with "H" Hour at 0245 hours.

24. From the 8th July onwards, a heavy pre-occupation was the protection of the assault convoys. The burden of this responsibility fell on Coastal Air Force prior to D - 1 day. No. 33 Group, located at PANTELLARIA in a most perfect situation, assisted Coastal Air Force on D - 2 and D - 1 to some extent. On D - 1, Malta based fighters took over convoy protection completely after mid-day and during the night; for this task two thirds of the available day fighter effort from Malta was fully employed.

25. The anticipated high scale of enemy air effort did not materialise, and the assault convoys were entirely unmolested from air attack.

26. An unforeseen menace in the shape of boisterous weather did appear quite suddenly on the morning of 8th July and persisted throughout the morning and afternoon, and it seemed possible that the landing might be delayed; fortunately, the sea died down in the evening.

27. The convoys reached their assault positions in perfect order and disembarkation commenced as planned. Tactical surprise was achieved.

AIRBORNE ASSAULTS.

28. Synchronised with the seaborne assaults, airborne landings, employing approximately 350 aircraft under the control of Troop Carrier Command, were made in the SYRACUSE area (glider-borne mainly) and in the PONTE DE OLIVO area (parachute troops). Tactical Bomber Force operated in conjunction with these operations with diversionary attacks in the CATANIA area and bombing attacks in the vicinity of the dropping zones and providing navigation markers (incendiary bombs) in the Central (PONTE DE OLIVO) sector. Night flying Hurricanes from MALTA (No. 73 Squadron) were also employed to assist by shooting at searchlights in the dropping zones and along the routes of the transport aircraft, but there was little interference of this kind.

29. The glider-borne operations were adversely affected by a strong wind from the northwest which caused gliders to be cast off too soon and a proportion landed in the sea, or just on shore, and reduced the effectiveness of the venture in that sector. In the Central sector the operation went as planned.

30. This operation was the largest airborne operation yet attempted by Allied forces, and bearing in mind the limited experience of the crews of the transport aircraft the result was satisfactory but not emphatically successful.

ASSAULT BY LAND FORCES.

31. The initial landings on SICILY were made as scheduled; a heavy swell existed and was particularly strong along the most westerly beaches.

32. Slight opposition only was encountered from coastal batteries, and all planned beachheads were established rapidly. On the 10th July, the ports of SYRACUSE and LICATA were captured, together with the landing grounds at PACHINO and LICATA.

On the 11th July, the enemy launched a counter-attack in the GELA area and was repulsed after some small initial success. AUGUSTA port and the airfields at COMISO and PONTE DE OLIVO were taken on 12th July.

33. By the 13th July an advance was in progress on all sectors; the assault on SICILY had been successful and the requirement was to enlarge the bridgehead.

OPERATIONS TO ASSIST THE ASSAULT.

Against enemy air forces.

34. The air offensive against the weakened enemy air force was continued by Strategic Air Force and Tactical Bomber Force on D - 1 day and the night D-1/"D" Day. All airfields known to be active were attacked with a number of delay action and instantaneous fused bombs. The measures taken appeared fully effective and no enemy air attacks against shipping were undertaken on the night D - 1/"D" Day.

35. Throughout the assault period these types of attacks were undertaken with Tactical Bomber Force now operating at maximum effort at night. A proportion of this night effort was also maintained against road

movement. Day effort by Tactical Bomber Force was reduced on account of the range factor and the shortage of fighter escort, the available fighter force being fully employed in a protective role by day.

36. Malta intruders also were active each night over occupied airfields in SICILY and on the toe of ITALY.

Fighter cover over the assault beaches.

37. It was appreciated that the enemy would use his full air effort against the shipping and beaches from early on "D" Day with the object of disorganising the whole operation at the outset. The plan formulated to counter this development was to provide continuous patrols over two beaches throughout the hours of daylight, and over all landing areas for the first two hours of daylight, from 1030 to 1230 hours, 1600 to 1730 hours, and for the last 1½ hours of daylight, at which times it was appreciated that enemy attacks might be expected. Additionally, one Wing was retained at readiness at MALTA to re-inforce any area as occasion demanded.

38. On the above basis the fighter force was allocated as follows:-

Beach.	Force.	Base.
ACID	5 Spitfire Squadrons	MALTA
BARK	ditto	ditto
CENT	ditto	ditto
DIME	1 U.S. Fighter Group (Spitfires)	GOZO
JOSS	ditto (P-40)	PANTELLARIA.

39. The anticipated high scale of enemy air effort did not materialise in full though attacks by day against shipping and beaches on the 11th and 12th July involved a large number of enemy aircraft, and there was considerable air fighting. On the 11th July our fighters shot down 28 enemy aircraft, probably destroyed 5, and damaged 16, while on the 12th July, 24 enemy aircraft were destroyed, 9 probably destroyed, and 24 damaged. In effect, however, the enemy air threat to the eastern and southern beaches was readily countered, but against the western beaches (JOSS and DIME), where the enemy main effort was made, they achieved some small success with fighter-bombers and escorted JU.88's.

40. By last light on "D" Day, 12 craft only out of a total of approximately 2,000 ships and numerous other craft had been damaged by air attacks, and it was evident that the protective measures taken were most successful. On the following days the enemy reduced his day effort mainly to fighter-bombers but increased very appreciably the scale of night attacks. A counter-measure was fully prepared to meet this contingency.

Night fighter activities.

41. For Operation "HUSKY", three G.C.I's were mounted in L.S.T's for employment at ACID, BARK and DIME beaches. These G.C.I's were to act as forward controls for the MALTA G.C.I. It was a novel experiment and the results achieved clearly prove its future value.

42. The night fighter effort of No. 600 Squadron (Beaufighters), 1 Flight of No. 108 Squadron (Beaufighters), 1 Flight No. 73 Squadron (Hurricanes) (up to 15th July), supported by No. 23 Squadron and 2/5 Flight of No. 256 Squadron (Mosquitos), was located at MALTA. It was a strong force and with the forward G.C.I. stations was quite ready to meet the increased enemy night activity. The following results show the success of the night fighter efforts:-

10/11 July	2 JU.88 1 Cant. 1007	destroyed	2 JU.88 probable.
11/12 July	2 JU.88 1 He.111 1 E/A.	destroyed	

12/13 July	5 JU.88 3 He.111 2 Cant. 1007 1 DO.217	destroyed	1 JU.88 probable.
13/14 July	2 JU.88 2 He.111 1 P.108 1 unidentified	destroyed	1 JU.88 probable.
14/15 July	9 JU.88 2 He.111 1 Cant. 1007	destroyed	1 JU.88 damaged.
15/16 July	6 Cant. 1007 5 JU.88 2 He.111	destroyed.	

Air activity against enemy road movements.

43. As a result of trials, which showed a slow rate of disembarkation of supporting arms for the land forces, the attack of enemy movement towards the assault area was submitted as an important Army requirement. In view of the terrain this movement would be by road, and it was appreciated that it would come from the concentration area in the centre of the island (arround ENNA) against the eastern and southern beaches and probably also along the coast road from the western end of the island.

44. This late proposal was outside the agreed outline plan, but the commitment was met by the allocation of 2 Groups of P-38 Fighter-bombers from Strategic Air Force to Tactical Air Force for the assault period, to re-inforce the 2 A-36 Groups. The plan for the employment of these Groups was to cover the main routes from as soon after first light on "D" Day as possible and attack all movement seen. Formations of 12 aircraft were dispatched every 30 minutes throughout the day. For these attacks, the P-38 aircraft were allocated the eastern area and the A-36 Groups maintained a similar schedule over the western and central areas.

At the outset, targets were scarce but traffic tended to increase as the day wore on and a large number of M.T. was destroyed. Under this scale of attack traffic was not allowed to develop and the scale of road and rail movement was quickly reduced to small proportions.

45. During the subsequent days this employment of the P-38 and A-36 Groups was continued widespread over the whole island, and obviously resulted in complete dislocation of enemy movement.

SUMMARY OF TACTICAL AIR FORCE EFFORT IN ASSAULT STAGE.

46. During the assault stage the air activity by Tactical Air Force units was intensive, and the effort made is summarised in the following statistics:-

TOTAL SORTIES.

Tactical Bomber Force (Operating from Tunisia).

Day	.. ..	24
Night	.. ..	305

XII Air Support Command (Operating from Tunisia).

Fighters	..	280	(includes 36 sorties by 325 Group of N.A.T.A.F.)
Fighter-bombers	..	1277	(includes 829 sorties by P-38's of N.A.S.A.F.)
Tac/Recce	..	60	

Desert Air Force (Operating from Malta).

Fighters ..	3122	(included 31st U.S. Group at GOZO and 33rd U.S. Group at PANTELLARIA).
Fighter-bombers ..	93	
Tac/Recce ..	72	

Malta.

Night intruders ..	37
Night A/I fighters	58

LOSSES.

1 B-25
10 A-36
11 P-38
3 P-40
2 Hurricanes
12 Spitfires
1 Mosquito

CLAIMS.

	Destroyed.	Probables.	Damaged.
JU.88	17	3	2
Me.109	31	6	25
JU.87	1	2	3
MC.202	7	5	2
MC.200	12	5	4
JU.52	3	-	5
He.111	2	-	-
FW.190	3	-	3
Cant. 1007	1	-	-
DO.217	1	1	2
Me.210	1	-	-
RE.2001	2	-	1
Unidentified	1	-	-
P.108	-	-	1
Me.110	1	-	2

THE ADVANCE FROM THE BRIDGEHEAD AND CAPTURE OF SICILY - 13th July to 17th August.

Operations of land forces.

47. The 13th July saw a general advance from the bridgeheads in all secotors. In the 8th Army area, however, the thrust along the coast to CATANIA on 16th July met stiff opposition and little progress was made. This situation persisted in the CATANIA sector and denied the use by us of airfields in the GERBINI plain; in the 8th Army area until the last days in July the only forward movement was made by the Canadian Division advancing northward on the left flank until the end of July.

48. Meanwhile, 7th Army (U.S.) was pushing vigorously north and west from their bridgeheads on the south coast and captured ENNA on the 20th July and PALERMO on 22nd July. There was little opposition and the speed of advance was strikingly rapid. By 24th July the western half of the island of SICILY was captured together with a vast number of Italians, and the 7th Army now turned east. From 27th July onwards resistance increased as German opposition was encountered along the north coast, and on the inland road through NICOSIA and TROINA.

49. The enemy now occupied a restricted area bounded by a line from CATANIA around the southern slopes of Mount ETNA to TROINA, and thence

to the north coast at S. STEFANO. The terrain in all sectors was extremely mountainous and favoured defence. Movement off the roads was virtually impossible and enemy mines and demolitions further increased the difficulties. Enemy policy now appeared to be, to delay the inevitable capture of SICILY as long as possible, while evacuating men and material across the narrow STRAITS of MESSINA to the toe of ITALY.

50. At the end of July, pressure was being exerted on the enemy in all sectors and there was a slow but steady movement forward. On the 8th Army front the Canadians had captured AGHIRA and were moving on REGALBUTO which was captured on 2nd August, and was followed on 5th August by the occupation of CATANIA and a further movement northwards.

In the face of difficult terrain and strong opposition, 7th Army were at this time making little progress. On 6th August, however, TROINA was captured and an advance started towards CAESARO, which was captured on 8th August. In the coastal region two successful seaborne landings were made behind the enemy lines and quickened the tempo of movement somewhat.

51. By the 13th August, RANDAZZO, the key point relative tothe territory now left to the enemy, was captured and enemy resistance virtually broken. The further progress of both 7th and 8th Armies met little opposition, and the only delay in the advance was imposed by mines and demolitions. An attempt by 8th Army to trap the remaining enemy elements by a seaborne landing at SCALETTA was just too late.

On the evening of 16th August 7th Army entered MESSINA and firing ceased early on the 17th August.

52. The capture of SICILY had been achieved, and 6,500 Germans and 125,000 Italians taken.

AIR OPERATIONS.

Enemy air situation.

53. At the time of the advance by the land forces from the bridgehead commenced, the enemy air effort was very much reduced and consisted mainly of sporadic attacks on shipping by day with fighter-bombers against ports and shipping. The enemy operational air bases were now in the toe and heel of ITALY and only very small numbers of aircraft were using the remaining Sicilian airfields as advanced landing grounds.

Main tasks of Tactical Air Force.

54. From this period until the close of the campaign in SICILY, air operations by Tactical Air Force units may be discussed under the following broad headings:-

(i) continuance of protective cover, for shipping and beaches, and later ports, by day and night.

(ii) direct assistance to the advance of the land forces.

(iii) prevention of withdrawal of enemy forces to Southern ITALY.

Strategic Air Force assistance.

55. As a background to Tactical Air Force operations, Strategic Air Force continued attacks on airfields and communication targets in Southern ITALY, and on the terminal ports on each side of the STRAITS of MESSINA, including MESSINA, REGGIO and SAN GIOVANNI. Medium bombers were also employed by day against static objectives in rear of the battle area.

Continuance of protective cover.

56. While shipping concentrations remained at beaches, providing a

most attractive target to the enemy air forces, protective cover by day and night was essential. The scale of fighter protection required by day was, however, appreciably reduced after the 13th July when the enemy suffered severe losses for what proved to be his last heavy day attack. With the opening of SYRACUSE, GELA and LICATA ports and the establishment of squadrons in SICILY, the fighter effort by day from MALTA in a protective role was gradually eliminated.

57. Against the sustained enemy attacks on shipping and ports at night full scale night fighter cover from MALTA and later by No. 600 Squadron operating from SICILY was continued and proved most effective. The intruder Mosquito squadrons, also, sustained their night activities against airfields in Southern ITALY.

DIRECT ASSISTANCE TO THE ADVANCE OF THE LAND FORCES.

58. To assist directly the advance of the land forces the main requirement initially was to get the Kittyhawk fighter-bombers from the mainland, firstly, to MALTA, and subsequently to airfields in SICILY. No. 239 Wing had been moved to MALTA on "D" Day to meet emergency demands, but the continuous operation of Kittybomber squadrons of this Wing from MALTA airfields was difficult while the Spitfires still remained. Hence, before the advance from the bridgehead commenced, it was essential that Spitfire squadrons should be located in SICILY and Kittybomber squadrons at MALTA and as soon as possible in SICILY. It was the intention that these squadrons would be available to operate on either 7th or 8th Army front until the fighter-bombers of XII Air Support Command, located in Tunisia, could be located in SICILY.

AIRFIELD CONSTRUCTION.

59. In preparation for the rapid movement of squadrons into SICILY, arrangements had been made in the planning for adequate resources for airfield construction being available to meet the demand, and the work on airfields was put in hand without delay.

Appendix "H" gives details of the airfields constructed, when work commenced, and the date they were ready for operations.

BUILD-UP OF SQUADRONS IN SICILY.

60. Hand in hand with the airfield construction, the provision of supplies and A.A. defence, came the readiness to movement of squadrons. All possible preparations were made for rapid movement. The details of the build-up of squadrons in SICILY, giving dates and locations, is attached at Appendix "I".

TACTICAL BOMBER ARRANGEMENTS.

61. At the outset of the advance, the Tactical Bomber Force still remained in the CAPE BON peninsula. Their main employment was at night and directed against road movement and static objectives on the enemy routes of supply or re-inforcement. Only the B-25 Groups were in a position to operate by day. In consequence, when the fighter-bombers moved out of MALTA, No. 3 S.A.A.F. Wing, No. 232 Wing and No. 47 (U.S.) Bomber Group were moved to MALTA on 21st July to replace them. In this manner the full tactical bomber force was made available to assist the advance.

The tactical bombers in MALTA were placed under direct control of Air Officer Commanding, Desert Air Force, and the two B-25 Groups and No. 326 Wing on the mainland under Commanding General, XII Air Support Command. Forward bomber controls were available at these Headquarters, working direct to Advanced Headquarters, Tactical Bomber Force, in MALTA, in the case of Desert Air Force, and to Main Headquarters, Tactical Bomber Force, for XII Air Support Command. Arrangements were made for these separate bomber forces to be mutually supporting should operations demand it.

62. No. 326 Wing, which specialised in night operations, remained on the mainland and carried on with the night programme, and was supported by that

proportion of the B-25 Groups that could be sub-let for night operations while these Groups still continued to provide a strong striking force at stand-by to meet Army calls for air assistance. In this connection, the work of No. 326 Wing on night operations against enemy road movement with low level attacks was outstanding; in addition, this Wing provided the "pathfinder" force to illuminate objectives for the B-25 squadrons which were not highly trained in night navigation. In this way a perfectly balanced night bomber effort was available.

63. These units eventually moved to SICILY on 4th August, and were joined by those from MALTA, so that the whole of Tactical Bomber Force was again united in SICILY by 12th August. During the movement to SICILY, tactical bomber operations continued without interruption.

PREVENTION OF WITHDRAWAL OF ENEMY FORCES TO SOUTHERN ITALY.

64. It is now apparent that the enemy had commenced to withdraw from SICILY early in August, thinning out his resources prior to his final exit. The whole process being organised and gradual.

The withdrawal in this manner was made possible by the following:-

(i) Use of favourable ground for delaying tactics.

(ii) Mining and demolitions.

(iii) A tremendous concentration of flak on both sides of the narrow area of the Straits for protection of craft undertaking the evacuation.

(iv) Narrowness of the Straits and intensive traffic by night.

The first two factors prevented pressure by our ground forces, so eliminating any enemy concentrations or build up on the beaches and offering no suitable targets for air power.

The third factor was a counter to our air supremacy and prevented the full employment of tactical bombers and reduced the scale of employment of fighter-bombers over the narrow area of the Straits. But enemy traffic was limited by day and at no time presented good targets.

Regarding the fourth factor, the Straits are so narrow that conditions resembled the crossing of a broad river. It was never possible for our naval craft to enter the Straits and stop the intensive night traffic.

Despite the intensive A.A. protection, however, considerable toll of enemy shipping was taken. The detailed list of claims are:-

7 Barges 2 Motor vessels 5 Landing craft 2 Siebel ferries 3 "F" Boats 1 "E" Boat 3 small boats	Destroyed.
15 Barges 9 Landing craft 8 Siebel ferries 2 "F" Boats 2 "E" Boats 1 Motor vessel 6 misc. craft	Direct hits.
63 Barges 1 Train ferry 15 Motor vessels 30 Siebel ferries 45 Landing craft 45 misc. craft 2 "F" Boats	Near misses.

SUMMARY OF AIR OPERATIONS.

65. For the capture of SICILY, Tactical Air Force units were disposed where they could best afford direct assistance to the land forces.

66. During this phase the employment of air forces followed normal methods and there are few outstanding instances.

Fighters.

67. The fighter force operating over the forward areas continued to ensure complete air mastery. In this task they were not seriously challenged at any time. Rarely did the enemy interfere with our air operations, though he was frequently in the offing in very small numbers to take advantage of any weakness. Evidently, he was inspired on occasions to operate over his hard-pressed ground forces, but his effort was palpably weak and indicated a general state of disorganisation of his air forces. The "high light" of the fighter force activity was the destruction by No. 322 Wing of 25 JU.52's on the 25th July in the MILAZZO area. This one operation appeared to stop all air transport service to the enemy occupied area.

Fighter-bombers.

68. From the aspect of the fighter-bomber there was very few targets, and time after time armed reconnaissance reported no movement. In the enemy occupied area, however, there was an abundance of cover (olive trees, shrubs, etc.) and there is little doubt that the enemy made extensive use of this protection. Occasionally, Desert Air Force operated fighter-bombers very low so that all cover could be investigated; the results of these attacks were certainly profitable in the destruction of enemy M.T., but in all cases the volume of light A.A. fire caused considerable aircraft casualties, and attacks could not be continued as a standard practise.

In addition, fighter-bombers constantly attacked all forms of shipping in the STRAITS of MESSINA (see paragraph 64).

Tactical bombers.

69. With the nature of the terrain favouring defence and allowing comparitively small enemy forces to hold up our advance, there were few targets for the tactical bomber force in the actual close support role. In consequence this force was mainly employed by day against static objectives designed to impede enemy movement, and to a lesser extent against transport concentrations, gun positions and dump areas. By night, continuous attacks against movement within the enemy occupied area were made as a primary task, with occasional attacks on garrison towns and focal points of communications.

70. During the final stage, Tactical Bomber Force maintained a high rate of effort by day and night. This effort was continued during the moves untertaken by units of the force. Photographic results indicate a high measure of accuracy in day bombing.

71. There is little doubt that the tactical bomber force operated under a severe handicap in being based so far away (MALTA and mainland of North Africa) from the Controlling Headquarters, but this handicap must be expected in a seaborne landing against a hostile country. The fact that the force operated at such intensity and efficiency, by day and night, is not only a tribute to the force but also a clear indication of the practicability of this method of operating in future campaigns.

SUMMARY OF EFFORT OF TACTICAL AIR FORCE UNITS.

72. In the final phase of the campaign the air effort of Tactical Air Force units reached a very high level. The details of the operational sorties are:-

Tactical Bomber Force. (Operating from Tunisia, Malta and Sicily).

Day	.. ..	3938 sorties.
Night	.. ..	925 sorties.

XII Air Support Command. (Operating from Tunisia and Sicily).

Fighters	.. ..	4730 sorties.

Fighter-bombers ..	4647	(includes 376 sorties carried out by P-38's of N.A.S.A.F.)
Tac/Recce ..	472	

Desert Air Force (Operating from Malta and Sicily).

Fighters	9247	(includes 156 sorties carried out by 31st U.S. Group).
Fighter-bombers ..	6285	
Tac/Recce	126	
Night A/I Fighters	308	

Malta.

Night intruders ..	34

LOSSES.

19 A-36's
1 P-51
2 P-40's
5 Spitfires
10 B-25's
6 Baltimores
8 Bostons
4 Spitfires
47 Kittyhawks and Warhawks
4 Spitfires
4 Kittyhawks

CLAIMS.

	Destroyed.	Probable.	Damaged.
MC.202	7	1	15
MC.205	1	-	-
ME.109	28	14	21
FW.190	17	-	5
JU.52	22	-	-
HE.129	1	-	-
ME.110	6	-	3
DO.217	2	-	1
SM.84	-	1	-
HE.111	13	-	2
JU.88	45	5	2
Cant. 1007	10	-	-
JU.87	1	-	8
MC.200	3	-	2
RE.2001	-	1	1
P.108	2	-	-
Sav.84	1	-	-
FM.82	1	-	-
Fies. Storch	1	-	-
Gotha Glider	-	-	1
Unidentified	4	-	-

HEADQUARTERS, NORTHWEST AFRICAN TACTICAL AIR FORCE

THE SICILIAN CAMPAIGN
SIGNALS ASPECT

INTRODUCTION

1. The code name of HUSKY was given to the operation designed to capture the Island of SICILY. Two main factors which affected the mounting of the operation from the signals point of view were :-

(i) That the responsibility for equipping the air forces engaged was divided between H.Q., NORTHWEST AFRICAN AIR FORCES in CONSTANTINE and H.Q., R.A.F. MIDDLE EAST in CAIRO.

(ii) That the interval planned to elapse between the conquest of TUNISIA and the assault on SICILY was to be as brief as possible, but that during this period the islands of PANTELLERIA and LAMPEDUSA had to be reduced.

FIRST FACTOR

2. Supreme command of all air forces was exercised by the Air Commander in Chief from a joint Mediterranean Air Command and Northwest African Air Forces Command Post located at LA MARSA near TUNIS. Command of the air forces acting in direct support of the 7th U.S. and 8th British Armies was vested in A.O.C., Northwest African Tactical Air Force. A command Post for this purpose was set up at LA MARSA in conjunction with 15th Army Group (in command of the two armies engaged).

3. Under the command of the TACTICAL AIR FORCE were :-

(i) THE DESERT AIR FORCE, composed of British and South African Fighter Wings, and U.S. Fighter Groups, to be equipped and maintained by Middle East and embarked from the Delta and Tripoli.

(ii) THE XII AIR SUPPORT COMMAND, composed of U.S. Fighter Groups, to be equipped by Northwest African Air Forces and embarked from ORAN.

(iii) THE TACTICAL BOMBER FORCE, composed of U.S., British and South African Bomber Groups and Wings from both Middle East and Northwest African sources.

4. During the planning stages of the operation the Air Commander in Chief and his Headquarters were situated in Algiers; thus the initial policy planning was carried out there. At the same time, in view of the divided responsibility for supply, for training and for movements, two imdependent detailed planning staffs were set up in CAIRO and MOSTAGANEM (near ORAN). This wide geographical separation between planning staffs concerned lead to the greatest difficulty in the production of the signals plan, which had of necessity to be most closely co-ordinated.

SECOND FACTOR

5. The necessity for limiting the time which should elapse between the conclusion of the TUNISIAN campaign and the assault on SICILY lead to the greater part of the planning being carried out by the planning staffs without direct reference to the requirements of the Signals Staffs of the Tactical Units to be involved. While this step caused considerable comment at the time, it is not considered that this factor had any measure of ill effect on the final plan for the following reasons :-

(i) Any Signals Plan must conform to the requirements of the Air Staff Plan, and will thus have the same broad outline no matter by what experienced signals planning staff it is conceived.

(ii) The planning staffs concerned had at their disposal full details of recent signals experience in the WESTERN DESERT and NORTHWEST AFRICA.

(iii) Main Strategic Channels of Communication, frequencies and call signs, which require a large part of the attention of any signals planning staffs, do not require the attention of the executives.

6. The need, however, for the employment of XII AIR SUPPORT COMMAND and TACTICAL BOMBER FORCE units in the operations for the reduction of PANTELLERIA, rendered it extremely difficult to equip and mount these forces in time for HUSKY.

THE SIGNALS PLAN

7. Details of the Signals Plan are given in the outline plans of Forces 141, 343 and 545. The final instructions to the Air Forces are given TACTICAL AIR FORCE SIGNALS INSTRUCTION NO. 1 for OPERATION HUSKY, DESERT AIR FORCE SIGNALS INSTRUCTION NO. 1 and XII AIR SUPPORT COMMAND SIGNAL OPERATION INSTRUCTION.

LOCATION OF THE AIR FORCES

8. At the outset of the operation HUSKY the Spitfire Squadrons of the DESERT AIR FORCE were located in MALTA, and came under the command of A.O.C., MALTA. The remaining Squadrons were held in TRIPOLI until such time as they could be brought forward.

9. The Spitfire Wing of XII A.S.C. was located on GOZO under the command of A.O.C., MALTA, one group of P-40s were located on PANTELLERIA and the remaining groups on the CAP BON Peninsula under the command of C.G., XII A.S.C.

10. The whole of the TACTICAL BOMBER FORCE was located in TUNISIA.

11. In view of the difficulty of providing telephone lines from LA MARSA, through TUNIS, to Rear XII A.S.C. at KORBA and H.Q., T.B.F. at NABUEL, it was necessary for H.Q., T.A.F. to set up its operations room at HAMMAMET. This resulted in it being necessary for the main W.T. Station also to be located there. All signals to and from T.A.F. Command Post at LA MARSA had therefore to be passed to and from HAMMAMET on two teleprinter plus speech lines provided between the two elements of the Headquarters. This naturally imposed a delay on all signals, and gave rise to certain difficulties in distribution. It was, however, the lesser of two evils. All cyphering was carried out at HAMMAMET, one teleprinter circuit being provided with secret terminations.

W.T. COMMUNICATIONS - H.Q. T.A.F.

12. During the latter part of the month of May, during June, and the first week in July 1943, which period covered the final stages of the planning and mounting of operation HUSKY, and the conduct of the operations against PANTELLERIA, a most careful analysis of W.T. traffic was maintained by T.A.F. W.T. Station. From this analysis some figures are given which may be of use in future operations.

13. W.T. TRAFFIC

Daily average Total	:	26,000 groups	
Composed of :	IN:		9,000 groups
	OUT:		6,000 "
	THROUGH:		11,000 "
Peak Daily Total	:	37,000 "	
Composed of	IN:		15,000 "
	OUT:		9,000 "
	THROUGH:		13,000 "

These figures were obtained during the period in which the W.T. Organisation was that which grew up during the TUNISIAN campaign. It is interesting to note the reduction in the percentage of THROUGH Groups which was obtained as a result of the change over to the planned HUSKY Organization which was finally made on July 10th, HUSKY D Day (see para. 24).

14. Of the daily average of 26,000 groups, 75% carried some degree of Priority (Precedence), whereas only 25% were routine messages. A count made over 10 days traffic, 260,000 groups, gave the following breakdown for the ratio of Priority/Routine groups :

Type of Message		Ratio of Priority to Routine Groups
OUT	-	6 : 1
IN	-	3 : 1
THROUGH	-	3 : 1

It can thus be seen that the degrees of priority were badly degraded, and it is evident that British EMERGENCY (equals U.S. Urgent) was the only degree of precedence which was at all effective. British IMMEDIATE (equals U.S. PRIORITY) could be regarded as ROUTINE messages, while all others were the equivalent of DEFERRED.

15. The average delays on messages were as follows :-

IN (T.O.O. to Time pass to Central Registry)
Priority: 7 hours Routine 12 hours

OUT (T.O.O. to time of clearance by W.T.)
Priority: 5 hours Routine 7½ hours

THROUGH (T.O.R. by W.T. to time of clearance by W.T.)
Priority: 1½ hours Routine: 4½ hours

16. It has not proved possible in the field to keep such a detailed analysis, but a group count of IN, OUT and THROUGH messages on each channel is being maintained.

17. HUSKY D Day was 10th July. The assault proved to be successful, and it was originally intended to move Advanced H.Q., T.A.F. into SICILY to commence operations on 27th July.

Rear H.Q., W.T. Station, consisting of 8 channels, was set up at LA MARSA, and the Main W.T. Station at HAMMEMET was closed and divided into two parties. PART "A", consisting of 8 channels, was due to arrive in SICILY in time to open watch on 27th July; PARTY "B", consisting of 12 channels, was due to arrive four days later.

18. Due, however, to difficulties in shipping, it soon became evident that it would not be possible to fulfil this programme. At mid-day on 25th July, the Air Staff being anxious to proceed to SICILY at the earliest possible moment, instructions were given for an attempt to be made to fly into the island a skeleton W.T. station.

19. Owing to the fact that all the H.Q., W.T. Equipment was packed for shipment (PARTY "A" was by this time embarked), three G.P. Packsets were obtained from No.303 M.S.S.U. In addition one SCR 188, which had been originally issued to an A.M.E. Station, but which had been exchanged by T.A.F. for a G.P. Packset,

was obtained. A party of 30 officers and men from PARTY "B", equipped with tentage, rations for ten days, full kit and arms, was assembled at HAMMEMET landing ground at 0800 hours 26th July, and was enplaned in four DC-3 aircraft of 216 Group together with the W.T. equipment mentioned above.

20. This party was flown to CASSIBILE, arriving at about 1200 hours. Transport was borrowed from the A.D.R.U., and by 1800 hours the personnel and equipment were on site. Work was immediately started, and by midnight good contact had been established with LA MARSA and the SCR 188. During the next few hours contact with MALTA, DESERT AIR FORCE and XII A.S.C. was made.

21. It was not possible, however, to advise the Air Staff to proceed to SICILY owing to the fact that while good communications were established with LA MARSA on the SCR 188, and with MALTA on a G.P. Packset, it was not possible to maintain any degree of reliability on the two G.P. Packsets working to D.A.F. and XII A.S.C. In this connection it is necessary to point out that both these places could be worked on the SCR 188.

22. This move has been given in some detail because it is an excellent example of the possibility of flying forward a small W.T. Station, capable of maintaining itself for ten days, at very short notice. It is also an example of how effort and initiative can be entirely wasted owing to the failure to provide suitable equipment. It is imperative that a replacement for the R.A.F. G.P. Packset should be found at the earliest possible date. This fact has been proven time and time again ever since the beginning of the NORTHWEST AFRICAN campaign.

23. Party "A" eventually arrived on 29th July, and opened watch on the evening of 30th July. Party "B" arrived on 5th August, and by the evening of 6th, the Advanced H.Q. W.T. Station was complete.

24. The station has not been operative sufficiently long for accurate traffic averages to have been established. The present figures are :-

Daily Average Total	:	28,000 Groups
Composed of	IN:	17,000 "
	OUT:	5,000 "
	THROUGH:	6,000 "

These figures are tending to rise, the total group for 13th, 14th and 15th August being 30,000, 33,000 and 31,000 groups respectively.

26. Landlines. The state of the landlines in SICILY was extremely bad. At the present time Adv. T.A.F. is in communication with Advanced D.A.F. at LENTINI and with T.B.F. at COMISO. Adv. D.A.F. and T.B.F. are also linked by landline. It has not been possible, however, to establish any contact with XII A.S.C. on the north coast of SICILY.

DESERT AIR FORCE

27. Desert Air Force will be issuing their own report on signals, so it is the intention here only to stress certain aspects from which it is possible to learn lessons which may be of use in future operations.

28. The establishment of W.T. Communications by Advanced D.A.F. on arrival in SICILY was delayed for a number of reasons. Firstly, D.A.F. equipment was being provided from the United Kingdom, and was due to be off-loaded in CATANIA on D + 14. As CATANIA had not fallen by that date the equipment remained in the convoy which was held in readiness at MALTA.

29. Secondly, it had been planned for Advanced Desert Air Force to make use of 211 Group Equipment sited at PACHINO. As, however, 8th Army moved forward to LENTINI on D plus 7 this arrangement fell through. Fortunately, C.S.O., D.A.F. anticipating difficulties with the convoy ex U.K., had made arrangements with Middle East for the provision of 12 reserve channels, together with personnel, to be held in readiness. Eight of these channels were ferried over from MALTA and were established at LENTINI on time.

30. The site at LENTINI ~~ix~~ extremely bad from the W.T. point of view, being on the northern slopes of a mountain having no access for W.T. vehicles to the top.

31. In general it is considered that the planned scale of communications was satisfactory. The greatest difficulty experienced was with the allocation of suitable frequencies, of which there were insufficient allotted for all requirements.

32. It is now evident that there must be a revision of the policy governing A.L.G. Signals Sections and Field Force Headquarters Signals Sections. When these units have fulfilled their respective roles successfully they are, on the arrival of Wing and other main signals sections, thrown up, and have no further function to perform. This is extremely bad for morale, and leads to inefficiency.

33. It is therefore recommended that these units should be abolished and that the following policy be adopted for the provision of assault communications.

(i) Each Beach Brick should be provided with its own signal section for communication with the Base.

(ii) Each Embarkation Unit should be provided with its own Signal Section.

(iii) A.L.G. Signals Sections and M.P.R.Us. should be combined to form Forward Fighter Controls which should be an integral part of the Fighter Group or M.O.R.U. which is to control fighters after the opening phases of the assault. These should have their own independent link back to base.

Furthermore, all assault W.T. Sections must be provided with T.1190 Type Transmitters and reliable power units. Where it is essential to use V.L.P. sets, adequate charging facilities must be provided. All sections must be capable of existing both technically and administratively for at least a fortnight.

34. Radar. G.C.Is and C.O.Ls. functioned well. A great need was felt for an M.R.U., and it is considered that one of these stations should be landed by D plus 3 at the latest so that accurate height readings may be available at an early stage.

35. Owing to the impossibility of guaranteeing that follow-up convoys will arrive on time, or will discharge over the planned beach or port, it is considered that the experiment of splitting R.D.F. Stations into A and B parties should be dropped. Party A of a G.C.I. cannot last for more than 4 days unless it is reinforced by Party B. It is therefore recommended that in all future operations G.C.I. and C.O.L. stations in the assault should be shipped complete, even if this means a reduction of the number which can be put in.

36. It is mostlstrongly recommended that all Light Warning Sets should be under the command of an officer. These small units of a dozen men are dispersed widely over the country, and it is extremely difficult for an N.C.O. to approach local Army Units for anything of which he may be in need. A detailed R.D.F. report is given at Appendix "A".

37. Signals Administration. Signals Administration needs considerable strengthening. The policy at the present time is to attach the many small signals units, such as A.M.E.S.s. to the nearest Wing for Administation. Wings move suddenly, and are often not replaced; the result is that on matters such as mail, pay and other personal points, the airmen in A.M.E.Stations are considerably worse off than those on larger units. The difficulty is aggravated in the case of small signal units located in American areas.

38. It is therefore recommended that M.S.S.Us. should be strengthened by the addition of a small administrative staff capable of administering to the needs of upwards of a dozen small outlying units. Furthermore, whenever a number of units are detached for service with an American Command, an M.S.S.U. should always accompany them.

39. Equipment. A.S.Ps. are not at present equipped to deal with signals demands other than those of the most trifling nature. All main items of equipment

must be obtained by reference back to some higher command. This is a slow and unwieldy process. It is therefore recommended that A.S.Ps. should be equipped to deal with demands for replacements of all types of signals equipment in use in the field (including complete transmitters of the T.1190 type). Should this not be possible, it is recommended that in each operational area there should be a small Signals Stores Park. Only in this way will it be possible to deal with signals equipment through the normal equipment channels, instead of by the "back-door" method at present in favour.

40. XII A.S.C. H.Q., XII A.S.C. will be issuing their own detailed signals report and it is the intention here to stress only those points which, from the broader aspect, may be of use in future operations.

41. The greatest difficulty with which XII A.S.C. had to contend was that while their Communications Officer was engaged in the detailed planning of HUSKY at MOSTAGANEM, they were at the same time conducting operations against PANTELLERIA from the TUNISIAN tip. Furthermore, certain items of signals equipment belonging to XII A.S.C. together with the personnel to operate them, were detached from the command for use in PANTELLERIA after it had been occupied. Thus the Command was forced to conduct operation HUSKY without certain equipment and personnel, which have not yet been entirely replaced.

42. Where expediency dictates the detachment of men and equipment from a command about to engage in a major operation, it is essential that replacements should be made at once.

43. The provision of crystals for the fighter aircraft of XII A.S.C. was another example of the supply service failing to meet the requirements of a plan which was known well in advance. Sufficient Channel D crystals were not provided for the equipment of all aircraft until D plus 4. This crystal was the Emergency Homing and Air Sea Rescue frequency; this it can be seen that for four days pilots of XII A.S.C. were being called upon to take part in active operations over the sea without the benefit of Air Sea Rescue. This is a most unsatisfactory state of affairs.

44. The only link between XII A.S.C. Adv. in SICILY in the early phases was a radio net joined by PANTELLERIA - MONROVIA - MALTA. This was very overloaded and it is the opinion of XII A.S.C. that all assault links should be on a one-to-one basis. This is not practicable under the light scales of equipment demanded by assault conditions, but there is no doubt whatever that better Air Communications must be provided from H.Q. Ships. This aspect is discussed in a later para.

45. There is a general tendency in XII A.S.C. to regard nets as unworkable. While the desirability of the one-to-one links is admitted, it is not an economic proposition, nor do sufficient frequencies exist, for a large operation to be planned on this generous scale. The real fault undoubtedly lies in the war training of U.S. operators who do not seem to have impressed upon them the functions of a control station.

46. XII A.S.C. operations have been hampered throughout the campaign by the fact that it has been impossible to provide them with telephone lines to T.A.F. or D.A.F.

TACTICAL BOMBER FORCE

47. The opening of operation HUSKY found TACTICAL BOMBER FORCE in the process of converting a large number of their aircraft to V.H.F. The provision of crystals for these units was rendered difficult by the large demands of the fighter force. As a result, T.B.F. were not finally equipped until 11th August.

48. The American Bomber Units of T.B.F. from 9th Air Force had been stripped of all ground W.T. equipment which should have been an integral part of the units. The reason for this is now known. As a result, these units had to be supplied with RAF personnel and equipment from the already slender resources of T.B.F.

49. It is recommended that a SIGNAL COMPANY (WING) should be assigned to T.B.F. to alleviate this situation.

50. Tactical Bomber Force consists of 19 Squadrons, and is providing a very large bomber effort which entails considerable dispersal of bomber controls and signals. It is therefore recommended that H.Q., T.B.F. should be strengthened by the addition of one Wing Commander Signals to Establishment.

51. Heretofore, landlines for T.B.F. have been provided by the Air Formation Signals of the area in which they are working. The requirements have now become so large that it is considered that a separate A.F.S. Company should be allotted to T.B.F. to look after their needs.

HEADQUARTER SHIPS

52. In view of the limited number of radio channels which can be installed in any one H.Q. Ship, the general experience is that considerable overloading of such channels as are available invariably takes place. With a view to minimizing this, it is suggested that consideration should be given to the provision of independent fighter control ships which would fulfil a purely air role, thus placing at the disposal of the air the full facilities of the ship.

(Sgnd) E.M.H. GRUNDY,
Group Captain,
Chief Signals Officer,
TACTICAL AIR FORCE.

16th August, 1943.

REPORT ON THE USE OF R.D.F. IN OPERATION "HUSKY"

1. PLANNING

1.1 PROVISIONING. The provisioning of equipment was adequate and even generous since losses in shipping and in the assault landings were much smaller than expected. In all stages of the operation sufficient equipment to maintain cover over the forward areas and at the same time afford adequate protection to ports and bases has been available.

1.2 TYPE OF EQUIPMENT. The G.C.I./C.O.L. type of Equipment and Light Warning equipment were, as in the Tunisian campaign, found to be very suitable for operation in the mountainous country met with in the operation. M.R.U. Stationa were useful in giving seaward cover after landing. A discussion of siting problems in Sicily is given in a later section. With the increasing use of Mk.VIII A.I. equipped aircraft and C.O.L. Controlled Night Interceptions it is a mistake in planning to place a requirement for G.C.I. and C.O.L. stations as distinct entities, since the former are not equipped with W/T gear and operators whilst the latter are not equipped with V.H.F. or personnel trained for controlled interception. This restricts the tactical handling of the gear unnecessarily. Stations should be of the G.C.I./C.O.L. type so that they can be used for either function and able to carry out controlled interceptions in either role. Controllers should similarly be trained to carry out either G.O.L. or G.C.I. type interceptions.

1.3 LOADING. G.C.I. and C.O.L. units landed in the assault phase of the operation were divided into "A" and "B" parties, the former containing the R.D.F. receiver, transmitter and aerial vehicles, one power vehicle and V.H.F. gear(where applicable). This saves shipping space in the assault convoy and the station is able to carry on with this scale of domestic and technical equipment for a limited time. Unfortunately in "HUSKY" arrangements for shipment of the "B" party containing the major portion of the crew, the domestic equipment, a large quantity of spares and the second power unit seem to have broken down completely in some cases. This has a serious effect on the crew and station generally since it means that the station is inadequately equipped with transport for domestic purposes such as obtaining rations and water and that the one power unit running for a long period without maintenance often leads to serious unserviceability of the station. Unless some firm guarantee can be given that "B" party will arrive in the theatre about five days after "A" party then in future operations "A" party must be increased to include the second power unit (trailer) with a 3-ton load carrier for towing and general duty. Some increases in domestic and technical trades must also be made.

Care must also be given to the dimensions of the A.M.E.Stations to the load planning of the reinforcement programme. The G.C.I./C.C.L. Stations landing on CENT beach on D plus three day were non-operational for a week owing to the fact that their aerial vehicle had been left behind at Tunis, being too high to load on the L.S.T. sent back to transport the vehicles.

The effectiveness of the G.C.I. Stations mounted for operation on L.S.Ts. was reduced by virtue of the fact that they were in two cases loaded with priority equipment intended for off-loading on D-Day. This meant that the L.S.T. spent the night of D/D plus 1 in port unloading, thereby defeating the object for which the G.C.I./L.S.T. had been created. Fortunately the shore G.C.Is. were working very successfully. Other equipment loaded on the G.C.I./L.S.T. should be of lesser priority for off-loading on D plus 2 or D plus 3. The L.S.T. Captain must also be thoroughly briefed on the function of the G.C.I. being carried and must be prepared to meet, consistent with the reasonable security of his ship, the requirements of the G.C.I. Technical Officer with (time regard to position and anchorage. The G.C.I./L.S.T. should be available for some/ previous to the operation to allow the overcoming of technical difficulties in both the loading of the gear and its operation. The hurried substitution of a fresh L.S.T. intended for the LICATA area resulted in a situation in which the aerial vehicle could not be raised to deck level by the L.S.T. elevator owing to its size and had to be loaded on to the deck by a dock crane. This prohibited any possibility of speedy landing on a beach by this particular G.C.I.

2. LANDING

2.1 GENERAL. Landing proceeded smoothly in almost all cases. One case is

recorded in which the convoy drove off the L.C.T. to drop in four feet of water, this being necessitated by the slope of the beach at this point. This does credit to the strength of the vehicles and the efficiency of the waterproofing.

2.2 OPERATION ASHORE. Once ashore stations in all the landing areas were mustered without difficulty, and proceeded to sites after reconnaissance by the technical officers concerned. On site the gear was made operational with commendable speed. After establishing touch with local Mobile Plotting Room Units reporting was commenced by W/T. In some areas on the first night there was an overgenerous distribution of G.C.I. and L.W. Stations but this was due to the happy fact that no stations had been lost in the assault. Experience at this stage of the operation would seem to indicate that the MP.R.U., A.L.G., and A.F.S. sections would function more smoothly if fused into "Assault Sectors" under the command of one officer who could coordinate their activities and present to each the priorities to be given to various W/T, Line and R/T channels according to the tactical needs of the situation. This should lead to an even more speedy and efficient control ashore than is attained under the present arrangement. Nevertheless, G.C.I. stations were quickly in touch with their associated M.P.R.U. by landline and C.O.L. and L.W.Stations(with a few exceptions) were communicating with some degree of success by W/T. The results of the first few nights of controlled night-fighter activity are given in the section devoted to that aspect of the operations.

3. FOLLOW-UP MOVES

3.1 DESERT AIR FORCE AREA. Sufficient equipment was available to allow close follow-up of the Army Advance up the east coast of Sicily. From the coastal belt the hills rise very steeply inland and in general operation of the GCI/COL apparatus has been confined to the coast in order to provide essential G.C.I. and C.O.L. cover over the ports and forward areas and at the same time to give the best possible medium to high-flying cover over inland approaches. In some areas permanent echoes have made the latter task difficult. The main bulk of inland cover has been provided by the Light Warning Stations which have once again proved their worth in this task. Night bombers attacking the East coast ports have always approached around the West side of Mount Etna which provides an all-time record in permanent echoes. Careful sighting of Light Warning sets to the South-West of the mountain has enabled a fairly good advance warning to be provided for the G.C.I. Stations controlling the night-fighters. A later section sets out some principles on which Light Warning Stations are sited for most effective inland cover. The first erection of one M.R.U. Station was unnecessarily delayed by virtue of the fact that components of the masts arrived without any markings to indicate their position in the framework and the ensuing scene would have gladdened the heart of a jig-saw puzzle enthusiast.

3.2 XII A.S.C. AREA. Sufficient equipment was again available to allow close follow-up of the Army advance which in this area was very fast. A rear Operations Room with associated R.D.F. was maintained in the GELA area whilst the forward Mobile Operations Room followed the Army advance. Light Warning Stations were again used to provide the bulk of the inland cover when advancing along both the north and south coasts of the Island. On reaching the Northern coast very full cover over the approaches to the newly won territory was possible.

3.3 MORU/MARU. This has operated under the control of the Desert Air Force. It suffered an initial set-back when the complete equipment of the M.A.R.U. was lost in Augusta harbour by enemy action. This, coupled with the heavily contested and slow advance on the CATANIA front has prohibited the M.O.R.U./M.A.R.U. being assigned a mobile role. It was therefore brought into operation in the MELILLI Area and was made responsible for the day protection of ports and installations in the 8th Army area and Westwards to GELA, the night fighter protection of both the British 8th and American 7th Army Areas and A/Sea Rescue for the Allied Air Forces. The M.A.R.U. functioned, with a hastily collected set of Filter Room and Signals equipment, in a converted mill. In this role M.O.R.U./M.A.R.U. has performed good work. The M.O.R.U. equipment seems admirably suited to its task and the personnel of both M.O.R.U. and M.A.R.U. are well trained.

4. SITING OF LIGHT WARNING STATIONS.

This campaign has confirmed the conclusion reached in North Africa that

the Light Warning Set carefully sited can provide valuable information in country where the more powerful equipment would be virtually ineffective due to permanent echoes. Light Warning Stations being small and available in sufficient numbers can be sited to cover specific inland lines of approach. Valuable information has been obtained by placing two Light Warnings close together so that they are affected by permanent echoes on varying azimuths. This enables a fair medium and high flying coverage of quite a large area to be obtained. Other sitings are successful in valleys down which enemy aircraft approach. A siting in this case some distance up the sloping side on one edge of the valley can provide better low-flying coverage along the length of the valley. Permanent echoes in some azimuths are obviously bad but this must be accepted and sitings of other stations made to cover the weak areas. In the advance towards the CATANIA Plain a series of ridges running from East to West were encountered. Results were obtained here by placing the Light Warning some short distance down the Southern slope of the ridges. This had the effect of providing medium and high-flying cover unencumbered by permanent echoes from the succeeding ridges. When necessary the Light Warning has also acted as an efficient coast watching station.

5. NIGHTFIGHTERS

The operation of nightfighters in "HUSKY" has met with marked success and is summarised in the tables below. Table 1 covers the operation of all the nightfighter effort from MALTA for the first seven nights of the campaign. In this period all nightfighters were based on MALTA. Table 2 gives a summary of the success of 600 Squadron who have since been based in SICILY protecting the North and Eastern areas whilst MALTA have continued with their patrols over the Southern area. In the assault stage aircraft equipped with Mark IV and Mark VII/VIII aircraft were operating under control of the G.C.I. stations which had been set up ashore. Mark VII/VIII aircraft were not, for security reasons, allowed to cross the coast of SICILY. During the first seven nights fifty-five enemy aircraft were destroyed, three probably destroyed and one damaged. One G.C.I. Station in the AUGUSTA Area has to date controlled the successful destruction of forty-one a/craft.

TABLE 1

NIGHTFIGHTER OPERATIONS OVER SICILY JULY 10TH TO JULY 17TH

Date:	CONFIRMED	PROBABLE	DAMAGED
10/11	3	1	NIL
11/12	3	NIL	NIL
12/13	11	1	NIL
13/14	5	1	NIL
14/15	12	NIL	1
15/16	6	NIL	NIL
16/17	13	NIL	NIL
17/18	2	NIL	NIL
	55	3	1

TABLE 2

AIRCRAFT DESTROYED BY 600 SQUADRON JULY 11TH TO AUGUST 11TH

AIRCRAFT	DESTROYED	PROBABLE	DAMAGED
JU 88	26		2
HE III	9		
CANT Z1007	3		
DO 217	1		
SM 84	1	1	
SM 82	1		
PIAGGIO 108	1		
TOTALS	42	1	2

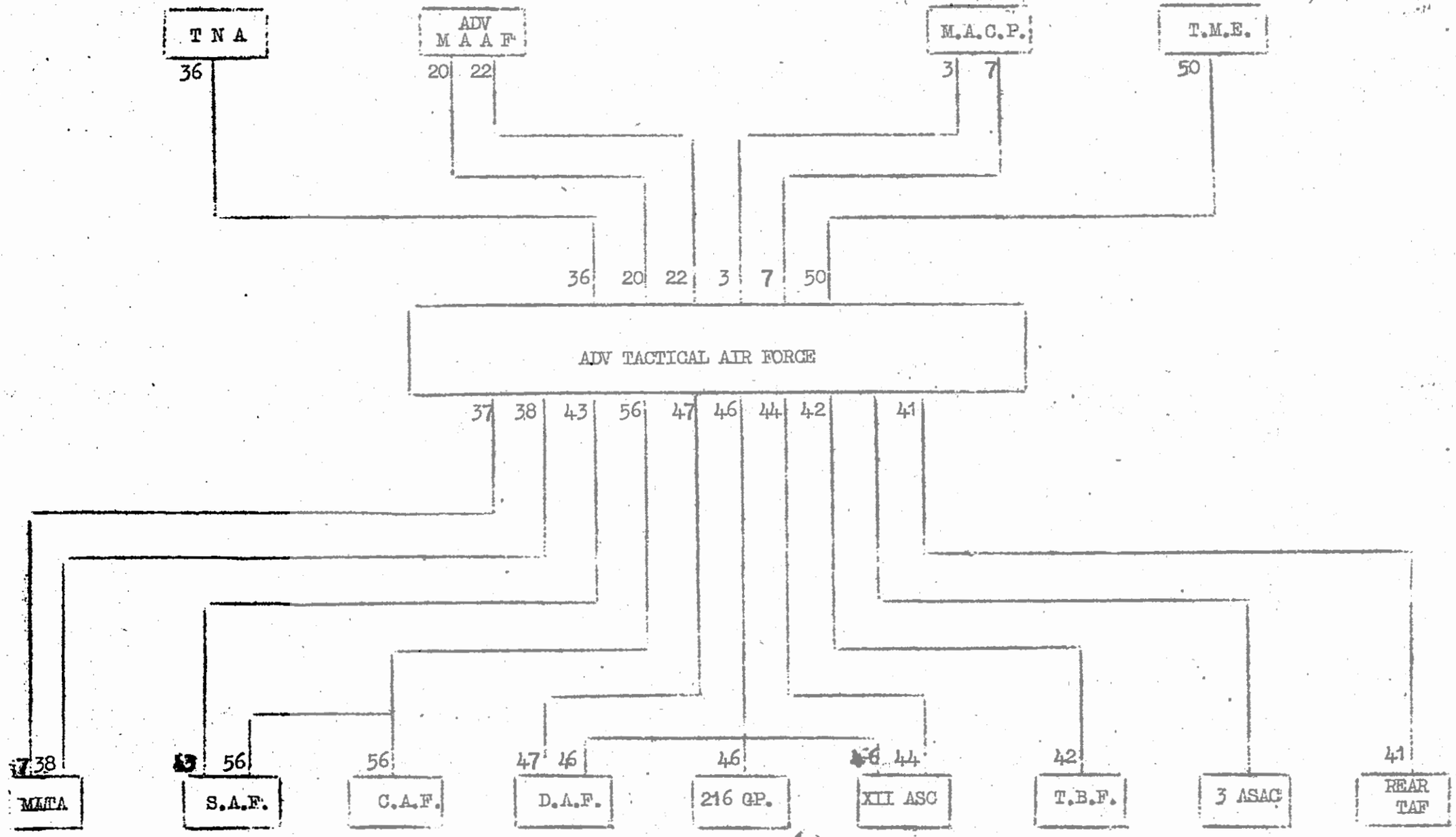
6. ADMINISTRATION

It has again been shown that Light Warning Stations suffer badly through having no formation personally interested in their administration. Personal mail, airmen's records, health and hygiene as well as general discipline are all unsatisfactory because there is no officer specifically responsible for these matters. Two courses are open, either the formation of a Light Warning Headquarters Unit of small size designed to look after the administration of five or six posts or the staffing of the M.S.S.Units so that they can be made responsible for the administrative as well as the technical efficiency of the Light Warning Units in their areas. One of these measures must be taken as the present system leads to a steady decline in the efficiency of the station as well as the morale of the airmen. Light Warning Stations operate under trying conditions usually well in the forward area and they should for that reason alone have access to some Administrative Officer to settle the various responsible problems which are bound to arise.

(Sgnd) P. E. AXON,
Wing Commander,
R. D. F.

H.Q. TACTICAL AIR FORCE W.T. COMMUNICATIONS

30 JULY - 15 AUGUST 1943



BRITISH 'MOST SECRET'
Equals AMERICAN 'SECRET'

HEADQUARTERS
NORTHWEST AFRICAN TACTICAL AIR FORCE

Reference:-
TAF/53/1/AIR

18th September, 1943

MEMORANDUM ON LESSONS FROM OPERATION HUSKY

LIST OF APPENDICES:

APPENDIX 'A' - Detailed Report by Desert Air Force

APPENDIX 'B' - Detailed Report by XII Air Support Command

APPENDIX 'C' - Detailed Report by N.A.T.A.F. on the Signals Aspect of HUSKY.

APPENDIX 'D' - Detailed Observations by N.A.T.A.F. on the Technical Maintenance Aspect.

APPENDIX 'E' - Detailed Report by N.A.T.A.F. on the Administrative Lessons.

APPENDIX 'F' - Detailed Report by N.A.T.A.F. on Airfield Construction.

1. The major lessons arising out of HUSKY which may affect future operations of this character, are summarised in this memorandum. Most of the points mentioned are discussed in more detail in the reports submitted by Desert Air Force and XII Air Support Command, copies of which are attached at Appendices 'A' and 'B'.

ATTACKS ON AIRFIELDS

2. Probably the most outstanding feature of Operation HUSKY was the success which attended the attacks on enemy airfields. These proved conclusively the lessons of the Tunisian Campaign, that an airfield can be so damaged by air action as to be rendered unfit for flying. In at least two cases, MILO and BISCARI, the damage caused by heavy bomber attacks was so extensive that no effort was made to repair them. Other airfields were frequently made unserviceable for periods of from 12 to 48 hours.

It was also found that attacks by 'frag' bombs caused severe losses to enemy aircraft on the ground, even when in pens.

The value of the disorganisation caused by attacks of the nature described above, made immediately before and during the initial stages of a seaborne assault, is evident.

SEABORNE G.C.I.'s

3. Perhaps the second most useful lesson learnt in HUSKY, was the value of the G.C.I. mounted on L.S.T. and located off the assault beaches. The introduction of this advanced control station enabled night fighters to operate with a high degree of efficiency. In consequence the losses caused to shipping by enemy night attacks were negligible.

If however, the Seaborne G.C.I. is to fulfil its function, it is essential that the L.S.T. in which it is carried is not loaded with high priority equipment or stores. In one instance, a G.C.I./L.S.T. was loaded with armour which had to be disembarked early and the act of doing so made it quite impossible for the G.C.I. to operate. Thus, if an L.S.T. cannot be allocated specifically for use as a G.C.I. Station, it must not be loaded with items urgently required in the initial assault.

CONTROL OF A.A. GUNFIRE

4. The control of A.A. gunfire by warships, landing craft and merchant vessels proved most unsatisfactory, despite elaborate regulations. A higher standard of recognition must be acquired by A.A. personnel and a more effective control exercised by the Royal Navy.

It is recommended strongly for consideration that when aircraft are forced to be routed over shipping in the assault area that all A.A. fire be prohibited at certain fixed times when the aircraft are due to pass; this particularly applies to transport aircraft used in airborne operations.

REPORTS ON AIR SITUATION IN ASSAULT AREAS

6. In order to assess the scale of protection required over the beaches after an assault has been launched, it is essential for the Senior Air Force Officer in each main assault area to render a brief situation report to Tactical Air Force Headquarters at least twice a day. The officer concerned to be given a specific brief to this end. Although much information can be obtained from pilots returning from patrol, without guidance from the ground an accurate appreciation of the protective fighter cover required is extremely difficult to make. Without such an appreciation, an undue proportion of the available fighter effort is likely to be employed for an unnecessary long period in a purely defensive role.

ATTACK ON COMMUNICATIONS
EMPLOYMENT OF FIGHTER BOMBERS

7. In HUSKY, the main role given to the fighter bomber force was to paralyse all enemy movement towards the assault areas. In the opening phases of the operation good targets were found and formations of 12 aircraft were used effectively. As targets became smaller and more scattered, the size of formations was reduced to 8 and 4 aircraft with the object of ensuring a constant stream of aircraft being kept over all roads leading to the battle area. These attacks were most profitable and successful initially and at a later stage M.T. was forced to lie up in olive groves and such other cover as was available owing to the constant threat of attack. Although the number of vehicles destroyed was small, road movement was practically brought to a standstill.

In addition to road movement, similar attacks were directed against the railway system. These too were successful, but owing to the inherent limitations of the Sicilian railroad system, targets were limited and the object was soon achieved. In the later stages of the operation attacks were discontinued in order to avoid further damage to a means of transportation we ourselves wished to use.

EMPLOYMENT OF LIGHT BOMBERS

8. During the later stages of HUSKY, the Tactical Bomber Force were

/.....Page 3)

employed mainly in their normal role of supporting land operations. Initially however, particularly during the moon period and when provision of fighter escort was difficult, the Tactical Bomber Force was used as the complement of the fighter bomber and employed principally against road movement at night. Their effort was developed mainly at low altitude and continued the day pressure on movement which resulted finally in the complete disorganisation of enemy communications.

This and later phases of the operations again emphasized that a tactical bomber force must be equally efficient by day and night.

BOMB LINE

9. It was quite evident that those responsible for the periodic promulgation of the bomb line with Seventh Army during HUSKY were not clear as to what was required. Frequently it bore no relation whatsoever to the position of the troops and in consequence large areas occupied by the enemy had to be ignored by our own aircraft. It is essential that all Army formations, particularly those with no previous operational experience, should be quite clear that the bomb line given indicates the position which it is expected our own troops will reach in approximately two hours time.

Again frequently demands had to be made to new army formations asking for a bomb line. It is clear that Army training measures are not stressing the fundamental value of the ground information to the air forces operating in their assistance.

AIR TRANSPORT

10. Operation HUSKY demonstrated quite clearly that the only way in which air force units can be transferred quickly from their pre-assault bases to airfields in occupied territory is by air transport. Calls forward of units are usually at short notice and frequently at times which do not exactly follow those anticipated in the planned build-up. In order that the air transport formations can be kept fully informed as to the progress of the operation and the probable moves of units, it is essential that the air transport organisation has an advanced headquarters alongside the Tactical Air Force Headquarters. In HUSKY, Troop Carrier Command and No.216 Group had a Command Post alongside Tactical Air Force, Headquarters. In consequence they were kept fully in the picture and were able to coordinate and meet the heavy demands made upon them with minimum economy of effort.

AIRBORNE OPERATIONS

11. Normally the aircraft which undertake airborne operations are those which are also required for air transport. These two tasks are frequently required simultaneously. It is obviously uneconomical to hold transport aircraft specifically for one of these commitments, and a clear priority for these operations must be established at the outset. It is apparent also that no pre-determined allotment of resources will be rigid and must depend on the general situation obtaining at the time.

12. The most serious problem affecting airborne operations in HUSKY was the routeing of aircraft to avoid friendly shipping proceeding to and lying off the beaches. The necessity of providing a safe channel of approach through friendly shipping cannot be over emphasised. Although in theory this should ensure adequate security, in practice it is preferable to route Troop Carrying Aircraft to their dropping zone along a route which does not involve passage over the assault beaches, even if this route lengthens considerably the distance between troop carrier bases and the dropping zones. The only satisfactory alternative is to restrict A.A. fire completely at the time the air transport fleet is due to pass over shipping

AIRFIELDS - REPAIR & CONSTRUCTION

13. In the 8 Army area, airfield construction was undertaken by British Airfield Construction Groups, and initially in the 7 Army areain part by Combat Engineers. The latter arrangement was due solely to the shortage of shipping and the inability

/.....Page 4

of 7 Army to include any Aviation Engineers in the first flight.

On the British side, airfield construction groups were provided by both Middle East and from the United Kingdom. The essential difference between these two groups was the number of personnel attached to them, the Middle East establishment being considerably larger than the construction groups coming from U.K. As a result of the experience gained in HUSKY, the conclusion reached is that the standard airfield construction group as established in the U.K. is a better balanced unit and with slight modification in respect of certain items of equipment (detailed recommendations in respect of which have been submitted to the War Office by 15 Army Group) should meet the requirements of any future combined operation.

In the 7 Army area although no Aviation Engineers were included in the initial assault, it was found that the Combat Engineers were fully capable of repairing existing enemy airfields, but would not have been capable of developing a new site from scratch. In practice the demands on Combat Engineers is very great and it is most unlikely that they would be retained to complete heavy undertakings.

14. The provision of an officer with operational flying experience for liaison duties with airfield construction groups or any other engineer formation concerned with airfield construction, was proved to be essential. Unless the engineer officer in charge of airfield construction can obtain immediate advice as to the operational suitability of any sites selected, there is bound to be delay in commencing construction and a definite risk in starting work on fields which are unsuitable for operations.

15. Unless the Air Force Commander can be informed at the earliest possible moment that suitable airfield sites have been found and that these sites are likely to be ready for occupation by a certain date, it is extremely difficult for him to forecast the move of his units and draw up his plan of operations. This was appreciated before HUSKY was launched and steps were taken to provide certain of the air force Liaison Officers with construction groups with separate wireless units. These wireless units were necessarily portable and although they were easy to move about, it was found in practice they were insufficiently powerful to communicate with air force headquarters on the mainland. As a result of the experience gained in this operation, it is felt that the provision of such wireless units is not entirely necessary and that the Air Force Liaison Officer can pass back information satisfactorily by making use of Army channels - either Divisional or Corps Headquarters, or through Advanced Air Headquarters when this is accessible.

16. Finally, experience shows it is essential that the Chief Engineer Officer charged with the responsibility of constructing airfields immediately after an assault should be made fully conversant with the air staff requirements in the early stages of planning. Unless this is done there is danger that a sufficiently careful study will not be made of the airfield construction requirements, or the plans required to meet them and the shipping space needed to lift the necessary equipment.

INTERCOMMUNICATION

17. A detailed report on the signals aspect of HUSKY is attached at Appendix 'C'. The main lessons learnt during the operation were:-

(a) The H.Q. Ship must have a greater number of purely air force links back to the Main Air Headquarters directly concerned with the conduct of operations. In HUSKY, only two channels were available and a minimum of four is considered essential.

(b) No Headquarters should plan to use the communications of another subordinate Headquarters in order to economise in shipping space but must be accompanied by its own signal units.

/.....Page 5

(a) More attention must be paid by Commanders to the priorities given to individual signals. As nearly all signals originated during HUSKY were classified as 'Immediate' or higher, there was a general slowing down of all priority traffic.

TECHNICAL MAINTENANCE

SERVICING COMMANDOS

18. In HUSKY, sufficient Commandos were included in the assault to maintain up to 16½ Spitfire Squadrons and 2 half Beaufighter Squadrons. In general they were reasonably satisfactory, but better servicing would have been available for units if Squadron 'A' parties had been substituted for them. This is in no way a reflection on Commando personnel. It is doubtful however, if an independent unit of the Commando type, can ever hope to provide a squadron with as good service as personnel who have become accustomed to working with a particular type of unit over an extended period. This fact was fully substantiated by the marked improvement in the technical ability of Commandos which was shown after a month or so with squadrons in SICILY.

The fundamental objection to the Commando as such, is that they can only be obtained by drawing on tradesmen who would otherwise be available for employment in squadrons and other technical units, and after the arrival of squadron personnel become surplus to essential requirements. Whenever Commandos are employed arrangements must be made to absorb them into other units, once their assault role is completed.

On balance, it is felt that the value of the Servicing Commando does not justify the introduction of a specialist unit of this nature, and it is recommended that the technical personnel put in with an assault should be drawn from the squadrons. To do this it will be necessary to ensure that the squadron establishment of technical personnel is maintained at one F.M.E. and one F.M.A. per U.E. aircraft, together with ancillary trades to a proportionate scale.

BUILD UP OF SQUADRONS - R.S.U.'s & M.T.L.R.U.

19. In HUSKY the emphasis in planning and on moves of units into SICILY was placed on those elements which accompanied the assault. Experience showed that although squadrons can operate for a limited period with only part of their normal organisation, the balance of squadron and supporting units should be fed in within 10 - 15 days. Unless this is done, wastage in aircraft, transport and equipment becomes inordinately high. In HUSKY, it was only possible to accept this situation owing to the relatively low scale of enemy opposition.

20. In general, it has been found that essential air force units with a minimum of transport are given a high priority in the assault, but are apt to be shut out in the subsequent follow up convoys at expense of the pre-arranged planned build-up.

21. A number of more detailed observations are given at Appendix 'D'.

ADMINISTRATION

PLANNING

22. The three main HUSKY administrative planning staffs were deficient in specialist officers of the Services, and in junior staff officers. These limited staffs were overburdened with "devilling" work on detail, and forced to rely on the judgment of officers not fully in the picture for specialist advice. They were in sharp contrast to full Army staffs who nevertheless expected attendance by Air Force representatives at all their branch conferences.

23. It is recommended that future administrative planning staffs should be established with senior representation in the following branches, backed by

/.....Page 6

specialist officers and junior staff for detailed study -

(i) Administration and Organisation

(ii) Movements

(iii) Equipment and Engineering

24. The multiplicity of planning staffs located from U.K. to Cairo, caused considerable confusion over spheres of responsibility and over the degree of action being taken by each headquarters.

25. The inclusion of considerable detail in the original M.A.C. Outline Plans resulted in the misuse of this detail by certain Headquarters, who regarded it as final. In order to avoid the possibility of confusion, it is suggested that on future occasions the logistical data to be included in the Outline Plan by the Higher Headquarters should either be limited to overall stock and shipping requirements and the assumptions on which such figures were based, or, if it is considered desirable to include detailed appendices, that such appendices should be described as a guide only to detailed planning.

26. The Air Task Force Commanders staff must be brought into the picture sufficiently early to permit that staff to settle its own Order of Battle and to issue its own administrative instructions to all units destined to come under the Air Task Force Commander for the battle, irrespective of what theatre will mount those units. Similarly, it must be given the opportunity to agree on the establishments required for the specific operation in time for those establishments to be implemented.

27. Assistance from members of the planning staff of the Higher Formation is invaluable to the Task Force Commander, and when circumstances permit, their attachment to the Task Force Commander's Headquarters for the period of the battle is recommended, in order to provide a measure of continuity between the preparatory and executive phases of the operation.

28. The passage of R.A.F. units through American beaches and their subsequent maintenance in American Army areas with the aid of Service Command adds to the complexity of administrative planning and briefing, but it is quite practicable provided the planning staff is in close touch with the American Army Headquarters.

SHIPPING

29. The craft ferry service from MALTA was an unqualified success. It permitted the movement of ground units and supplies to meet daily or even hourly changes in operational requirements.

30. In amphibious operations involving a short sea voyage, it is desirable the Air Forces be allotted in the follow up convoys the exclusive use of so many L.S.T.'s. Thereby flexibility in the calling forward of air forces is assured. This flexibility is unattainable when it is necessary to pre-stow M.T./Store ships.

31. The U.S.A.A.F. is at present entirely dependant on the U.S. Army transportation organisation for stowage and loading. There are no representatives of the Air Corps in the stowage division or on the quayside. It was very difficult in HUSKY to amend the Army decision on Air Force shipping bids to influence the stowage of Air Force units and supplies, to gain the desired tactical dispersal of these units and supplies between ships and craft, or to secure details of an unloading schedule. This applied equally to R.A.F. and U.S.A.A.F. requirements for the Western Task Force area.

32. It is most strongly recommended that in future operations utilizing U.S. Army Task Force shipping, the R.A.F. and U.S.A.A.F. are given proper representation at the Task and Sub-Task Commander's meetings, in bidding, a recognised air member on the stowage committees, and air representative at the docks to "progress" the loading of Air Force units and supplies.

/.....Page 7

BEACH ORGANISATION

33. It is most desirable that an advanced administrative element of the Task Force Headquarters should land as early as possible, to co-ordinate the movement of units and supplies and to make local decisions. This should be needed by the D/A.O.A. or his equivalent, and should be fully mobile with a wireless link.

34. Experience in HUSKY of three different types of R.A.F. Beach Bricks suggests that the best organisation is a Sub-base Headquarters under a Squadron Leader operationally controlling two or three Brick Components each of about 3 officers and 30 men. The exact number and control will depend on the number of brigade fronts used by the Army.

35. R.A.F. Beach Brick Commanders should be attached to the Divisional P.M.L.O., through whose beaches they are to work, as soon as the P.M.L.O. and his A.M.L.O.'s start detailed planning.

36. It is quite clear that the R.A.F. in amphibious operations must be given shipping space for M.T. load carriers, from an S. & T. Column or A.A.P., on the assault convoy. These would be shipped with balanced initial loads of P.O.L., S.A.A. and oxygen, and would remain under the operational control of the R.A.F. throughout.

37. Further detailed lessons on beach organisation and clearance are contained in Appendix "E".

SUPPLIES

38. The rapid advance of the ground forces, and the success of the aerodrome construction engineers in preparing strips permitted a speedy build up of squadrons in SICILY, as supplies were either available or could be ferried from MALTA. The lesson to be drawn is that supplies should be planned on an optimum build up to enable advantage to be taken of a good ground situation. Air Force tonnages involved, even on this basis only represent a small fraction relative to Army requirements of the normal overall shipping lift.

LONG RANGE TANKS

39. Provisioning of long range tanks for a specific operation should be based on three factors:-

(i) Distance over which fighters are expected to operate from their bases in the initial stages.

(ii) Anticipated enemy air opposition

(iii) The estimated time between the launching of the assault and the construction of landing strips in the assault area.

40. Although less than 25% of the long range tanks stocks were expended during HUSKY, it would be dangerous to take this as a yardstick for future operations. Stocks should be capable of meeting a 100% expenditure, calculated in relation to the factors already stated.

SCALES OF NON TECHNICAL EQUIPMENT

41. It is agreed that light assault scales were made unnecessarily meagre, and that more domestic equipment and tentage could have been loaded in unit transport.

42. It is necessary to issue separate scales for assault convoy units, and for subsequent arrivals by follow up convoys.

MECHANICAL TRANSPORT

43. Two G.C.I. stations remained non operational for several days owing to the delay in the arrival in SICILY of their aerial trailer. This was because the height of these trailers was over the maximum of 11 feet 6 inches which can be

/.....Page 8

loaded in an L.S.T. The trailers therefore had to be shipped separately on an L.C.T. under special arrangements.

44. Attention is drawn to the frequency with which these loading difficulties may occur as a result of the current design of certain specialist vehicles which in some cases are as much as 13 feet higgh. Trailers of any description are most undesirable in the early stages of an amphibious operation, owing to the difficulty of and delay in loading, and the greater chance of loss in disembarkation. As present equipment makes the inclusion of outsize vehicles and trailers in an assault unavoidable, they should be embarked on L.C.T.'s.

for

Air Marshal.
Air Officer Commanding,
N. A. T. A. F.

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APPENDIX "A". MOST SECRET

ADVANCED HEADQUARTERS, DESERT AIR FORCE

REPORT ON LESSONS LEARNT FROM OPERATION 'HUSKY'.

List of Appendices :

Appendix "A" - Report on Signals Organization.

" "B" - Report on Air Formation Signals.

" "C" - Report on the Planning and Execution of Operation 'Husky' from the Administrative Side.

General

1. Due to the lack of any serious opposition, most of the lessons that emerged from Operation 'Husky' concerned communications, organization and administration rather than operations. It is, however, important to emphasise certain short-comings and mistakes which would certainly have had serious consequences had the enemy opposition been stiffer than it turned out to be. The main features which the Desert Air Force wish to bring to the notice of higher authority are dealt with in the following paragraphs. Full detailed reports on the Administrative, Signals, and Air Formation Signals Aspects are attached as Appendices. Appendix "C" (Administrative Lessons) is of general interest and should be considered as part of the main report.

Signals

2. Details are in Appendix "A".

3. The main difficulty under which signals organization had to function was the lack of sufficient suitable frequencies. This, in turn, was due to the large number of Headquarters concerned in the operation, all of whom had to have full signals facilities. It is not within the province of this Headquarters to comment on the general lay-out and system of control, but it is quite certain that there would have been a complete signals breakdown in the operational sphere had we met with anything but very light enemy opposition. As it was, "Most Immediate" signals were taking up to twelve hours to get through and the usual battle of prierities started, resulting in abnormal delays and loss of operational control.

4. The system of controlling light bombers working from the mainland was necessarily complicated and the signals organization was quite unable to compete with this problem, again mainly because of the dearth of suitable frequencies. It is therefore suggested that in future combined operations where, in all possibility, both American and British Forces will be taking part, the number of Headquarters will have to be rigidly cut down and that the general system of control must be based on the capacity of the signals organization to serve it efficiently.

5. The Order of Battle for 'Husky' showed a large number of small independent signals units, each one as a separate entity, whereas their sole purpose was to provide communications for some operational or administrative formation. It is strongly recommended that they should not be shown as units but merely as part of the formation which they are intended to serve - i.e. Forward Fighter Control, Headquarters Desert Air Force, Wings, 211 Group, etc. Signals units tend to form their own "Empire" and to resist control by operational formations. Only in rare cases is it necessary to have "pure" signals units constituted as such.

Air Formation Signals

6. Full report at Appendix "B".

7. It has already been proved many times that an efficient system of

.... /P.2.

landline communications is the basis of success in mobile air operations in the field. The highest priority must therefore be given to landing sufficient personnel and material during the early stages of the operation. For instance, the Desert Air Force had been made responsible for co-ordinating the operations of its own units and those of 12th Air Support Command in SICILY; and yet it was over a week after "D" Day before a land-line link could be established between our Forward Fighter Control organization at PACHINO and that of the 12th Air Support Command at GELA. The importance of this lateral link had been emphasised many times before the operation started.

Personnel

8. It was most noticeable that personnel of all categories who had not had experience of mobile operations were far less efficient than those who had worked together in previous operations in the desert or North Africa. This is no reflection on the individuals concerned, but it will be worth taking considerable trouble when planning future combined operations to ensure that at least a proportion of experienced and reliable units and personnel are put into key positions. This applies particularly to A.A. units detailed for the defence of airfield Air Formation Signals Units, R.A.F. Signals Units, and Servicing Commandos. Further recommendations concerning Servicing Commandos will be found in para. 19 of Appendix "C".

Anti-Aircraft Defence of Airfields

9. The A.A. units detailed for the defence of airfields in SICILY came from different Army formations; some from England, some from North Africa, and some from Middle East. The numerical strength allotted to defend forward airfields was more than adequate, but would in fact have proved ineffective had the enemy made any determined attacks. This was because none of the usual technique which had been so laboriously acquired by the Eighth Army and Desert Air Force was put into practice. There was none of the usual co-ordination between the R.A.F. and A.A. Commanders and, in the early stages, no central A.A. authority to take Command of the various A.A. units concerned. The A.A. defence of aerodromes captured during the first stages of a combined operation is vital and how ever inconvenient it may be from the administrative point of view, every effort ought to be made to place A.A. Units who have the necessary experience of working with the R.A.F. in mobile operations into such key positions. It was most unfortunate that the 12th A.A. Brigade with its long experience in the desert should have been relegated to a static defence role and units with no previous experience of the special requirements of aerodrome protection substituted.

Construction of Airfields

10. Too many authorities were concerned with airfield construction and this resulted in some unnecessary work being done. It is admitted that the original plan catered for casualties which never occurred and that more aerodrome reconnaissance officers and controlling personnel than were really needed became available in the PACHINO district. A conference recently held at Headquarters, Tactical Air Force, has resulted in an organization being laid down which is perfectly satisfactory to all concerned. It is worth mentioning here, however, that the responsibility for laying down aerodrome construction policy and priorities must remain in the hands of the R.A.F. Commander concerned, otherwise there will inevitably be confusion, leading to the uneconomical use of the plant and labour.

Close Support Bombing

11. As already stated, the control of tactical bombers in the circumstances was a very difficult problem, particularly as the bombers had to meet the needs of two separate Armies. Although the advantages of a centralised bomber force which can be switched to either front are undoubtedly great. It is impossible for anyone not in the closest touch with the Army Commanders concerned to appreciate, in time, which are the right targets to attack. It would probably have been better to have split the Bomber force, placing some under direct control

of Desert Air Force and some under 12th Air Support Command, leaving it to these two authorities to arrange between themselves to help each other out when necessary.

12. It is not proposed to put forward further argument here on what has become a difficult and controversial subject. But one thing is certain; it is impossible to give timely and accurate close support with light and medium bombers unless, together with fighters and fighter bombers, they are under the direct operational control of the R.A.F. Commander working with the Army concerned. Bombers worked on the Daimler hire system do not give the best results in close support.

/signed/ C.B.R.Pelly

A/Cdr
for Air Vice Marshal,
Air Officer Commanding,
Desert Air Force.

AHQDAF/56/31/Air
15th August, 1943.

DISTRIBUTION:

H.Q. Tactical Air Force	10 Copies.
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APPENDIX "A" TO REPORT ON LESSONS LEARNT FROM OPERATION 'HUSKY'.

REPORT ON SIGNALS ORGANIZATION

NOTE: This report deals only with W/T, R/T and R.D.F. - Landlines have been dealt with separately.

GENERAL

1. During the period up to D plus 10 Air Headquarters Desert Air Force was located in MALTA. This put a considerable strain on MALTA'S signals and cypher facilities, and it was necessary to set up a separate Desert Air Force Cypher Office to deal with the Book Cypher traffic. Four additional W/T Channels were set up by Desert Air Force to augment the inter Command W/T Stations. These were found invaluable as certain operational W/T Links could function without going through the normal traffic office.

2. Broadly the planned communications organization was workable and W/T contact was made in the majority of cases, but communications were not always satisfactory due to the number of causes as follows:

(i) Interference. Owing to the bulk of communications being short range the congestion in the 2 to 4 megacycle band was considerable. The only remedies seem to be

(a) use minimum power necessary.
(b) use high grade receivers.
(c) use medium and low frequencies where possible.
(d) All units must have accurate wave meters and must check all frequencies every hour.
(e) Operators must be trained to read through interference.

(ii) Routeing. Owing to difficulty of communication and uncertainty of location of units routeing was not easy and responsibility schedules were changing very rapidly as units moved. Messages usually got through, but delays were often considerable, and the subject matter 'dead' on receipt. It is essential that units without signals facilities should be told which signal office to use.

(iii) Laterial Communications. These were almost non existent due to inexperience in mountainous country, and MALTA was used extensively for linking; communication with XII A.S.C. was particularly difficult and it took about three weeks to get lateral communications working satisfactorily.

EQUIPMENT

3. W/T equipment functioned satisfactorily for the period for which it was planned to operate, but this was in general for three days only after which time power supplies and motor generators were in need of overhaul. All units must be capable of functioning fully and continuously for at least a fortnight, for this the power supplies were totally inadequate. Small patrol electric sets will not in general run continually, and mains power with suitable rectifiers and charging boards must be provided with every unit so that the small P.E. sets are used for emergency only or on vehicles operating singly. Even then P.E. sets and storage batteries must be double banked since continuous float charging is not practicable.

4. With all V.L.P. equipment both W/T and V.H.F. particularly the power pack will not stand up to continuous running and spare power packs must be provided.

5. The use of V.H.F. aircraft for working aircraft was not satisfactory. The volume control on the aircraft receiver is adjusted for the reception of the

T.1131, when transmissions from the TR.1143 are being received by aircraft the signal strength is weak and unless the pilot is trained to receive weak signals he will not notice the ground station. On the other hand if the aircraft receiver has the volume tuned up, the pilots suffer from blasting when receiving the T.1131. The output from the TR.1143 could be improved if units were provided with test equipment so that transmitters work at maximum efficiency and the aerial should be capable of being mounted on a separate mast and a suitable length of feeder so that it can if necessary be mounted on the roof of a building or in a tree. It is doubtful if satisfactory results will be obtained unless the T.1131 and R.1132 is used at all ground stations required to direct aircraft for purposes other than local aerodrome control.

6. Considerable trouble was experienced with the TR.1143 and SCR.522 power pack. This is not designed for continuous running and the drain on the batteries is considerable. If the TR.1143 has to be used for transmitting it is essential that the battery driver R.1132 be used with it, to avoid running the 1143 power pack when listening out.

7. The R.1132 and TR.1143 combination from ground point to point work using rhombic aerials has proved entirely satisfactory. This equipment was supplied to No. 1 M.O.R.U. Unfortunately similar equipment supplied from U.K. for use by A.H.Q. was sunk.

ORGANIZATION

8. The assault sections suffered very few losses, and were able to get into operation quickly. Delays were experienced when personnel arrived separated from their equipment. This was particularly noticeable with Units coming from U.K. The vehicles which did not get sunk did not get unloaded until several days after the personnel who were camped without any domestic equipment; fortunately the weather was fine.

9. The system whereby the Air Headquarters Signals Section came from U.K. was not satisfactory. Units must move with their signals sections. The Headquarters set up with only a skeleton section brought from MALTA and was not fully operational from a signals point of view until 7 days later, when a portion of the U.K. component arrived.

FIELD FORCE H.Q. SIGNAL SECTIONS AND A.L.G. SIGNALS SECTIONS.

10. These sections worked hard and well, apart from the equipment difficulties mentioned above, but they present considerable difficulties from the administrative point of view. The principle of attaching an M.P.R.U. to an A.L.G./Signals Section and expecting it to function as a nucleus Sector is unsound. It is recommended that the Field Force and A.L.G. Signals Sections be reconstituted on the following lines.

(i) Field Force Signals Sections.

These are intended to function as Signals Centres. During a landing and until aircraft are operating from the occupied territory the important information comes first from the beaches or ports through which all units and supplies pass: As soon as a landing ground is being prepared for operation the centre of interest moves from the beach to the landing ground where the supplies and servicing facilities are wanted. Field Force Signals Sections should therefore be disbanded and split into two, one part being integral with the Beach Brick or Port Embarkation Unit, to communicate in the first instance direct with the base. The second part should be absorbed into the Wing Signals Section which will initially occupy the L.G. This Section will then set up nucleus Wing communications direct with base and also join the link with the beaches or Ports, by the time the Wing Headquarters and aircraft arrive communications will be fully established. It is essential that the signals section arriving first at the landing ground shall have

two low power transmitters and ample power and charging facilities in addition to stand by V.L.P. packsets.

(ii) A.L.G. Signals Section and M.P.R.U.'s.

These Sections should be disbanded and absorbed into the main Sector (in this instance 211 Group) under which they will operate. The Sections should then be reformed into Forward Fighter Control Units with personnel who know the methods used by the main Sector when operating aircraft. These F.F.C.U.'s should be equiped with at least two V.H.F. channels for working aircraft using T.1131/R.1132 equipment, a V.H.F.: telephone link to the main sector, two L.P. W/T Channels for working main Sector and Wings and V.L.P. W/T plotting channels. An advanced warning system consisting of W.U. posts, L.W. Sets and if necessary a G.C.I. and a C.O.L. should accompany this Unit. The Unit being part of the main Sector is sufficiently flexible to admit of its being either used as the advanced party of the main Sector, or being reduced to an absolute skeleton party to accompany forward troops.

SIGNALS ADMINISTRATION.

11. The M.S.S.U.'s have proved invaluable technically, but no plan has been taken into consideration the administration of small signals units such as A.M.E.S. Station. These Units manage to draw their rations but distribution of Mail and comforts and general domestic supervision presents a problem. It is strongly recommended that the M.S.S.U.'s be strengthened so that they may be responsible for both technical maintenance and administration of isolated signals units.

CODES AND CYPHERS.

12. The allocation of cyphers has been entirely satisfactory. Distribution has been a problem due partly to lack of transport but mainly to lack of time. The cypher organisation must be planned well ahead so that rush distribution is eliminated as far as possible.

13. Cypher traffic at Air Headquarters has been eased slightly by the temporary introduction of a fast courier air Service for delivery of daily serviceability and stock returns. The major problem is the distribution of signals. It is realised that this is a registry responsibility but where operational and priority traffic is concerned distribution must be directed from the Cypher Office. The bulk of the traffic at Headquarters is typex, and provision must be made for a competent typing staff for copying signals so that the original typex message may be kept by Cyphers.

14. Provision for the safe custody of S. & C. publications is inadequate. Every Headquarters should be provided with a secure van for storage of surplus books, only current books being kept in the Cypher Office.

CONCLUSION.

15. The lessons learned may be summarised as follows:-

(i) Power supplies and charging facilities must be over insured. Small P.E. sets should be used for short intervals only - adequate spares for P.E. sets must be provided.

(ii) V.H.F. receivers R/1132 must be used at all V.H.F. ground stations.

(iii) V.L.P. equipment must be always backed up by L.F. equipment for use when communication is difficult.

(iv) Sections should train and work together if possible prior to an operation and they must always move with their equipment, otherwise they are a liability.

(v) Small separate Signals Units such as M.S.U.'s, A.L.G. Signals Sections must be eliminated as far as possible, much discomfort and unnecessary

paper work is caused by lack of administration co-ordination, and operational efficiency suffers as a result.

(vi) Great use could be made of V.H.F. telephone links to bridge gaps in trunk telephone routes, but equipment must be designed and developed for this purpose and not improvised.

(vii) A.S.P.'s must hold spares to back up replacement stocks held by M.S.S.U.'s.

(viii) In close country units must be sited so that point to point and air to ground communications can operate at maximum efficiency.

(ix) Adequate load carriers must be supplied to signals units to carry personnel and domestic equipment without overloading technical vehicles. A light vehicle must be provided for routine runs. e.g. rations.

R. D. F.

Lessons learnt on Operation 'Husky'.

I. The general briefing for all M.E. Units was satisfactory after modifications. The briefing was not so good for Units from U.K.

2. The general condition of equipment sent from the Middle East and North Africa was poor, much evidence of rush jobs and shortage of equipment.

3. The splitting of personnel and equipment on the first stage of journey (TRIPOLI to MALTA) was very inconvenient, as insufficient time was given to G.C.I. Units to assemble and operate with their Controllers and Night Fighters with whom they were scheduled to work.

4. No evidence of briefing for G.C.I. or M.P.R.U. controllers.

5. The splitting of all A.M.E.S. (not L.W.S.) into A and B parties reduced the R.D.F. operating efficiency on the operation.

6. The lack of R.D.F. co-ordinating personnel for the operation.

7. The V.H.F. equipment supplied to the G.C.I. "A" Party was inadequate and should have been twin channel high power 1131/32.

8. The L.S.T. used for seaborne R.D.F. should not be used for transporting other equipment.

9. The G.C.I. on L.S.T. should not have to operate where the ship is beached.

10. The M.P.R.U. were unable to cope owing to poor V.H.F. W/T facilities and shortage of personnel.

11. W/T communications were not satisfactory during the early stages of the operation.

12. The general standard of W/T operators was low, not fully versed in erecting aerials and tuning of their equipment.

Suggestions for future Operations.

1. All briefing for future operations should be done by one central body for all units concerned.

2. All Units should have at least one week under operational conditions, to test and adjust gear before embarking.

3. All R.D.F. equipment should be embarked on L.C.T. Mk. IV as complete units with full personnel.

4. A Senior Air Staff Officer of Adv. H.Q. or the operating Group should be delegated to brief and supervise all Sector and G.C.I. controllers prior to and during future operations.

5. The A.M.E. Stations should not be split into two parties and should embark and travel as one complete unit.

6. An R.D.F. Officer, per area or batch of A.M.E.S. should be delegated to co-ordinate all communication channels and liaise between R.D.F. Units, their Sectors and local G.O.R. IX and if necessary resite stations according to local conditions.

7. If the A.M.E.S. are not divided into two parties, the V.H.F. equipment (supplied and travelling with "B" party) is adequate for operations.

8. Seaborne R.D.F. should have exclusive use of L.S.T. or L.C.T. to obviate the necessity of a G.C.I. having to operate on the landing beach, possibly under high cliffs etc.

9. G.C.I. on L.S.T. or L.C.T. during operations should be anchored away from Convoy during the landings.

10. (i) The day and night fighter controlling unit or group should arrive not later than D + 5.

(ii) The N.P.R.U. or Forward Fighter Control should be enlarged. This would necessitate larger and better equipment and to include its own signals Section with extra personnel and A.F.S. Section.

(iii) This F.F.C. Unit should comprise of the following party:

I F.F. Control Unit.
I Field Force Signals Unit to amalgamate with the F.F.C. after the actual landing.
I G.C.I./C.O.L.
4 L.W.S.
I/2 W.U. Screen.

(iv) The establishment of F.F.C. should include filter personnel to present a clarified picture to the Controller.

11. Better communications could be established if greater attention were paid to the use of more powerful modern equipment and selection of frequencies.

12. The personnel selected for future operations should be efficient and capable.

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Proposed constitution of Forward Fighter Control Unit.

CHANNELS.

V.H.F. to aircraft "A" and "B".

V.H.F. R/T to Main Sector.
H.F. R/T to aircraft.
H.F. R/T inter F.D.O. wave.
V.H.F. D/F.
W/T to L.W.S. (two channels)
W/T to W.U.
W/T to C.O.L.
W/T to G.C.I. (stand by to L/L)
W/T to Sector and A.H.Q.
W/T to Wings.

EQUIPMENT.

2 single channel T.1131/R.1132 vehicles plus power.
R.1132 TR.1143 with rhombic aeriels.
Collins 18Q.
SCR.274.
Vehicle type 105.
2 Collins 18Qs.
I Collins 18Q.
I Collins 18Q.
I L.P. Specialist pair or trio with V.L.P. channel fitted.

PERSONNEL.

I S/Ldr. 2 F/Lts. Controllers.
I F/O. Signals.
2 F/Os. 2 Sgts. Cyphers.
I Cpl. 17 A.C. R/T Ops.
I Sgt. W.O.M.
I Cpl. 23 A.C. W.Ops.
I Cpl. 3 A.C. W.M.
2 Motor Cyclists.
3 A.C. A.C.H.
2 Cooks.
3 D.M.T.
I Cpl. F.M.T.
I A.C. M.T.M.
I Cpl. 12 A.C. plotters.

The above equipment can be met by the following types of Middle East Signals Specialist Vehicles.

M.E.1.	I.
M.E.2.	I.
M.E.3.	2.
M.E.21.	5.
M.E.23.	1.
M.E.30.	2.
M.E.53.	I (Cypher and Traffic Off.)
Type 105.	I.
Ops Room Vehicle.	I.
Vans 15 cwt.	1.
Jeeps.	I.
Motor Cycles.	2.
Tenders water.	I.
Tenders 3-ton	3.

MOST SECRET

APPENDIX "B" TO REPORT ON LESSONS LEARNT FROM OPERATIONS "HUSKY".

REPORT ON NO. 4 A.F. SIGNALS

1. The original disembarkation dates and actual dates of landing of Units of 4 A.F. Signals are shown under columns (a) and (b) below.

Unit	(a) Date	Place	(b) Date	Place	Remarks
37 Wing Tp. less det.	D.	Bark South	D 1	Bark South	
39 Wing Tp. less Det.	D.	Bark East	D	Bark East	
Det.37 Wing	D.3	Bark South	D 3	Bark South	
Det.39 Wing	D.3	Bark East	(i)D	Bark East	(i) Personnel only
			(ii)D 4	Bark East	(ii) Transport.
111 Line Tp.	D.3	Bark East	(i)D	Bark East	(i) Personnel only.
			(ii)D4/5	Bark East	(ii) Transport.
110 Line Tp. less Det.	D.3	Bark South	D 3	Bark South	
14 Wing Tp.	D.	Cent.	D	Cent	
2 Squadron	D.3	Cent	D 7/8	Cent	
38 Wing Tp.	D.3	Cent	D 7/8	Cent	
109 Line Tp.	D.3	Cent	(i)D 5	Cent	(i) Personnel only.
			(ii)D 7/8	Cent	(ii) Transport
3 Squadron	D.14	Bark South	Not arr.		Reported to be delayed 9 days.
Det.110 Line Tp.	D.14	Bark South	Not arr.		
38 Op. Tp.	D.14	Bark East	(i)D 14	Syracuse	(i) Transport due to be disembarked 4/5 days time. 1 Off, 38 men unemployable.
4 A.F.Sigs less foregoing units.	D.14	Catania	D 14	Syracuse	Transport due to be disembarked 4/5 days time. 11 Officers 189 O.R.'s unemployable.
2 Coy 7 A.F.Sigs.	D 5	Catania	(i)D 9	Augusta	(i) 8 Officers, 224 O.R.'s disembarked. M/T stores sent to Malta, not yet returned. Personnel unemployable
49 Wing Sec.	D 5	Catania	(i)D 9	Augusta	
50 Wing Sec.	D 5	Catania	(i)D 9	Augusta	
49 Line Sec.	D 5	Catania	(i)D 9	Augusta	
128 Line Sec.	D 5	Catania	(i)D 9	Augusta	

2. It will be noted that

(i) With the exception of 2 Squadron H.Q. who arrived 8 days after the operations commenced, no executive officers were due to land until D 14. Similar conditions apply to Rgt. H. Q. Officers.

(ii) That personnel were disembarked long before M/T and stores and consequently were left in idleness and were only an additional liability to ration.

(iii) That only 2½ Line Troops were due to land at D 3 and that two of these troops were unable to function owing to absence of stores until D 5 and D 8.

(iv) 20 Officers and 451 O.R.'s are unemployable owing to absence of stores and M/T.

.../P.2

3. In any future operations I would suggest that

(i) A nucleus party of Regt. H.Q. including C.O., Line Recce Officers, Draughtsmen and a clerk should land on D Day. It is considered essential that Line Recce Officers should be landed as early as possible and that a Senior Officer should be available to co-ordinate the work of the Sections landed with the early parties.

(ii) Squadron Headquarters should be landed at D 3 at latest to co-ordinate work in their area and administer their Troops.

(iii) As large a portion as possible of Line Troops should be landed as soon as possible after D Day or held ready to land immediately a reasonable degree of security has been secured.

(iv) If it is impossible to ship the heavy transport of Line Troops in the early stages, the Troop should be furnished with an increased number of 15 cwts. trucks so augmenting the number of small detachments for reconstruction of P.L. routes.

(v) Line Mtce. Troops should be landed immediately behind the Line Troops.

(vi) All Line and Line Mtce Troops should travel with their vehicles and with stores loaded on such vehicles. This applies to all Signals Sections.

(vii) All Detachments of the line and Line Mtce. Troops should carry as much cable as possible with a reasonable proportion of copper wire and P.L. stores and working equipment for P.L. reconstruction.

(viii) No reliance can be placed on the early provision of Lines by Army signals for R.A.F. purposes. In the present operations Corps Signals moved too fast and were too short handed to provide the COMISO-PACHINO lateral.

(ix) Acclimatised troops should be landed in priority to new troops, i.e., in the present operations, it would have been better and much more efficient to have landed 4 A.F. Signals before 7 A.F. Signals.

(x) It is borne in mind that in the event of rough weather troops travelling in L.C.I.'s or L.C.T.'s may in some cases be unfit for work for 24 hours.

APPENDIX "C"

MOST SECRET.

ADVANCED HEADQUARTERS, DESERT AIR FORCE.

Report on the Planning and Execution of Operation "Husky" from the Administrative side.

This report is intended to summarise the experience gained by the planning staff in Cairo known as force 545 and by the Administrative Staff of Headquarters, Desert Air Force in the course of the planning of operation "Husky" and subsequently in Malta and Sicily.

A. PLANNING STAFF.

1. Formation of Force 545. Force 545 was responsible for all detailed planning for the Eastern Air Task Force, which subsequently became the Desert Air Force. Force 545 did not commence work until the end of March 1943, nor were any representatives of A.H.Q., Western Desert included in the Planning Staff before the middle of April. This was too late to enable the experience gained in the Western Desert and Tunisia to be utilised to the fullest extent. In particular, Force 545 had no proper opportunity of settling the detailed Order of Battle or of fixing a satisfactory time table for the entry of Units into Sicily. This had to a considerable extent already been done by Force 141 in Algiers. (That Units were, in many cases, shipped to Sicily in a different order from that originally laid down was due entirely to the flexibility of the ferry services from Malta and North Africa owing to the strong representation of R.A.F. interests on the Ferry Control Committee in Malta - see Part B (Movements)).

2. Planning and Executive Responsibility. The multiplicity of planning staffs involved in "Husky" was probably inevitable in view of the complicated hierarchy of Air Forces in the Mediterranean and the fact that two separate task forces were destined for Sicily. It did, nevertheless, lead to far too large a number of planning instructions and memoranda all covering much the same ground. What should be ensured in the future is that (1) the planning staff representing the "Task Force" Headquarters is brought into the picture at as early a stage as possible and (2) this planning staff works closely with, and preferably at the same place as that Headquarters, as well as with the planning staffs of the other services. In "Husky" planning, the 8th Army H.Q. in Cairo worked on this basis, but the administrative staff of Force 545 consisted of only five officers (1 W/Cdr. and 1 S/Ldr. Admin Plans, 1 W/Cdr. Movements, 1 S/Ldr. Equipment and 1 S/Ldr. Engineer) while the whole of A.H.Q., Western Desert was west of Tripoli, some 1500 miles away. This weakness was even more marked on the Air Staff of Force 545 which contained no representatives of A.H.Q., Western Desert at all. In consequence, it was often extremely difficult for Force 545 to take action in matters of policy on which descisions could be made on the spot by their Army and Navy colleagues. Moreover it is often difficult to decide where the planner's responsibility ends and that of the executive begins. This difficulty is lessened if the two staffs are working closely together.

3. Air Plan. Administrative planning by Force 545 was seriously hampered by the continued lack of a firm Air Plan. The need for this at the earliest possible moment cannot be too strongly emphasised, particularly where shipping priorities are concerned.

4. Provisioning. On this there are two comments to be made as far as the planning staff are concerned.

(a) In order to meet the Air Staff's desire for flexibility it is advisable where different types of fighters and fighter-bombers are includdd in the force, to ship ammunition and bombs for all types in the initial stages, regardless of the air plan's movement programme, though it is not necessary to double up on POL.

(b) The following scale of provisioning for long range tanks was laid down by Mediterranean Air Command.

On sorties from Malta:-
Spitfires - Tanks carried and jettisoned on every sortie.

Kittyhawks - Tanks carried on 50% of sorties and all jettisoned.

On sorties from Sicily:-
Spitfires - Tanks carried on 75% of sorties, 25% being jettisoned.

Kittyhawks - Tanks carried on 50% of sorties. 25% being jettisoned.

This scale was considered by Force 545 to be excessive and events confirmed this view. While operating from Malta, the average expenditure of tanks by the three Spitfire Wings was less than 25% and in Sicily long range tanks have so far been scarcely used at all. The use of long range tanks by the Kittyhawks has been negligible, both in Malta and in Sicily, as they have normally been carrying 250 lb. bombs. No doubt the proportion of tanks jettisoned was influenced by the number of combats being far less than expected, but it is considered that future provisioning should accord more closely with actual experience. Long Range Tanks take up a disproportionate amount of shipping space and provisioning of this kind is a source of embarrassment to the A.S.P. which has to carry the tanks.

5. Security. There was a tendency to over-emphasise security in the earlier stages. It is important that specialist staff officers at the executive headquarters should have sufficient knowledge of the plan to enable them to do their work of mounting the force efficiently from the outset. From this point of view, again, it would have been better had Force 545 been in closer touch with A.H.Q., Western Desert.

B. MOVEMENTS.

6. The Movement Plan was necessarily complicated. Not only were Units and stores destined for Sicily drawn from widely separated places, but many Units of the Desert Air Force had to be withdrawn for re-fitting in Egypt at the close of the Tunisian campaign. In general, the movements plan worked extremely smoothly, and great credit is due to the various movements staffs concerned.

7. Assembly of Units in Malta. Malta was used as a forward base for Advanced Headquarters, Desert Air Force, all its fighter Squadrons and many other Units of the force. Ferries consisting of L.S.T's. L.C.T.'s, L.C.I.'s and M.T. Stores Ships were operating from Middle East, Tripoli and North Africa to MALTA. Shipping space for R.A.F. Units required in Malta was allocated by Force 545, and the extent of such allocations advised by them to the Commands interested. This system worked well as far as Middle East and Tripoli were concerned. North Africa possibly did not appreciate the necessity for Force 545 allocating shipping space to them for Units which they were shipping to Malta. This was necessary because space on the Sousse/Sfax-MALTA ferry was controlled and allocated by 8th Army in Cairo, and consequently Force 545 had to estimate the requirements of R.A.F. Units in North Africa. Events proved the estimates to be reasonably reliable.

8. Movement of Units to Sicily.

(a) Ex Middle East. Ship-to-shore convoys were mounted from both Egypt and the Levant. Every endeavour was made to ship unit personnel together with their M.T. in the same ship, but owing to the physical limitations of M.T. stores ships, this was not normally possible. A careful check was kept on the P.M.L.O.'s and M.L.O.'s of Army Formations to ensure that the stowage of R.A.F. Units and stores was such as to permit their discharge at the appointed time. In this connection, it is considered necessary to have an R.A.F. Landing Officer to work alongside the Army Landing Officer.

(48)

The C.O., of the R.A.F. Beach Brick component through whose beach the particular landing will be made is the obvious choice. It will ensure that he knows the plan and enable him to deal with any attempted alteration of R.A.F. priorities when the operation is in progress and over which the Air Headquarters have no local control.

(b) Ex. U.K. Units were shipped under arrangements made by Air Ministry. Units and stores were well dispersed in the various ships, and lists showing allocations of Units and stores to ships were received from Air Ministry in good time. These allocation lists which were received from both U.K. and Middle East are invaluable to the Headquarter's Staff. They are the only means by which it is possible accurately to assess losses and they form a basis on which to plan priority of discharge of the ships, if port or beach capacities exceed or fall below those expected. Unfortunately, owing to Catania not being available as early as planned and to air attacks on Syracuse and Augusta, M.T. store ships from U.K. were in many cases diverted to Malta for some days and personnel were concentrated for several days at Augusta without any equipment whatever, all of which was loaded in their M.T.

(c) Ex. MALTA. The Malta ferry was the most complicated movements problem of the whole operation. A "Ferry Control" was formed by the 8th. Army, and the R.A.F. were represented by A.O.A., D.A.F. and Movements, D.A.F. At the outset, Chief of Staff, 8th. Army ruled that R.A.F. requirements from Malta were to be first priority. This allowed the Air Staff great flexibility and meant that Squadrons and accompanying ancillary units could be shipped into Sicily at short notice and in a different order from that originally laid down. Thus, reliance on Air transport in order to ensure flexibility was to a large extent unnecessary. A Squadron whose aircraft left Malta for Sicily at any time during the day, could be sure of the arrival of its ground party the following morning. In actual fact, nucleus Squadron servicing personnel were sent into Sicily ahead of their aircraft.

The success of the Malta Ferry was to a large extent due to the fact that the R.A.F. controlled their own movements. At the morning Ferry Control meeting a bid was made for the requisite number of craft. These craft were allocated to the R.A.F. who used them and loaded them according to their own priorities. Priority lists were supplied daily - sometimes hourly - by D.A.F. Movements to Malta Movements who carried through the Movements accordingly.

9. The Ferry System. The Malta Ferry worked extremely well and enabled minute-to-minute changes to be brough about. It is suggested that in any future planning of combined operations more use be made of ferrying by the R.A.F. It would enable pools of transport, loaded with balanced loads of POL., explosives, etc., to be kept at the forward base. In this way, the R.A.F. would not depend for supplies solely on the discharge of M.T. stores ships, which is often delayed by labour troubles, lack of port facilities, etc. It would enable emergency loads to be sent to forward landing grounds with minimum delay. The subsequent build up would, of course, still have to be shipped in M.T. stores ships.

A further advantage of the ferry system is that normally it is possible to ship Unit personnel and M.T. complete in the same ship. Even if the number of personnel intended to accompany M.T. in the L.S.T.'s or L.C.T.'s exceeds the capacity of these craft it is nearly always possible to obtain an L.C.I. to ensure arrival of personnel at the same time as their M.T.

10. Capacities of landing ships and craft. It may be useful to tabulate the average capacities of these vessels.

An L.S.T. averaged 55/60 R.A.F. M.T. and 250 personnel.
An L.C.T. (Mk.3) averaged 10/11 R.A.F. M.T. and 50 personnel.
An L.C.T. (Mk.4) averaged 12/14 R.A.F. M.T. and 50 personnel.
An L.C.T. (either Mk.3 or 4) averaged 200 tons D.W. stores (full).
An L.C.I. (L) averaged 200/250 personnel.

Experience proves that it is always possible to add at least one jeep to an L.S.T. or L.C.T. when loading is complete and it would be useful to keep a pool of these vehicles near the embarkation points in future operations and use them to fill in odd space when they are required.

C. BEACH ORGANISATION.

11. In general, the R.A.F. Beach Brick Components were successful in carrying out the tasks for which they were designed and there is no reason to suppose that the case would have been different had stiffer opposition been encountered in the early stages of the invasion. There is no doubt, however, that an advanced element of the Force Headquarters should land as early as possible; the presence in Sicily of responsible Staff Officers from Advanced Headquarters, D.A.F. as well as the C.O.'s. of 121 M.U. (A.A.P.) and 40 A.S.P. was invaluable in the early stages in co-ordinating the movement of Units and supplies to their appointed destinations. Conversely, no staff officers from formations other than the Force Headquarters should be present as they are liable to cause confusion by giving orders without any clear knowledge of the situation.

12. Briefing of Brick Commanders.

It is essential that the C.O.'s. of the R.A.F. Brick Components should be fully briefed, and this should not be left till the last moment. The briefing of the Middle East Bricks was satisfactory, but it is thought that that of the North African and U.K. Bricks left something to be desired. If the recommendation made in paragraph 8 (a) of this Report is adopted, the C.O.'s of the Brick Components should be more fully "in the picture" than was possible in Husky.

13. Communications between Beaches and Force H.Q.

This was unsatisfactory - on "D" day signals were received by A.H.Q. from only one Beach Brick - and lack of full information made necessary the shipment of covering stocks from Malta. The information contained in Stock Returns and other signals from the beaches is vital in an operation of this nature and it is accordingly recommended that each R.A.F. Brick Component be provided with its own W/T Link with A.H.Q.

Stock signals were not in all cases made out in an intelligible form and it is essential that POL. should be shown in gallons and ammunition in numbers of rounds.

14. Equipment for Beach Bricks.

Experience proved that it is unsatisfactory for R.A.F. components not to be fully self-contained units by the time they report to the Army Brick with which they are to work. The scale of Unit equipment detailed in Appendix "A" to this Report is therefore recommended for each Brick Component.

15. Sign Posting.

It will be seen that sufficient paint and similar equipment is included in the suggested scale of equipment to enable thorough sign-posting to be carried out. The importance of this cannot be over-emphasised. Lack of sign-posting on the beaches caused endless delay and inconvenience and was largely responsible for the delivery of supplies to the wrong places. Similarly, the H.Q. of the R.A.F. Component should be marked by an R.A.F. ensign so that it can be easily found.

16. Beach Brick Establishments.

The establishment LWE/ME/2018 dated 13th May 1943 proved generally satisfactory, but the following amendments are recommended:-

The deletion of 2 Clerks/G.D. (leaving 1)
The addition of 1 Cook and 1 Medical Nursing Orderly.

To make the Unit self-contained two 3-tonners are also needed.

17. Handling of POL. and Explosives.

The plan did not envisage the entry of an A.A.P. (121 M.U.) into Sicily until D + 14. Until then, it was supposed that supplies of POL. and explosives would be handled by the dumps formed and controlled by each Beach Brick. In fact, dumps of 121 M.U. were opened at Pachino on D + 3 and at Priolo, north of Syracuse, a few days later. These dumps proved invaluable in centralising and controlling the flow of supplies from the beaches. It is accordingly strongly recommended that in any future operations of this nature an advance section or sections of the A.A.P. should land as soon as any Beach Brick has been successfully established in order to receive and control all supplies of POL and explosives coming in through each set of beaches. This system has the following advantages:-

(a) It enables a better dumping area for supplies to be found than is usually available near the beaches.

(b) Undue dispersal of stocks is avoided and A.H.Q. staff is enabled to keep a close check on supplies.

(c) The number of daily stock signals to A.H.Q. can be reduced, thus assisting the signals organisation.

(d) Servicing Commandos and Squadrons can find their supplies more readily.

(e) Diversion of stocks to different areas, as new landing grounds become available, is simplified.

(f) There is less danger of R.A.F. supplies being lost in Army dumps. This happened frequently on the beaches during the early stages.

(g) When supplies are landed over a number of beaches, it is easy for bombs to become separated from their components. Concentration of stocks in an A.A.P. dump enables this to be corrected.

(h) Finally, the C.O. of the A.A.P., landing on D + 1 or D + 2, will be able to take action in accordance with any variation in the plan which could naturally not be included in the briefing of the R.A.F. Brick components.

Each advance section of the A.A.P. should have sufficient M.T., say 10 three-tonners, to enable it to work its Park.

18. Army Responsibility to R.A.F.

Relations between 8th Army and the Desert Air Force are very close and the Army on the whole fully appreciate their responsibilities as regards the provision of labour and transport for the handling of R.A.F. supplies. But it was evident that this was not clearly understood by Units fresh to 8th Army and it is recommended that in future care is taken to ensure that the position is thoroughly appreciated by Army Beach Commanders, M.L.O's., A.M.L.O's. and Transport Officers before the commencement of the operation. Stress should be laid on the fact that, while R.A.F. supplies are small in quantity by comparison with Army stores, they are generally of the highest importance and must be given the priority of discharge and handling accepted by the Army Planning Staff.

D. ENGINEERING: AIRCRAFT MAINTENANCE AND SERVICING.

19. Servicing Commandos.

(a) These Units were not used to the extent anticipated. The main reasons for this were (1) the fact that landing grounds were not ready as early as expected and (2) the flexibility of the Malta Ferry (described in Part B of the Report) which enabled Squadron advance parties to be moved at short notice ahead of their aircraft and to be closely followed by the remainder of the Squadron personnel after aircraft had flown in to Sicily.

If the ferry system is worked in future operations in the way which is recommended above, the need for Servicing Commandos is considerably lessened, provided, of course, that Squadron personnel are accustomed to maintaining under field conditions aircraft operating at a high rate of effort.

The advantages of Servicing Commandos are that (1) they allow for flexibility in the Air Plan by enabling Squadrons of different types to be put into a new landing ground at short notice, though it is not entirely satisfactory for a Commando to have to cater for more than one type of aircraft and (2) they take the first shock of casualties, thus saving losses among squadron ground personnel who may be harder to replace. Against these advantages must be set the considerable disadvantage of finding sufficient work for the Commando when it has been replaced by Squadron personnel. It is of course true that if Commandos are not included in the force the light assault scale establishment for a fighter squadron will have to be increased.

(b) The main criticism of the Servicing Commandos in Husky is that they had been trained as Commandos rather than as efficient aircraft servicing units. There were numberous deficiencies in ground equipment and aircraft spares which could and should have been avoided, nor were the units sufficiently trained in the proper use of what equipment they did possess. The following instances of deficiencies may be quoted:-

(i) In 3230 S.C.U., the unions to the hose lines did not fit the S.R. hand pump unions and all pumps were therefore useless.

(ii) Pure glycol only was carried by one Commando, and there was none ready mixed with water, available for use in Merlin engines. This position was aggravated by the Unit failing to carry either distilled water or tartaric acid tablets for treating local water. Crashed aircraft therefore had to be drained of glycol before the arrival of 40 A.S.P. Advance Detachment, and many valuable manhours were unnecessarily wasted. (All Spitfire Squadrons had been instructed to carry a minimum of 90 gallons of ready mixed Glycol in four-gallon containers.)

(iii) Universal jacking trestles with Spitfire beams were shipped unassembled, and the bolts were missing when the time came to assemble them.

(iv) One S.C.U. was equipped with only half a complete airscrew kit, and when an airscrew had to be changed considerable delay was incurred.

(v) Aircraft and engine spares did not extend further than tyres and plugs. Supplies of these items were not sufficient, and had to be made up by 40 A.S.P. Advanced Detachment. Tyres were not assembled on wheels, and valuable time was expended on fitting them.

It is essential that S.C.U.'s be equipped with every device to save manpower. At least one three-tonner for each Squadron to be serviced should be made readily convertible to a fuel bowser and serviced by three men. The vehicle should contain an engine driven refuelling pump, with two semi-rotary pumps as stand-by and an opened 44-gallon fuel drum to act as storage drum, into which fuel may be poured from the 4-gallon containers during the early stages, before aviation fuel is delivered in drums. Only in this way can the fuel be correctly filtered and aircraft quickly refuelled.

(c) In any future operation in which Servicing Commandos are to be used, it is most strongly recommended that the Force Headquarters under whose control they will come is responsible for laying down their scale of technical equipment and for training the Units in the servicing of all types of aircraft which are likely to be employed.

20. Squadron Maintenance.

Squadrons have been able to operate efficiently on their reduced establishment, although maximum effort has been called for from all tradesmen. Squadrons have been able to carry out minor inspections without assistance from Servicing Commandos, provided the latter take on minor and temporary repairs to aircraft including those which have to be repaired prior to flyback.

21. Repair and Salvage Units.

It is recommended that a small R.S.U. Advance Party, with cranes only, be landed as early as possible after aircraft have flown in, on any future operation. In Husky, aircraft wastage has been remarkably low, but cannot be expected to remain so in the future. The presence of a crane on a landing ground ensures the removal of crashed aircraft with the least delay, and without causing further damage to the aircraft or to the surface of the landing ground by dragging the aircraft.

E. EQUIPMENT.

22. Air Stores Parks.

No A.S.P. was planned to land in Sicily before D + 14. It was felt to be unjustifiable to put in a unit of this type at an earlier stage owing to the range of spares intended to be carried by the Servicing Commandos and the Squadrons. Any spares not available from these sources would, it was thought, be made available by the cannibalisation of crashed aircraft, or, alternatively, new aircraft would be flown forward from North Africa.

In fact, however, the flexibility of the Ferry Service to Sicily enabled an advance detachment of 40 A.S.P. to land on D + 3. This detachment included a propellor assembly party with spare propellers, all of which were issued in two days. In addition, the detachment carried types and tubes and other highly consumable items. The presence of an A.S.P. detachment so much earlier than planned, with a far wider range of spares than those carried by the Squadrons, was invaluable in maintaining serviceability and reducing the robbing of casualty aircraft to a minimum. In fact, cannibalisation, of which so much was heard during the planning stages, hardly took place at all. The acceptance of this principle seems quite unnecessary.

It is strongly recommended that if, in any future operation, shipping will not permit the move of a complete A.S.P. Advance Party with the Squadrons, a small detachment consisting of propeller assembly personnel and carrying propellers, sparking plugs, compressors, tyres and tubes, etc., should be shipped so as to arrive either with or immediately after the Squadrons.

23. Mounting of the Force.

(a) There was considerable divergence in the preparatory equipping of Units intended for Sicily between the Commands responsible for their mounting. The instructions issued by Force 545 were designed to cover all Units equally, but in some cases little or no action was taken on them, possibly owing to delay in receipt of the instructions. Units arrived both from the Delta and from North Africa kitted to incorrect clothing scales. The Squadrons from North Africa had not been reduced to the light scales of tentage and arrived in Malta with surplus kit, heavy tentage and no water cans. Fortunately the staging period of two to three weeks in Malta before D Day enabled Desert Air Force to bring all Units staging in Malta to common scales.

(b) The cutting down of unit equipment to special light scales proved unnecessary to a large extent, as much equipment could have been carried in Unit vehicles without overloading, which has subsequently had to be sent forward. Assault scales are really only necessary in the case of Units landing over beaches on D Day and immediately afterwards.

24. Supply of Common User Items by Army.

The Army undertook the supply of all items to D + 28. This system was unsatisfactory in the case of clothing and cooking equipment which the Army proved quite unable to supply. The Army supply of M.T. spares for the R.A.F. however worked very smoothly.

F. ARMAMENT.

25. Packing of 20 m.m. Ammunition.

A new type of Ammunition Box produced by Middle East known as the tropical box H35 Mk.1 was used in Husky. This box is fitted internally with fibre side and end pieces which support a tin liner, the metal container for the ammunition itself being 37 x 15 x 20 cms. The box is bound with a metal strap in addition to the normal fastenings of the H35 Ammunition box. This new box eliminates the high rate of wastage - as much as 30% - which has resulted in the past from the breakage of boxes in the course of normal handling and it is recommended that it should be used in future operations.

26. Squadron Armament Personnel.

While the light scale establishment proved adequate in this operation it would require to be increased if Servicing Commandos were not available or if ammunition was not ready belted and in good condition. The suggested increase is:- 2 AC. Armourers and 4 Armament Assistants in Spitfire Squadrons and 6 AC. Armourers Bomb, in Kittyhawk Squadrons.

27. Bomb Disposal.

In the original plan the only provision made was for 1 F/Lt. on the Air Headquarters Staff. Last minute rectification of this was made by increasing the strength of each Wing Headquarters by two airmen for Bomb Disposal duties. This is a makeshift arrangement as a Bomb Disposal Squad should not consist of less than four airmen and should have its own transport. It is considered that Bomb Disposal Squads should be established to a scale of one Squad to every two Wings, each Squad consisting of 1 Sgt. and 3 Cpls. and being supplied with one 3-tonner.

G. MECHANICAL TRANSPORT.

28. Types of Vehicles.

All the Squadrons from North Africa were equipped with trailers, as

were a number of signals units. This delayed the loading of ships and craft and greatly increased the chances of loss on wet landings. Many signals specialist vehicles appear to be unnecessarily high and it is desirable that they should be re-designed to a height not exceeding 11 feet to enable them to be loaded in L.S.T's.

29. Waterproofing.

Thorough training in water-proofing and in driving ashore through water was given by A.H.Q., Western Desert to all Units under their control in the Tripoli area before the move to Malta. Many units from North Africa, however, arrived in Malta without any of the preliminary stages of water-proofing having been done and with their drivers quite untrained. This was remedied by Desert Air Force giving further training in water driving in Malta and by the excellent work done by the R.E.M.E. detachment which had been sent to Malta by 8th Army to supervise and complete the waterproofing of both Army and R.A.F. vehicles.

It was proved that any vehicle can go through water with its engine completely immersed, provided the waterproofing has been well done and the driver carries out his instructions. Where many drivers failed was in coming off the ramps too quickly instead of accelerating after their front wheels had come off. It is essential that two-wheel-drive vehicles should be fitted with chains. Staff cars should not be used over wet beaches, as water gets inside the body of the car and makes it too heavy for the engine to pull it out.

As things turned out, much of the waterproofing was superfluous as many landings over the beaches could be made dryshod. This, however, cannot be foreseen, but it should not be necessary to waterproof vehicles which are not intended to land until after, say, D + 7, provided of course that a port is likely to be available by that time.

30. M.T. Drivers.

The shortage of D.M.T's. caused considerable inconvenience to Units concentrated in Malta, as specialist personnel could not easily be spared, particularly from the Squadrons, when auxiliary drivers were required to embark with their Unit M.T. It is highly desirable that the establishment of D.M.T's. should be increased to one per every two vehicles.

M.T. of Units from U.K. was not accompanied by drivers in the M.T. ships. This should be avoided in future as it makes it necessary to move drivers to the port or beach where the M.T. is discharged, which may well be different - as, indeed, it was in Husky - from that where the personnel have landed.

31. M.T. Light Repair Unit.

The Army met all demands for M.T. spares in common use by both Services and spares for specialist vehicles have been brought forward by air. In the absence of an advance section of the M.T.L.R.U. however, there have been no M.T. salvage facilities in the early stages, and it is recommended that such an advance section lands earlier than D + 14 in any future operation.

H. MEDICAL.

32. Anti-Malarial Measures.

The use of mepacrine was instituted throughout the force with the exception of pilots, who used quinine. One tablet per day was taken four days a week and most of the ill-effects experienced in North Africa from the use of mepacrine appear to have been avoided. Units which arrived deficient of mepacrine were issued with this item in Malta, or in Sicily in the case of Units from the U.K. Unfortunately all the U.K. personnel arrived in Sicily before

their M.T., which contained all the Unit equipment and these personnel had to spend several days without bivouacs or mosquito nets. This could have been avoided by the presence of a properly equipped Transit Camp; unfortunately the Transit Camp from U.K. was itself without any equipment. In any event, however, it is strongly recommended that on an operation of this kind, mosquito nets should be a personal issue and be carried by all personnel.

33. Air Evacuation of Casualties.

The system of evacuation of casualties by returning transport aircraft (DC.3's) which had been used satisfactorily in the Western Desert operated with conspicuous success. No less than 563 Army cases were evacuated, chiefly from Cassibile landing ground, between the 19th, and 23rd. July. An Air Ambulance Unit also did very good work and was responsible for the evacuation of 80 cases from Lentini as soon as this was practicable. There is no doubt that Air evacuation is a factor of considerable importance in maintaining Army morale.

I. ACCOUNTING.

34. (a) No provision was made in the plan for any Accountant Officers except those on Wing Headquarters to land in Sicily before D.+14. Arrangements had been made with the Command Paymaster, G.H.Q., Middle East for supplies of cash to be made available to R.A.F. Accountant Officers by Army Cashiers, but these had in fact received no instructions, and Accounting Officers at first experienced some difficulty in obtaining funds.

The view that accounting services would not be required for a considerable time after D. day proved wrong; they were, in fact, needed from D.+3 onwards for the exchange of currency as well as for payment of Officers and airmen. But it was not possible for Wing Accountant Officers to do more than attend to the require ments of their Wing and Units in the immediate vivinity of their landing ground, and it was some considerable time before the Command Accountant Officer was able to contact other Units who were many and scattered. Many Units were new to the force and quite ignorant of the Middle East War Accounting Instructions and the proper manner of operating an imprest account.

These difficulties could have been avoided had the C.A.O. Command arrived in Sicily earlier and worked in conjunction with the Army Paymaster at Syracuse. If this were done there is no risk of the indiscriminate allotment of imprests to R.A.F. units by Army cashiers in the early stages of the operation as all money is issued centrally to the C.A.O. He can arrange for the allocation of imprests and the issue of money and instructions to units on arrival, as well as for a Field Cashier to be located near the main points of disembarkation and move forward with Units as they advance.

(b) It is considered that the number of Clerks Accounting allowed on the advance parties of units, particularly Wings, was insufficient. In addition to the Wing Accounting Officer, one N.C.O. and one A.C. were the only accountant staff available to deal with upwards of 1500 personnel and they cannot do this efficiently. It is accordingly recommended that one A.C. Clerk Accounting should accompany each Squadron or Unit of equivalent strength on an operation of this nature.

APPENDIX "A".

SCALE OF EQUIPMENT RECOMMENDED FOR R.A.F. BRICK COMPONENT.

I	180 lb. R.D. Tent.	for H.Q. Office.
I	Folding Table 6'	
I	Folding Table 4'6"	
3	Folding chairs.	
I	Stationery Box with stationery pack-up	

6 spades.
3 axes pick.
1 axes felling.
1 gallon turpentine.
1 R.A.F. Ensign.
I gallon Black paint - 4 brushes (2-I" brushes, 2-½" brushes)
I gallon white paint.
20 metal signposts with metal pickets.
1 set of 2" stencils (letters and figures.)

Domestic Equipment.

1. Bivouac Tent per Officer.
1 Bivouac Tent per 2 all other ranks.
3 Cans, tea, complete (21C/88/89)
3 Kettles camp (21C/878)
2 Stoves wickless (21C/568)
10 gallons paraffin.
1 set Cooks Knives, Forks, Ladles.
I Bowl washing.
I Folding Table 6'.
I Forms Airmen 6'.
20 Jerricans (for freshwater).
2 Buckets, latrine.
2 Seats, latrine.
5 gallons disinfectant.
I tin water sterilizing powder (for Cooks use).
Water sterilizing Water Bottle Outfits.
(for issue to personnel - 1 per man)
Anti-Malaria Equipment as required.
I First Aid Medical Pack.

HEADQUARTERS, XII AIR SUPPORT COMMAND

APO 766

4 August, 1943.

SUBJECT : Reports of Staff Officers on Operation HUSKY

TO: AOC, Northwest African Tactical Air Force.

1. Attached herewith are reports from Colonel Israel, former Commander 3rd. Air Defense Wing and Lt. Colonel D.E. Williams, Signal Officer for the XII Air Support Command, on Lessons learned from Operation Husky.

2. It is understood that you are desirous of having these reports as soon as possible and I therefore make a rather hasty perusal of same and make the following general comments.

a. There was apparently much confusion in the planning due to the splitting of the Headquarters, XII Air Support Command into a rear echelon which was eight hundred miles away.

b. Officers drifted into this Command, both front and rear echelons from NAAF and NATAF for which no orders were issued, but in most cases merely because they were not needed or not desired at other places.

c. The shortage of proper radio equipment, the poor loading of same and a lack of time to prepare for loading is apparent.

d. A shortage of a Heavy Signal Battalion which still exists.

e. No light aircraft were provided for XII Air Support Command in spite of repeated requests to higher headquarters.

f. No approved panel system for ground-air communications with reconnaissance units.

g. The ground troops were reluctant to use yellow smoke and the blending of the yellow smoke with the yellow wheat fields in Sicily was a hindrance.

h. A shortage of properly trained communication personnel.

i. The landing of RDF personnel too soon and separation of this personnel.

3. There is also attached herewith copies of the report of the Signal Officer for the following Commands to be forwarded thereto by your Headquarters: Mediterranean Air Command Post, Northwest African Air Force, Combined Operations Headquarters, Air Headquarters Malta, Desert Air Force, Northwest African Coastal Air Force and Northwest African Strategical Air Force.

(SIGNED)
EDWIN J. HOUSE
Major General, U.S.A.
Commanding.

SECRET

2 August, 1943

SUBJECT: Lessons of the Operation "Husky".

TO: The Commanding General, XII Air Support Command.

SECTION I

Planning and Organization - General.

1. Many hinderances to general planning and organization were encountered due to the following facts:

a. Commander and initial Staff planning and implementing the operation were not from the headquarters charged with the operation.

b. Commanders, Staff Officers and units were involved in an entirely different operation and in other organizations. As a consequence, they could not be made available until the last minute to the proper commander and therefore entered the operation without sufficient indoctrination and instruction.

c. Two headquarters with similar titles were established some 800 miles apart. This resulted in confusion in the distribution of critical correspondence, instructions, cyphers, etc.

2. The Ground Army has not been educated to fully appreciate either the tactical or logistical problems of the Army Air Forces. An example of this was that warning and control units essential to air operations were not given proper consideration in loading on water transport. This Air Warning and Control element, known as the Advanced Control, is a team which if deprived of certain elements, will not function. It must be loaded and landed as a unit and must remain together. In this operation this team was broken up and was unable to get assembled, due to lack of transportation, for three days after landing. Much time must be spent by the Air Staff and the Ground Staff in discussing the problems of one another so that a mutual understanding may be reached.

3. During the Planning Stage, ships should be allocated to the Air Forces. By doing this, air corps units may be landed as dictated by the ground and air situation and the landing of ground troops unhampered by having air force troops and equipment virtually in their way during the most critical phase of their operations, the initial assault. Although the Ground Forces have not complained, probably due to the astounding success of this operation, it is certain that this interference existed. Furthermore air force troops and critical equipment which could not be used in any manner to assist the ground operations in the initial phase were unnecessarily exposed to casualty and loss.

4. With respect to Fighter Control and the operation of Air Support, Point to Point Ground Communications and space to work in are the two critical items.

a. Radio channels must be set up during the planning period direct from the headquarters planning and ordering the missions to the headquarters which assigns these missions to the performing organization. In other words the headquarters afloat or ashore ahead of the airdromes must have a radio channel direct to a headquarters located in the vicinity of the airdromes from which the supporting aircraft operate. This channel will be used only for ordering missions and acknowledgments. These messages cannot be processed thru a message center due to inherent delays involved.

b. The commander of the air forces aboard ship must foresee and require the provision of adequate operating space aboard the control ships. Adequate space for Fighter Control and Air Support functions must be provided.

SECTION II

Communications.

5. The following HF radio channels must be provided aboard ship and at advance land control. Net control must be with advance commander.

a. Air Support - Covered in Par.4.
b. Fighter Operations.
   (1) Fighter missions.
   (2) Friendly aircraft movements.
c. Command Channel No.1 - Operations.
d. Command Channel No.2 - Administration.
e. Command Channel No.3 - Overflow.

6. Field wire should be used for Intra Headquarters telephone communications only. The use of 5 and 10 pair cable where ordinarily two or more lines must be run will result in tremendous savings in weight, space, time and labour and will give much more satisfactory communications.

7. Complete wire plans must be drawn by all units. These plans should consider the following:

a. 5 pr cable to each:
   (1) Airdrome
   (2) G.C.I.
b. 5 or 10 pair cable from Fighter Control to transmitters, receivers, homers, etc.
c. Army Hqs. (5 pair)
d. ASAC Hqs.
e. AAA Hqs.
f. 50% spare cable.
g. 50% extra Switchboards.

8. Communications are very critical. The best radio wire, message center, cryptographic, etc. officers available should be brought in during the early phases of the planning, make the plans, implement them, conduct training and make the initial installations.

9. Heavy wire construction company should be landed with advanced echelon equipped to rehabilitate commercial lines and install cable.

10. The SCR 299 is not altogether satisfactory for beach landing. The SCR 195 mounted in a jeep or a suitable set in a half-track should prove much more suitable.

12. Selection of a sight for headquarters and Fighter Control should be a function of the Signal elements as it should primarily be selected with a view to communications facilities. A party should be formed as follows and landed ahead of the balance of the advanced Hqs. to make this selection:

1 C.O., Signal AW Bn.
1 Radio Officer
1 Radar Siting Officer
1 Filter Officer
1 Wire Officer
2 Radio Operators
1 Jeep with SCR 195
2 Jeeps

12a. Prior to the occupation of airdromes by our aircraft, positive radio communications between them and the headquarters and control must be established to supplement wire lines. Walkie-Talkies or SCR 193s are recommended for this purpose.

SECTION III

Aircraft Warning

13. There was a great abundance of Radar afloat during the amphibious phase of this operation, but no means was provided by which it could be trans-

mitted to the control ships and filtered. This can be provided by the use of F/M radio, Walkie-Talkies, VHF or HF. It is desirable that this be done and Filter centers on the main control and standby ships be established.

14. G.C.I. and L/Ws should not be landed until their security is reasonably assured. See Para.3.

ALL Warning sets must be supplied with HF reporting radio or substitute.

15. American owned and operated GCI/COL sets and teams, Ground Observer Units and radio intelligence units are urgently needed.

16. L/Ws should not be kept on the coast line. GCIs should relieve them at that location as soon as possible and the L/Ws moved inland. More L/Ws (about 6) should move in with the initial landing.

17. Ground observer posts must be pushed into the interior as rapidly as possible. This particularly applies to mountainous terrain where the operation of RADAR is poor.

18. Much intelligence can be obtained by the proper evaluation of Radar plots.

SECTION IV

Aircraft Control
AAA Control

19. The commander of the Advance Air Headquarters with a planning staff, must be with the Ground Force Commander. He must be provided with the communications facilities specified in Par. 5. In addition, he must be provided with VHF facilities and Radar plotting facilities upon which he can base the employment of his fighters and control them. He should also be provided with a radio link to bombardment aircraft in direct support of the operation, so that he can: a. Receive direct flash mission reports. b. Warn of approach of hostile aircraft. c. Change missions if warranted by change of tactical situation.

20. The air transportable SCR 522 is unsuitable for use in controlling aircraft due to its diffioulty of maintenance, lack of power and unreliability of performance. The SCR 639/640 should be used when practicable. SCRs 573 & 574 (includes SCR 639/640) when properly waterproofed are the best to be landed over beaches when there is sufficient shipping space. If not, the modified SCR 522 which employes a rectifier, mounted on a jeep should be used in lieu therefor.

21. Except for the main control ship and an emergency standby, there need be no other control ship, except visual, within fifty miles.

22. Visual controls should be placed at about five miles intervals. They should be linked with the main control ship by VHF R/T. Their function is the visual identification of aircraft in flight and the direction by VHF radio of aircraft to interceptions within their vision. The following is a recommended organization of this control unit:

2 Officers, Pilots, controllers.
4 Enlisted, Ground Observers.
2 VHF radio technicians.
1 VHF radio set

This control should be made mobile and accompany Divisional and perhaps Regimental headquarters upon landing. Their additional function with respect to ground operations will be to:

a. Receive flash intelligence and missions reports from aircraft in flight and transmit them to the ground commander.

b. Assist formations in the air to find their assigned ground target (to be bombed or straffed).

c. To assist aircraft in flight in identifying our ground troops by requesting Ground C.O. to display panels, smoke, etc., and by radio direction prevent attack of our own forces by friendly aircraft.

23. The SCS 3 equipment is excellent. It will negotiate extremely difficult terrain, it is exceptionally dependable and its performance superb.

24. Control sections should carry with them: plotting boards, status boards and mission boards. Black boards are best but bulky. Flexi-glass is satisfactory and easily transportable.

25. There was no control of A.A.A. during the amphibious phase of the operation. By the establishment of the Filter center recommended in Par. 13 and not allowing the AA weapons to be fired either aboard ship or ashore without prior clearance from an antiaircraft officer, Army or Navy, on duty at that center. Each ship should in addition be provided with competent observers to assist the Gunnery Officer in the identification of aircraft.

26. Aircraft movements warnings were invariably received late. An independent net (See Par.56) should be established to handle this and compliance with existing regulations reference submission of, and compliance with flight plans, rigidly enforced by the application of severe disciplinary measures. Unless this is accomplished, friendly aircraft, particularly at night, are seriously endangered by friendly AAA and fighters. Further the mission of the friendly fighters is seriously jeopardized by the inability of the controller to distinguish between friendly and hostile plotted flights.

SECTION V

Miscellaneous Observations.

27. Whenever possible, main Aircraft Control should be land based, visual on assault ships.

28. Keep airdromes as near land based main control as possible. It facilitates communications, control and defense.

29. Liaison type aircraft should be brought in promptly and make available to Air Commander and his staff for liaison with Ground force Hqs.

30. Bring equipment for separate officers mess.

31. Bring security personnel to guard Headquarters, radios, supplies, etc.

32. Motor transportation inadequate. Advanced Hq. and Control should have in addition to specially mounted vehicles, a minimum of :

12 Jeeps
4 Weapons Carriers
6 2½ Ton Trucks

33. Air Service Command troops not essential to initial phase. D plus 4 is soon enough.

34. Wing needs Ordnance Officer to plan and supervise arming for missions.

35. Delay fuses and Fragmentation bombs should be provided for an operation of this nature.

36. Straffing apparently has a greater effect than demolition bombs on following targets:

a. Motor and Troop columns.
b. L.S.T. and L.C.I. type surface craft.

37. Fighter units arrived on advanced airdromes without Oxygen.

38. Pilots of some units needed a rest prior to the initiation of this operation.

39. No opportunity was given units to effect essential maintenance of aircraft prior to the commencement of this operation such as:

100 hours inspections
Engine changes
Armament overhaul

40. Suitable liaison officers were not made available early enough to accomplish necessary amalgamation of thought with elements of the Ground forces.

41. Letters of instruction giving appropriate extracts of SOIs, Plans of Movement, Plan of Supply and designation of reports to be submitted eliminated confusion in air units except where units were divided during movement.

42. Water borne operating GCIs did an excellent job. Were it not for the essential guarantee of security for this instrument and its difficulty of movement over beaches, it would be ideal for a primary beach air control.

43. Hq. personnel should be as near complete T/O Strength as possible. The operation was a full time job for a complete staff.

44. Beach Detachments responsible for Air Force Supplies should have their own vehicles for transporting gasoline, ammunition, etc., and not be dependent on any other unit.

45. Fighter Group Detachment should have 8 jeeps and 8 $2\frac{1}{2}$ ton trucks. (2 ea for ea Sq. & Gp. Hqs.)

46. Provision must be made for repair of motor vehicles prior to the arrival of Service Center Groups.

47. Air Base Security Battalion should be moved in as well as AAA Defense prior to the arrival of any airplanes in a given airdrome area. A few parachutists or saboteurs could destroy all aircraft if this is not done.

48. Don't select any airdrome whose position can be easily spotted from the air at night as Ponte Olivo with its white runways, etc. It is much prefereable to construct new airdromes.

49. Believe Fighter-searchlight defense at night has been much maligned and not given a fair test. It would permit use of day fighters at night, give the AAA weapons a better chance and it would blind the hostile pilots and bombadier. An area dispersion would not disclose installations and by proper co-ordination the sphere of the GCI-Dark Fighter team would not be interferred with but assisted. It is noted that in the past operation, insufficient numbers of night fighters were available. On several nights, none were available to the GELA area and there was always a shortage of them.

(SGD)

ROBERT S. ISRAEL JR.,
Colonel, A.C.

SECRET

HEADQUARTERS
XII AIR SUPPORT COMMAND
Office of the Signal Officer
APO 766
U.S. ARMY

J-DEW/fjm

3 August, 1943

SUBJECT : Outstanding Signal Lessons Learned from Operation HUSKY

TO :- Commanding General, XII Air Support Command.

1. The enclosed report contains the outstanding Air Force signal lessons learned by the signal section this Headquarters from operation HUSKY. A detailed summary of the Air Force signal aspects of the operation will be made in the near future.

(SIGNED) D.E. WILLIAMS
Lt. Col., A.C.,
Signal Officer

COPIES TO:

A. C. in C., Mediterranean Air Command Post.
C.G., Northwest African Air Force
C.C.O., Combined Operations Headquarters
A.O.C., Air Headquarters, Malta
C.G., Northwest African Tactical Air Force
A.O.C., Desert Air Force.
C.G., Northwest African Coastal Air Force.
C.G., Northwest African Strategical Air Force

OPERATION HUSKY

PLANNING

1. Detailed signal planning for joint or combined operations must be done in one area if the effort is to be coordinated. Sufficiently close liaison to insure this coordination cannot be accomplished by the use of a common agency or by the signal method. The real solution lies in having planning staffs in the same vicinity. In this operation there was only one occasion when the signal officers of the forces concerned met to settle the problems. Obviously this one meeting did not produce all the answers and much was left to be desired.

2. Detail planning staff must be in close contact from the very early stages with the units to take part in the operation. These unit commanders must be classified, kept abreast of all developments, and utilized as advisors if a thoroughly smooth workable plan is to be produced.

3. Unless the time element between the planning and execution stage is very large, it is a fallacy to prescribe in a plan the use of any additional or different type of signal equipment than is in the actual possession, or at best on the T.B.A., of the units concerned. It can be safely assumed that such equipment will not be available due either to higher priorities for other operations or the seemingly inherent complexity of all supply agencies.

4. Signal planning for this operation was greatly handicapped by the large number of changes which occurred and continued to occur in the tactical plan up to the final sailing date. The allotment of shipping space for signal personnel, equipment and vehicles was made early in the planning stage and towards the end as the signal commitments became increasingly great, it was not possible to obtain additional space. The campaign progressed at a more rapid rate than was planned and consequently an extreme shortage in communication personnel and equipment existed before the follow-up convoys arrived. Before their arrival, all field wire had been expended in the attempt to extend communication from the Headquarters and sector operations to outlying fields and R.D.F. units, which in this case were considerable distances from the Headquarters and sector operations.

STAGING

5. It is imperative that all signal units reach the staging area well in advance of loading dates in order that equipment may be placed in good operating condition, waterproofing accomplished, and final instructions given to unit commanders. In this operation the units reached the loading areas at the last minutes and consequently it was not possible to accomplish all that was necessary.

MOUNTING

6. Air Force signal representatives must be present at each loading area to ensure that units and personnel are properly loaded. Unless this is done, the situation will be well out of hand with the results that personnel and equipment are compeletely separated when they are put ashore.

7. Signal units must be landed complete as to authorised personnel and motor transport strength. This is particularly true as regarding R.D.F. and communication units. The loss in efficiency caused by splitting such units into so-called assault and follow-up parties outweighs the few advantages to an arrangement.

COMMUNICATION

8. If this operation is indicative of things to come, it may be said that unless better Headquarters Ships are produced it is not going to be possible for the Army, Navy and Air Force to have sufficient and satisfactory communication aboard any one ship. First, the problem of mutual transmitter

interference is sufficiently great within itself to preclude the use of one ship for all services. Secondly, the type and nature of Air Force traffic does not permit its being handled by a common message center and cryptograph section. The solution to satisfactory aircraft control and communication with shore-based stations is to place all Air Force communication and control facilities in a separate ship.

9. The radio network laid down in HUSKY plan was not satisfactory aboard ship in that the traffic was much too heavy for the number of links available. Nets should have been avoided and strictly one to one contacts established. The net with USS Monrovia - Malta - Pantellaria - XII ASC Rear was practically useless as far as passing messages from XII ASC Rear to the Headquarters Ship, because of the high priority of comparatively unimportant messages, the density of traffic, and high interference level. Most reconnaissance reports from XII ASC Rear were either not able to be passed or delayed so long that they were of no use to the Headquarters Ship Command. This could have been avoided had it been possible to provide direct links from the ship to Malta and XII ASC rather than have to use a net. To date, net operations ashore have not been satisfactory either and all links are being made one to one.

10. Radio operating and cryptographic personnel for duty on Headquarters Ships must be the best obtainable. The operating conditions aboard will always be such that only experienced operators will survive. Too much stress cannot be placed on the use of highest grade operators and a sufficient number to allow a maximum of four-hour shifts while afloat.

11. The HF inter FDO wave on 5450 kc. was not satisfactory for either USS Monrovia or USS Ancon, and contact with Malta, HMS Bulolo and HMS Largs was not sufficiently good to be of any value. It is believed that the frequency of 5450 kc was too high for good phone contact over the distances involved. A frequency in the 2 to 2·5 m.c. band would have seemed infinitely more suitable.

12. The ground modified SCR 522 did not prove satisfactory on Headquarters Ship. The range was limited and considerable maintenance difficulty was experienced. The BC 639/640 set worked well and all future VHF installations on Headquarters Ships should be made with this type of equipment. The number of sets required will vary somewhat with the operation; however, a good installation would consist of at least five VHF channels.

13. Sixty miles of field wire were brought ashore in the assault phase and proved to be insufficient to carry over until the D + 4 reinforcement arrived. At least one heavy construction company with T.B.A. equipment should have been landed in the assault. Due to large amount of sabotage, it has been necessary to maintain an almost constant patrol on all lines to keep them in operation. The rehabilitation and construction of open wire circuits are far behind the requirements and will continue to be so until heavy construction battalions are made available to the area. Two and four pair cable should be brought ashore in quantity initially, in addition to at least 150 miles of field wire.

14. Although not entirely satisfactory for beach landing, the SCR 299 is the most dependable communication unit available at present. Provision should be made to bring ashore in the assault stage sufficient numbers of these sets (complete with power units) to care for all main channels of communication. A good substitute would be the SCR 193 mounted in command cars or amphibious jeeps. At least six SCR 193's mounted in jeeps should be included as a communication requirement to care for odd situations and failure of normal equipment

15. Each unit landed in the assault should carry with it one or more SCR 195's for communication on prearranged schedules with the Headquarters Ship. Through this system, units could be readily assembled ashore and be in direct communication with the Headquarters Ship.

16. The Air Support net should be operated on CW only. At present it is being operated on voice until the necessary changes in personnel can be effected to allow efficient CW operation.

17. An acute shortage of spares for the SCR 299 exists now, as before the operation, with particular regard to the VT 220 type tubes. These tubes are vulnerable and a minimum of two spares should be with each set in the field.

18. Insufficient power units (PE 75) were brought ashore initially. (These units could not be obtained prior to the operation although every effort was made to acquire them)

19. Only 50 percent of the SCR 188 type transmitters included in the assault reached shore in serviceable condition. This was not the fault of the sets, but was due to bad handling and enemy action.

R.D.F. and FIGHTER CONTROL

20. RDF information available to USS Monrovia was fairly satisfactory. The RDF aboard functioned quite well and the RDF broadcast from Malta was excellent. The fleet broadcast was not sufficiently well coordinated to be of much value. After H-hour, the ship's RDF became less effective due to the proximity of the shore which presented a multitude of permanent echoes.

21. The GCI mounted on the LST for the Licata area was not a complete success. The faults lay in the hurried last minute installation, which allowed no time for trials. In future operations it is most important to determine well in advance the type of antenna with which the GCI/COL units are equipped. One type cannot be handled by the elevator on the L.S.T. and must be deck loaded and unloaded by crane. With this installation it was not possible to operate the GCI transmitter and VHF R/T simultaneously. A suppressor unit must be provided. To be successful the ship-borne GCI must operate well off-shore to avoid the strong land permanent echoes. In theis operation, the ship's commander refused to go out beyond the destroyer belt (three miles off-shore), which seriously handicapped the GCI operation. The ship on which the GCI is to operate must be for that purpose only and the installation made well in advance of the assault date to allow the controller and crew the opportunity to become familiar with operating conditions. A. VHF channel with the control ship will take care of GCI liaison. However, a H/F W/T channel must be provided for passing information to the control ship.

22. GCI/COL and light warning equipment was landed in the early stages with comparative ease. However, caution must be exercised not to bring such equipment ashore so early as to subject it to enemy action and possible capture. One light warning set was destroyed in this operation by its crew because capture seemed imminent. As stated before, the GCI/COL and light warning sets should be brought ashore complete with all operating personnel and motor transport and not broken down into assault and follow-up units.

23. The GCI/COL is undoubtedly the most valuable piece of air warning apparatus that can be landed and all effort should be made to insure its successful loading and disembarkation.

24. The wireless observer units rendered good service. However, it is believed they should be brought in with the first follow-up convoy rather than during the assault.

25. W/T plotting by RDF units has not been as satisfactory as one might wish, but in view of the difficulties in laying and maintaining wire to these units over long distances the policy must be accepted. Good operators and radio mechanics will cure this situation almost completely, however, that is another problem within itself.

26. RDF sites as picked by map reconnaissance prior to the operation proved to be generally satisfactory with one or two exceptions.

TAF/500/4

SECRET

HEADQUARTERS, NORTHWEST AFRICAN TACTICAL AIR FORCE

THE SICILIAN CAMPAIGN
SIGNALS ASPECT

INTRODUCTION

1. The code name of HUSKY was given to the operation designed to capture the Island of SICILY. Two main factors which affected the mounting of the operation from the signals point of view were :-

(i) That the responsibility for equipping the air forces engaged was divided between H.Q., NORTHWEST AFRICAN AIR FORCES in CONSTANTINE and H.Q., R.A.F. MIDDLE EAST in CAIRO.

(ii) That the interval planned to elapse between the conquest of TUNISIA and the assault on SICILY was to be as brief as possible, but that during this period the islands of PANTELLERIA and LAMPEDUSA had to be reduced.

FIRST FACTOR

2. Supreme command of all air forces was exercised by the Air Commander in Chief from a joint Mediterranean Air Command and Northwest African Air Forces Command Post located at LA MARSA near TUNIS. Command of the air forces acting in direct support of the 7th U.S. and 8th British Armies was vested in A.O.C., Northwest African Tactical Air Force. A command Post for this purpose was set up at LA MARSA in conjunction with 15th Army Group (in command of the two armies engaged).

3. Under the command of the TACTICAL AIR FORCE were :-

(i) THE DESERT AIR FORCE, composed of British and South African Fighter Wings, and U.S. Fighter Groups, to be equipped and maintained by Middle East and embarked from the Delta and Tripoli.

(ii) THE XII AIR SUPPORT COMMAND, composed of U.S. Fighter Groups, to be equipped by Northwest African Air Forces and embarked from ORAN.

(iii) THE TACTICAL BOMBER FORCE, composed of U.S., British and South African Bomber Groups and Wings from both Middle East and Northwest African sources.

4. During the planning stages of the operation the Air Commander in Chief and his Headquarters were situated in Algiers; thus the initial policy planning was carried out there. At the same time, in view of the divided responsibility for supply, for training and for movements, two imdependent detailed planning staffs were set up in CAIRO and MOSTAGANEM (near ORAN). This wide geographical separation between planning staffs concerned lead to the greatest difficulty in the production of the signals plan, which had of necessity to be most closely co-ordinated.

SECOND FACTOR

5. The necessity for limiting the time which should elapse between the conclusion of the TUNISIAN campaign and the assault on SICILY lead to the greater part of the planning being carried out by the planning staffs without direct reference to the requirements of the Signals Staffs of the Tactical Units to be involved. While this step caused considerable comment at the time, it is not considered that this factor had any measure of ill effect on the final plan for the following reasons :-

(i) Any Signals Plan must conform to the requirements of the Air Staff Plan, and will thus have the same broad outline no matter by what experienced signals planning staff it is conceived.

(ii) The planning staffs concerned had at their disposal full details of recent signals experience in the WESTERN DESERT and NORTHWEST AFRICA.

(iii) Main Strategic Channels of Communication, frequencies and call signs, which require a large part of the attention of any signals planning staffs, do not require the attention of the executives.

6. The need, however, for the employment of XII AIR SUPPORT COMMAND and TACTICAL BOMBER FORCE units in the operations for the reduction of PANTELLERIA, rendered it extremely difficult to equip and mount these forces in time for HUSKY.

THE SIGNALS PLAN

7. Details of the Signals Plan are given in the outline plans of Forces 141, 343 and 545. The final instructions to the Air Forces are given TACTICAL AIR FORCE SIGNALS INSTRUCTION NO. 1 for OPERATION HUSKY, DESERT AIR FORCE SIGNALS INSTRUCTION NO. 1 amd XII AIR SUPPORT COMMAND SIGNAL OPERATION INSTRUCTION.

LOCATION OF THE AIR FORCES

8. At the outset of the operation HUSKY the Spitfire Squadrons of the DESERT AIR FORCE were located in MALTA, and came under the command of A.O.C., MALTA. The remaining Squadrons were held in TRIPOLI until such time as they could be brought forward.

9. The Spitfire Wing of XII A.S.C. was located on GOZO under the command of A.O.C., MALTA, one group of P-40s were located on PANTELLERIA and the remaining groups on the CAP BON Peninsula under the command of C.G., XII A.S.C.

10. The whole of the TACTICAL BOMBER FORCE was located in TUNISIA.

11. In view of the difficulty of providing telephone lines from LA MARSA, through TUNIS, to Rear XII A.S.C. at KORBA and H.Q., T.B.F. at NABUEL, it was necessary for H.Q., T.A.F. to set up its operations room at HAMMAMET. This resulted in it being necessary for the main W.T. Station also to be located there. All signals to and from T.A.F. Command Post at LA MARSA had therefore to be passed to and from HAMMAMET on two teleprinter plus speech lines provided between the two elements of the Headquarters. This naturally imposed a delay on all signals, and gave rise to certain difficulties in distribution. It was, however, the lesser of two evils. All cyphering was carried out at HAMMAMET, one teleprinter circuit being provided with secret terminations.

W.T. COMMUNICATIONS - H.Q. T.A.F.

12. During the latter part of the month of May, during June, and the first week in July 1943, which period covered the final stages of the planning and mounting of operation HUSKY, and the conduct of the operations against PANTELLERIA, a most careful analysis of W.T. traffic was maintained by T.A.F. W.T. Station. From this analysis some figures are given which may be of use in future operations.

13. W.T. TRAFFIC

Daily average Total	:	26,000 groups	
Composed of :	IN:		9,000 groups
	OUT:		6,000 "
	THROUGH:		11,000 "
Peak Daily Total	:	37,000 "	
Composed of	IN:		15,000 "
	OUT:		9,000 "
	THROUGH:		13,000 "

These figures were obtained during the period in which the W.T. Organisation was that which grew up during the TUNISIAN campaign. It is interesting to note the reduction in the percentage of THROUGH Groups which was obtained as a result of the change over to the planned HUSKY Organization which was finally made on July 10th, HUSKY D Day (see para. 24).

14. Of the daily average of 26,000 groups, 75% carried some degree of Priority (Precedence), whereas only 25% were routine messages. A count made over 10 days traffic, 260,000 groups, gave the following breakdown for the ratio of Priority/Routine groups :

Type of Message		Ratio of Priority to Routine Groups		
OUT	-	6	:	1
IN	-	3	:	1
THROUGH	-	3	:	1

It can thus be seen that the degrees of priority were badly degraded, and it is evident that British EMERGENCY (equals U.S. Urgent) was the only degree of precedence which was at all effective. British IMMEDIATE (equals U.S. PRIORITY) could be regarded as ROUTINE messages, while all others were the equivalent of DEFERRED.

15. The average delays on messages were as follows :-

IN (T.O.O. to Time pass to Central Registry)
Priority: 7 hours Routine 12 hours

OUT (T.O.O. to time of clearance by W.T.)
Priority: 5 hours Routine 7½ hours

THROUGH (T.O.R. by W.T. to time of clearance by W.T.)
Priority: 1½ hours Routine: 4½ hours

16. It has not proved possible in the field to keep such a detailed analysis, but a group count of IN, OUT and THROUGH messages on each channel is being maintained.

17. HUSKY D Day was 10th July. The assault proved to be successful, and it was originally intended to move Advanced H.Q., T.A.F. into SICILY to commence operations on 27th July.

Rear H.Q., W.T. Station, consisting of 8 channels, was set up at LA MARSA, and the Main W.T. Station at HAMMEMET was closed and divided into two parties. PART "A", consisting of 8 channels, was due to arrive in SICILY in time to open watch on 27th July; PARTY "B", consisting of 12 channels, was due to arrive four days later.

18. Due, however, to difficulties in shipping, it soon became evident that it would not be possible to fulfil this programme. At mid-day on 25th July, the Air Staff being anxious to proceed to SICILY at the earliest possible moment, instructions were given for an attempt to be made to fly into the island a skeleton W.T. station.

19. Owing to the fact that all the H.Q., W.T. Equipment was packed for shipment (PARTY "A" was by this time embarked), three G.P. Packsets were obtained from No. 303 M.S.S.U. In addition one SCR 188, which had been originally issued to an A.M.E. Station, but which had been exchanged by [illegible] for a G.P. Packset,

was obtained. A party of 30 officers and men from PARTY "B", equipped with tentage, rations for ten days, full kit and arms, was assembled at HAMMEMET landing ground at 0800 hours 26th July, and was enplaned in four DC-3 aircraft of 216 Group together with the W.T. equipment mentioned above.

20. This party was flown to CASSIBILE, arriving at about 1200 hours. Transport was borrowed from the A.D.R.U., and by 1800 hours the personnel and equipment were on site. Work was immediately started, and by midnight good contact had been established with LA MARSA and the SCR 188. During the next few hours contact with MALTA, DESERT AIR FORCE and XII A.S.C. was made.

21. It was not possible, however, to advise the Air Staff to proceed to SICILY owing to the fact that while good communications were established with LA MARSA on the SCR 188, and with MALTA on a G.P. Packset, it was not possible to maintain any degree of reliability on the two G.P. Packsets working to D.A.F. and XII A.S.C. In this connection it is necessary to point out that both these places could be worked on the SCR 188.

22. This move has been given in some detail because it is an excellent example of the possibility of flying forward a small W.T. Station, capable of maintaining itself for ten days, at very short notice. It is also an example of how effort and initiative can be entirely wasted owing to the failure to provide suitable equipment. It is imperative that a replacement for the R.A.F. G.P. Packset should be found at the earliest possible date. This fact has been proven time and time again ever since the beginning of the NORTHWEST AFRICAN campaign.

23. Party "A" eventually arrived on 29th July, and opened watch on the evening of 30th July. Party "B" arrived on 5th August, and by the evening of 6th, the Advanced H.Q. W.T. Station was complete.

24. The station has not been operative sufficiently long for accurate traffic averages to have been established. The present figures are :-

Daily Average Total	:	28,000 Groups
Composed of	IN:	17,000 "
	OUT:	5,000 "
	THROUGH:	6,000 "

These figures are tending to rise, the total group for 13th, 14th and 15th August being 30,000, 33,000 and 31,000 groups respectively.

26. Landlines. The state of the landlines in SICILY was extremely bad. At the present time Adv. T.A.F. is in communication with Advanced D.A.F. at LENTINI and with T.B.F. at COMISO. Adv. D.A.F. and T.B.F. are also linked by landline. It has not been possible, however, to establish any contact with XII A.S.C. on the north coast of SICILY.

DESERT AIR FORCE

27. Desert Air Force will be issuing their own report on Signals, so it is the intention here only to stress certain aspects from which it is possible to learn lessons which may be of use in future operations.

28. The establishment of W.T. Communications by Advanced D.A.F. on arrival in SICILY was delayed for a number of reasons. Firstly, D.A.F. equipment was being provided from the United Kingdom, and was due to be off-loaded in CATANIA on D + 14. As CATANIA had not fallen by that date the equipment remained in the convoy which was held in readiness at MALTA.

29. Secondly, it had been planned for Advanced Desert Air Force to make use of 211 Group Equipment sited at PACHINO. As, however, 8th Army moved forward to LENTINI on D plus 7 this arrangement fell through. Fortunately, C.S.O., D.A.F. anticipating difficulties with the convoy ex U.K., had made arrangements with Middle East for the provision of 12 reserve channels, together with personnel, to be held in readiness. Eight of these channels were ferried over from MALTA and were established at LENTINI on time.

30. The site at LENTINI ex extremely bad from the W.T. point of view, being on the northern slopes of a mountain having no access for W.T. vehicles to the top.

31. In general it is considered that the planned scale of communications was satisfactory. The greatest difficulty experienced was with the allocation of suitable frequencies, of which there were insufficient allotted for all requirements.

32. It is now evident that there must be a revision of the policy governing A.L.G. Signals Sections and Field Force Headquarters Signals Sections. When these units have fulfilled their respective roles successfully they are, on the arrival of Wing and other main signals sections, thrown up, and have no further function to perform. This is extremely bad for morale, and leads to inefficiency.

33. It is therefore recommended that these units should be abolished and that the following policy be adopted for the provision of assault communications.

(i) Each Beach Brick should be provided with its own signal section for communication with the Base.

(ii) Each Embarkation Unit should be provided with its own Signal Section.

(iii) A.L.G. Signals Sections and M.P.R.Us. should be combined to form Forward Fighter Controls which should be an integral part of the Fighter Group or M.O.R.U. which is to control fighters after the opening phases of the assault. These should have their own independent link back to base.

Furthermore, all assault W.T. Sections must be provided with T.1190 Type Transmitters and reliable power units. Where it is essential to use V.L.P. sets, adequate charging facilities must be provided. All sections must be capable of existing both technically and administratively for at least a fortnight.

34. Radar. G.C.Is and C.O.Ls. functioned well. A great need was felt for an M.R.U., and it is considered that one of these stations should be landed by D plus 3 at the latest so that accurate height readings may be available at an early stage.

35. Owing to the impossibility of guaranteeing that follow-up convoys will arrive on time, or will discharge over the planned beach or port, it is considered that the experiment of splitting R.D.F. Stations into A and B parties should be dropped. Party A of a G.C.I. cannot last for more than 4 days unless it is reinforced by Party B. It is therefore recommended that in all future operations G.C.I. and C.O.L. stations in the assault should be shipped complete, even if this means a reduction of the number which can be put in.

36. It is mostlstrongly recommended that all Light Warning Sets should be under the command of an officer. These small units of a dozen men are dispersed widely over the country, and it is extremely difficult for an N.C.O. to approach local Army Units for anything of which he may be in need. A detailed R.D.F. report is given at Appendix "A".

37. Signals Administration. Signals Administration needs considerable strengthening. The policy at the present time is to attach the many small signals units, such as A.M.E.S.s. to the nearest Wing for Administation. Wings move suddenly, and are often not replaced; the result is that on matters such as mail, pay and other personal points, the airman in A.M.E.Stations are considerably worse off than those on larger units. The difficulty is aggravated in the case of small signal units located in American areas.

38. It is therefore recommended that M.S.S.Us. should be strengthened by the addition of a small administrative staff capable of administering to the needs of upwards of a dozen small outlying units. Furthermore, whenever a number of units are detached for service with an American Command, an M.S.S.U. should always accompany them.

39. Equipment. A.S.Ps. are not at present equipped to deal with signals demands other than those of the most trifling nature. All main items of equipment

must be obtained by reference back to some higher command. This is a slow and unwieldy process. It is therefore recommended that A.S.Ps. should be equipped to deal with demands for replacements of all types of signals equipment in use in the field (including complete transmitters of the T.1190 type). Should this not be possible, it is recommended that in each operational area there should be a small Signals Stores Park. Only in this way will it be possible to deal with signals equipment through the normal equipment channels, instead of by the "back-door" method at present in favour.

40. XII A.S.C. H.Q., XII A.S.C. will be issuing their own detailed signals report and it is the intention here to stress only those points which, from the broader aspect, may be of use in future operations.

41. The greatest difficulty with which XII A.S.C. had to contend was that while their Communications Officer was engaged in the detailed planning of HUSKY at MOSTAGANEM, they were at the same time conduoting operations against PANTELLERIA from the TUNISIAN tip. Furthermore, certain items of signals equipment belonging to XII A.S.C. together with the personnel to operate them, were detaohed from the command for use in PANTELLERIA after it had been occupied. Thus the Command was forced to conduct operation HUSKY without certain equipment and personnel, which have not yet been entirely replaced.

42. Where expediency dictates the detachment of men and equipment from a command about to engage in a major operation, it is essential that replacements should be made at once.

43. The provision of crystals for the fighter aircraft of XII A.S.C. was another example of the supply service failing to meet the requirements of a plan which was known well in advance. Sufficient Channel D crystals were not provided for the equipment of all aircraft until D plus 4. This crystal was the Emergency Homing and Air Sea Rescue frequency; this it can be seen that for four days pilots of XII A.S.C. were being called upon to take part in active operations over the sea without the benefit of Air Sea Rescue. This is a most unsatisfactory state of affairs.

44. The only link between XII A.S.C. Adv. in SICILY in the early phases was a radio net joined by PANTELLERIA - MONROVIA - MALTA. This was very overloaded and it is the opinion of XII A.S.C. that all assault links should be on a one-to-one basis. This is not practicable under the light scales of equipment demanded by assault conditions, but there is no doubt whatever that better Air Communications must be provided from H.Q. Ships. This aspect is discussed in a later para.

45. There is a general tendency in XII A.S.C. to regard nets as unworkable. While the desirability of the one-to-one links is admitted, it is not an economic proposition, nor do sufficient frequencies exist, for a large operation to be planned on this generous scale. The real fault undoubtedly lies in the war training of U.S. operators who do not seem to have impressed upon them the functions of a control station.

46. XII A.S.C. operations have been hampered throughout the campaign by the fact that it has been impossible to provide them with telephone lines to T.A.F. or D.A.F.

TACTICAL BOMBER FORCE

47. The opening of operation HUSKY found TACTICAL BOMBER FORCE in the process of converting a large number of their aircraft to V.H.F. The provision of crystals for these units was rendered difficult by the large demands of the fighter force. As a result, T.B.F. were not finally equipped until 11th August.

48. The American Bomber Units of T.B.F. from 9th Air Force had been stripped of all ground W.T. equipment which should have been an integral part of the units. The reason for this is now known. As a result, these units had to be supplied with RAF personnel and equipment from the already slender resources of T.B.F.

49. It is recommended that a SIGNAL COMPANY (WING) should be assigned to T.B.F. to alleviate this situation.

50. Tactical Bomber Force consists of 19 Squadrons, and is providing a very large bomber effort which entails considerable dispersal of bomber controls and signals. It is therefore recommended that H.Q., T.B.F. should be strengthened by the addition of one Wing Commander Signals to Establishment.

51. Heretofore, landlines for T.B.F. have been provided by the Air Formation Signals of the area in which they are working. The requirements have now become so large that it is considered that a separate A.F.S. Company should be allotted to T.B.F. to look after their needs.

HEADQUARTER SHIPS

52. In view of the limited number of radio channels which can be installed in any one H.Q. Ship, the general experience is that considerable overloading of such channels as are available invariably takes place. With a view to minimizing this, it is suggested that consideration should be given to the provision of independent fighter control ships which would fulfil a purely air role, thus placing at the disposal of the air the full facilities of the ship.

(Sgnd) E.M.H. GRUNDY,
Group Captain,
Chief Signals Officer,
TACTICAL AIR FORCE.

16th August, 1943.

APPENDIX "A"

REPORT ON THE USE OF R.D.F. IN OPERATION "HUSKY"

1. PLANNING

1.1 PROVISIONING. The provisioning of equipment was adequate and even generous since losses in shipping and in the assault landings were much smaller than expected. In all stages of the operation sufficient equipment to maintain cover over the forward areas and at the same time afford adequate protection to ports and bases has been available.

1.2 TYPE OF EQUIPMENT. The G.C.I./C.O.L. type of Equipment and Light Warning equipment were, as in the Tunisian campaign, found to be very suitable for operation in the mountainous country met with in the operation. M.R.U. Stations were useful in giving seaward cover after landing. A discussion of siting problems in Sicily is given in a later section. With the increasing use of Mk.VIII A.I. equipped aircraft and C.O.L. Controlled Night Interceptions it is a mistake in planning to place a requirement for G.C.I. and C.O.L. stations as distinct entities, since the former are not equipped with W/T gear and operators whilst the latter are not equipped with V.H.F. or personnel trained for controlled interception. This restricts the tactical handling of the gear unnecessarily. Stations should be of the G.C.I./C.O.L. type so that they can be used for either function and able to carry out controlled interceptions in either role. Controllers should similarly be trained to carry out either G.O.L. or G.C.I. type interceptions.

1.3 LOADING. G.C.I. and C.O.L. units landed in the assault phase of the operation were divided into "A" and "B" parties, the former containing the R.D.F. receiver, transmitter and aerial vehicles, one power vehicle and V.H.F. gear(where applicable). This saves shipping space in the assault convoy and the station is able to carry on with this scale of domestic and technical equipment for a limited time. Unfortunately in "HUSKY" arrangements for shipment of the "B" party containing the major portion of the crew, the domestic equipment, a large quantity of spares and the second power unit seem to have broken down completely in some cases. This has a serious effect on the crew and station generally since it means that the station is inadequately equipped with transport for domestic purposes such as obtaining rations and water and that the one power unit running for a long period without maintenance often leads to serious unserviceability of the station. Unless some firm guarantee can be given that "B" party will arrive in the theatre about five days after "A" party then in future operations "A" party must be increased to include the second power unit (trailer) with a 3-ton load carrier for towing and general duty. Some increases in domestic and technical trades must also be made.

Care must also be given to the dimensions of the A.M.E.Stations to the load planning of the reinforcement programme. The G.C.I./C.O.L. Stations landing on CENT beach on D plus three day were non-operational for a week owing to the fact that their aerial vehicle had been left behind at Tunis, being too high to load on the L.S.T. sent back to transport the vehicles.

The effectiveness of the G.C.I. Stations mounted for operation on L.S.Ts. was reduced by virtue of the fact that they were in two cases loaded with priority equipment intended for off-loading on D-Day. This meant that the L.S.T. spent the night of D/D plus 1 in port unloading, thereby defeating the object for which the G.C.I./L.S.T. had been created. Fortunately the shore G.C.Is. were working very successfully. Other equipment loaded on the G.C.I./L.S.T. should be of lesser priority for off-loading on D plus 2 or D plus 3. The L.S.T. Captain must also be thoroughly briefed on the function of the G.C.I. being carried and must be prepared to meet, consistent with the reasonable security of his ship, the requirements of the G.C.I. Technical Officer with (time regard to position and anchorage. The G.C.I./L.S.T. should be available for some/ previous to the operation to allow the overcoming of technical difficulties in both the loading of the gear and its operation. The hurried substitution of a fresh L.S.T. intended for the LICATA area resulted in a situation in which the aerial vehicle could not be raised to deck level by the L.S.T. elevator owing to its size and had to be loaded on to the deck by a dock crane. This prohibited any possibility of speedy landing on a beach by this particular G.C.I.

2. LANDING

2.1 GENERAL. Landing proceeded smoothly in almost all cases. One case is

recorded in which the convoy drove off the L.C.T. to drop in four feet of water, this being necessitated by the slope of the beach at this point. This does credit to the strength of the vehicles and the efficiency of the waterproofing.

2.2 OPERATION ASHORE. Once ashore stations in all the landing areas were mustered without difficulty, and proceeded to sites after reconnaissance by the technical officers concerned. On site the gear was made operational with commendable speed. After establishing touch with local Mobile Plotting Room Units reporting was commenced by W/T. In some areas on the first night there was an overgenerous distribution of G.C.I. and L.W. Stations but this was due to the happy fact that no stations had been lost in the assault. Experience at this stage of the operation would seem to indicate that the MP.R.U., A.L.G., and A.F.S. sections would function more smoothly if fused into "Assault Sectors" under the command of one officer who could coordinate their activities and present to each the priorities to be given to various W/T, Line and R/T channels according to the tactical needs of the situation. This should lead to an even more speedy and efficient control ashore than is attained under the present arrangement. Nevertheless, G.C.I. stations were quickly in touch with their associated M.P.R.U. by landline and C.O.L. and L.W.Stations(with a few exceptions) were communicating with some degree of success by W/T. The results of the first few nights of controlled night-fighter activity are given in the section devoted to that aspect of the operations.

3. FOLLOW-UP MOVES

3.1 DESERT AIR FORCE AREA. Sufficient equipment was available to allow close follow-up of the Army Advance up the east coast of Sicily. From the coastal belt the hills rise very steeply inland and in general operation of the GCI/COL apparatus has been confined to the coast in order to provide essential G.C.I. and C.O.L. cover over the ports and forward areas and at the same time to give the best possible medium to high-flying cover over inland approaches. In some areas permanent echoes have made the latter task difficult. The main bulk of inland cover has been provided by the Light Warning Stations which have once again proved their worth in this task. Night bombers attacking the East coast ports have always approached around the West side of Mount Etna which provides an all-time record in permanent echoes. Careful sighting of Light Warning sets to the South-West of the mountain has enabled a fairly good advance warning to be provided for the G.C.I. Stations controlling the night-fighters. A later section sets out some principles on which Light Warning Stations are sited for most effective inland cover. The first erection of one M.R.U. Station was unnecessarily delayed by virtue of the fact that components of the masts arrived without any markings to indicate their position in the framework and the ensuing scene would have gladdened the heart of a jig-saw puzzle enthusiast.

3.2 XII A.S.C. AREA. Sufficient equipment was again available to allow close follow-up of the Army advance which in this area was very fast. A rear Operations Room with associated R.D.F. was maintained in the GELA area whilst the forward Mobile Operations Room followed the Army advance. Light Warning Stations were again used to provide the bulk of the inland cover when advancing along both the north and south coasts of the Island. On reaching the Northern coast very full cover over the approaches to the newly won territory was possible.

3.3 MORU/MARU. This has operated under the control of the Desert Air Force. It suffered an initial set-back when the complete equipment of the M.A.R.U. was lost in Augusta harbour by enemy action. This, coupled with the heavily contested and slow advance on the CATANIA front has prohibited the M.O.R.U./M.A.R.U. being assigned a mobile role. It was therefore brought into operation in the MELILLI Area and was made responsible for the day protection of ports and installations in the 8th Army area and Westwards to GELA, the night fighter protection of both the British 8th and American 7th Army Areas and A/Sea Rescue for the Allied Air Forces. The M.A.R.U. functioned, with a hastily collected set of Filter Room and Signals equipment, in a converted mill. In this role M.O.R.U./M.A.R.U. has performed good work. The M.O.R.U. equipment seems admirably suited to its task and the personnel of both M.O.R.U. and M.A.R.U. are well trained.

4. SITING OF LIGHT WARNING STATIONS.

This campaign has confirmed the conclusion reached in North Africa that

the Light Warning Set carefully sited can provide valuable information in country where the more powerful equipment would be virtually ineffective due to permanent echoes. Light Warning Stations being small and available in sufficient numbers can be sited to cover specific inland lines of approach. Valuable information has been obtained by placing two Light Warnings close together so that they are affected by permanent echoes on varying azimuths. This enables a fair medium and high flying coverage of quite a large area to be obtained. Other sitings are successful in valleys down which enemy aircraft approach. A siting in this case some distance up the sloping side on one edge of the valley can provide better low-flying coverage along the length of the valley. Permanent echoes in some azimuths are obviously bad but this must be accepted and sitings of other stations made to cover the weak areas. In the advance towards the CATANIA Plain a series of ridges running from East to West were encountered. Results were obtained here by placing the Light Warning some short distance down the Southern slope of the ridges. This had the effect of providing medium and high-flying cover unencumbered by permanent echoes from the succeeding ridges. When necessary the Light Warning has also acted as an efficient coast watching station.

5. NIGHTFIGHTERS

The operation of nightfighters in "HUSKY" has met with marked success and is summarised in the tables below. Table 1 covers the operation of all the nightfighter effort from MALTA for the first seven nights of the campaign. In this period all nightfighters were based on MALTA. Table 2 gives a summary of the success of 600 Squadron who have since been based in SICILY protecting the North and Eastern areas whilst MALTA have continued with their patrols over the Southern area. In the assault stage aircraft equipped with Mark IV and Mark VII/VIII aircraft were operating under control of the G.C.I. stations which had been set up ashore. Mark VII/VIII aircraft were not, for security reasons, allowed to cross the coast of SICILY. During the first seven nights fifty-five enemy aircraft were destroyed, three probably destroyed and one damaged. One G.C.I. Station in the AUGUSTA Area has to date controlled the successful destruction of forty-one a/craft.

TABLE 1

NIGHTFIGHTER OPERATIONS OVER SICILY JULY 10TH TO JULY 17TH

Date:	CONFIRMED	PROBABLE	DAMAGED
10/11	3	1	NIL
11/12	3	NIL	NIL
12/13	11	1	NIL
13/14	5	1	NIL
14/15	12	NIL	1
15/16	6	NIL	NIL
16/17	13	NIL	NIL
17/18	2	NIL	NIL
	55	3	1

TABLE 2

AIRCRAFT DESTROYED BY 600 SQUADRON JULY 11TH TO AUGUST 11TH

AIRCRAFT	DESTROYED	PROBABLE	DAMAGED
JU 88	26		2
HE III	9		
CANT Z1007	3		
DO 217	1		
SM 84	1	1	
SM 82	1		
PIAGGIO 108	1		
TOTALS	42	1	2

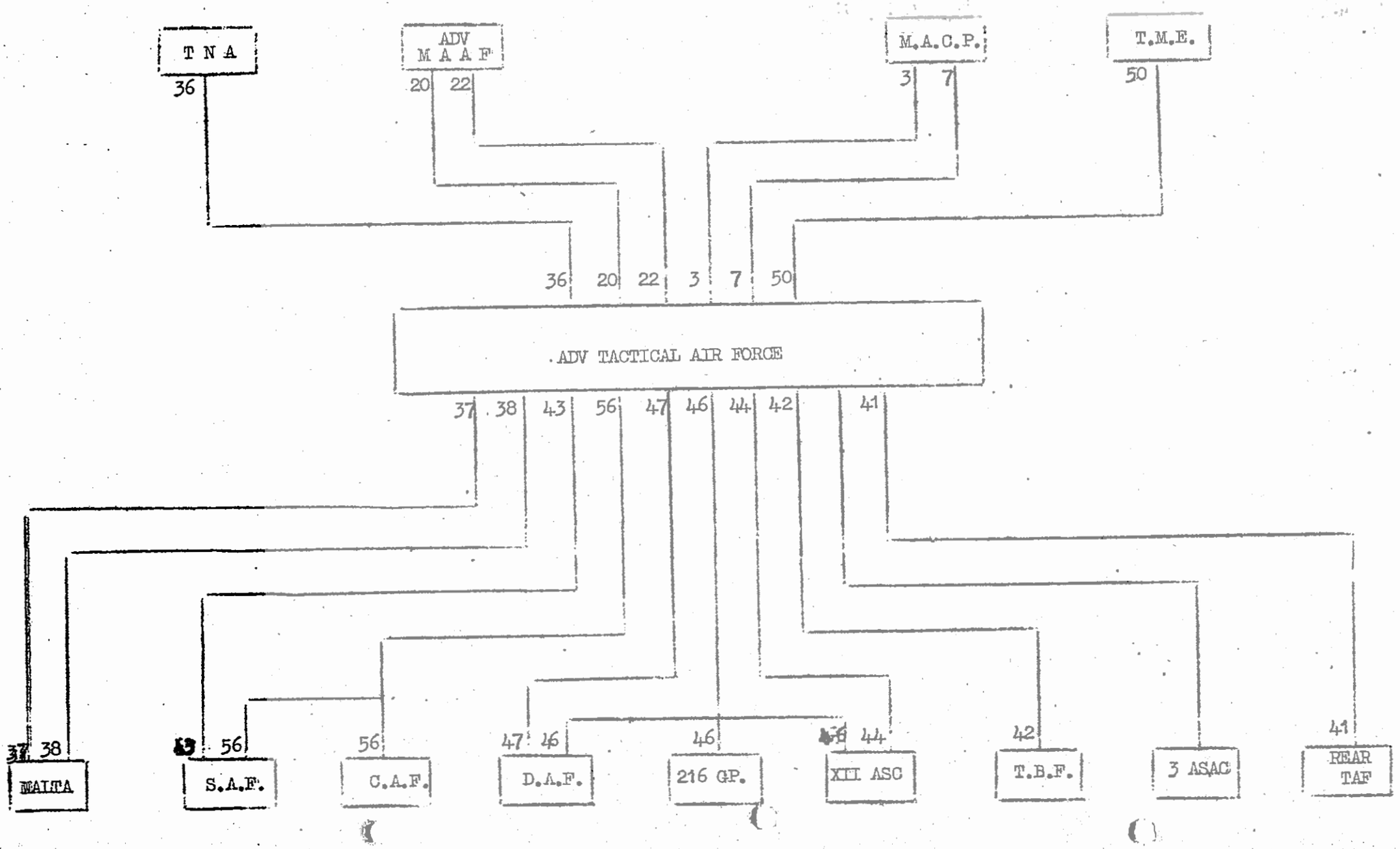
6. ADMINISTRATION

It has again been shown that Light Warning Stations suffer badly through having no formation personally interested in their administration. Personal mail, airmen's records, health and hygiene as well as general discipline are all unsatisfactory because there is no officer specifically responsible for these matters. Two courses are open, either the formation of a Light Warning Headquarters Unit of small size designed to look after the administration of five or six posts or the staffing of the M.S.S.Units so that they can be made responsible for the administrative as well as the technical efficiency of the Light Warning Units in their areas. One of these measures must be taken as the present system leads to a steady decline in the efficiency of the station as well as the morale of the airmen. Light Warning Stations operate under trying conditions usually well in the forward area and they should for that reason alone have access to some Administrative Officer to settle the various responsible problems which are bound to arise.

(Sgnd) P. E. AXON,
Wing Commander,
R. D. F.

SECRET

H.Q. TACTICAL AIR FORCE W.T. COMMUNICATIONS
30 JULY - 15 AUGUST 1943



APPENDIX "D".

British MOST SECRET
equals American SECRET.

TECHNICAL MAINTENANCE - Points arising from HUSKY.

1. Owing to enemy action damage being on a scale much smaller than anticipated, maintenance organisation was not strained as much as was anticipated.

2. Since Servicing Commandos were not called upon to act as Commandos but in their servicing capacity, in which they proved effective, it is difficult to judge their usefulness. It is suggested the same purpose could be achieved by absorbing the technical trades in Squadron A and B parties and giving all of them in the use of small arms. This would have the advantage of the men working with, and getting a better understanding of the work required on the aircraft being used.

3. One Commando, shipped in U.K., had all its personnel in one ship and all vehicles, tools, spares and domestic equipment in another. The ships were directed to different parts of the island and the unit was not able to link up until long after its usefulness as a Commando was passed. This must not be allowed to happen again.

4. A small R.S.U. element with a crane should be in with Squadron and Wing 'A' parties. Crashes on runways could have been moved more quickly and with less damage to runway and aircraft by use of a crane, than by resorting to "dragging".

5. This party would carry a small range of tools to deal with one or two types of aircraft likely to be encountered in the same way as a Commando.

6. The main R.S.U. party should be shipped complete as soon as Squadron 'B' parties have left, handing over any work incompleted to the forward element of a base maintenance M.U. which should be in a position to take over. (This plan is being adopted in "BAYTOWN" and "AVALANCHE").

7. Fighter Squadrons cannot operate for long at reduced scales of maintenance personnel and it is strongly recommended that sixteen F.M.E., and sixteen F.M.A., with other trades in proportion should be adhered to; these to be split into 'A' and 'B' parties of eight each and not included in 'C' party which was very late in arriving. Sickness and physical tiredness of the men has a direct effect on the standard of maintenance. Under the circumstances the serviceability was remarkably high.

8. An advance M.T.L.R.U. party is necessary with Squadron and R.S.U. parties, as R.A.F. units were not always conveniently situated to get help from R.E.M.E. and unserviceable vehicles threw a strain on the few vehicles available.

9. In the case of all units 'B' and 'C' parties should be shipped together. 'C' parties of some R.S.U's. did not arrive until after D+50 and the 'C' party of M.T.L.R.U. is not yet here at time of writing this. This party consists chiefly of vehicles and spares which are badly needed before a further move forward. In addition 'C' parties normally contain a large element of domestic personnel whose early appearance has a direct effect on the well-being and consequently on efficiency of the technical personnel.

(Signed) S. G. BIRCH.
Group Captain,
Engineer Staff Officer,
TACTICAL AIR FORCE.

15.9.43.
Headquarters,
N. A. T. A. F.

MOST SECRET.

Appendix "E" to T.A.F. Memorandum on Lessons Learnt from Operation HUSKY

Copy No. .....

HEADQUARTERS, TACTICAL AIR FORCE.

ADMINISTRATIVE LESSONS TO BE DRAWN FROM OPERATION "HUSKY"

PART I. PRE D. DAY PROBLEMS

ESTABLISHMENT OF PLANNING STAFFS

1. The three special planning staffs set up by M.A.C., N.A.A.F. and WESTERN DESERT (Force 545) were each limited to a very small number of relatively senior officers. There were no junior staff or specialist officers of the Services. Resultantly these limited staffs were burdened with "devilling" on supplies, establishments, etc., as well as policy and higher direction. It did not prove a satisfactory solution to farm out detailed calculations to specialist staffs on other Headquarters who were not in the picture.

2. The skeleton Air Force planning staffs were in sharp contrast to full Army staffs who expected attendance by Air Force representatives at their Branch conferences. To fulfil this requirement, the planning staffs were frequently tied up in conferences for the greater part of the day, during which little or no constructive work on purely air administrative matters could be accomplished on paper. The bulk of this therefore had to be accomplished by night work over a long period.

3. It is recommended that future administrative planning staffs should be established with senior representation in the following branches. The requisite specialist officers and junior staff to work out detail must also be established concurrently.

(i) Administration and Organisation.

(ii) Movements.

(iii) Equipment and Engineering.

DIVISION OF PLANNING STAFFS

4. The multiplicity of planning staffs caused considerable confusion over spheres of responsibility, and over degree of action being taken. Confusion also existed over the division between planning and executive responsibilities. The distance between the different administrative staffs slowed up decisions, overloaded signals traffic and led to misunderstandings. Planning memoranda and instructions also tended to be duplicated.

5. By results, however, these difficulties did not immediately affect the operation which, from the administrative angle, was split between two Task Forces:- (i) the R.A.F. mountings from MIDDLE EAST, MALTA and UNITED KINGDOM through 8th Army beaches, and (ii) the combined U.S.A.A.F. - R.A.F. mountings from NORTH AFRICA through 7th Army beaches.

DEGREE OF DETAILED PLANNING BY EACH STAFF

6. It has been suggested that the M.A.C. Outline Administrative Plan was too detailed. As a result of the publication of appendices showing suggested build-up

/ of requirements

of requirements by convoys and by aerodromes, it continued to be misleadingly quoted after changes in the Air Plan necessitated by changes in the Military Plan had modified these requirements. Certain Headquarters, particularly Army Headquarters, tended to regard its detail as firm and inviolable, whereas its purpose was, firstly, to provide as accurate an estimate as possible of overall stocks and shipping requirements, secondly, to indicate to the detailed planners how such estimates had been reached, and thirdly to assist the staffs of Formations that were actively engaged in the current battle during the first two months of planning.

7. The N.A.A.F. Outline Plan, in addition to its general direction, undertook the detailed build-up of personnel, vehicles and supplies for R.A.F. and U.S.A.A.F. forces being mounted from NORTHWEST AFRICAN ports. In so doing, it usurped the prerogative of the Task Force Commander's (Desert Air Force) planning staff, but the distance between staffs and the necessity for early loading made detailed planning on the spot essential.

8. Force 545, which was responsible for the detailed planning for the Desert Air Force, was not given sufficient time to prepare a detailed Administrative plan which could be implemented by all Air Forces scheduled to come under the control of Desert Air Force in SICILY. To be effective, such a plan required to be distributed at least three weeks before N.W.A. Fighter Wings moved to MALTA, and units supplied from the U.K. moved to their ports of embarkation. In an effort to make up for the shortage of time, Force 545 issued excellent Administrative Instructions, but even these arrived too late for effective implementation by NORTHWEST AFRICA and UNITED KINGDOM.

9. Force 545 administrative planners were further hampered by the distance between themselves and A.H.Q., Western Desert, who were ultimately responsible for the administrative set-up as the future A.H.Q., Desert Air Force.

10. Consequently units from the three theatres of MIDDLE EAST, NORTHWEST AFRICA and UNITED KINGDOM arrived for the battle on different establishments, with different degrees of mobility and on different scales of technical, domestic and personal equipment. These differences, particularly in regard to establishments and mobility, have not yet been successfully brought into line.

11. The issue of briefing instructions was complicated by the entry of the majority of the N.W.A. ground units into SICILY through American Army beaches, and their initial maintenance within American divisional areas. It was found necessary for the briefing of these units to be done from N.W.A. by N.A.T.A.F., because Force 545 was not in close enough communication with the U.S. 7th Army to secure the necessary details of the U.S. Army intentions.

12. The main conclusions on planning responsibilities reached are:-

(i) The Outline Plan of the Higher Formation should either confine its published data to overall totals and assumptions, or, if it is considered desirable to include detailed appendices, ensure that such appendices are tabulated as a guide only to detailed planning.

(ii) The Air Task Force Commander's Staff must be brought into the picture sufficiently early to permit that staff to settle its own Order of Battle, and to issue its own Administrative Instructions to all units destined to come under the Task Force Commander for the battle.

(iii) Assistance from members of the planning staff of the Higher Headquarters is invaluable to the Task Force Commander, and when circumstances permit, their attachment to the Task Force Commander's Headquarters for the period of the battle is recommended in order to provide a measure of continuity between the preparatory and executive phases of the operation.

/(iv) The initial

(iv) The initial tasks of the detailed planning staffs are to decide upon the Administrative Order of Battle, and to determine the Establishments required to suit the type of operations.

(v) The passage of R.A.F. units through American beaches and their subsequent maintenance in American Army areas adds to the complexity of administrative planning and briefing, but is quite practicable provided the planning staff is in close touch with the American Army Headquarters.

SHIPPING BIDS AND STOWAGE

13. Ship to shore convoys were mounted from EGYPT, LEVANT and the UNITED KINGDOM. Shore to shore convoys in craft were mounted from TRIPOLI, NORTHWEST AFRICA and MALTA on a ferry service.

14. Units and stores appear to have been well dispersed between ships in the EGYPT, LEVANT and UNITED KINGDOM convoys. The limitation of personnel accommodation on M.T/Store ships meant inevitable separation of personnel from their unit equipment and M.T. This is at present an evil inherent in deep sea shipping, and the only possible solution, other than exclusive use of L.S.T's, is balanced stowage to aim at simultaneous unloading. Control is naturally made easier by the early despatch to the Task Force H.Q. of full accurate stowage documentation. Allocation lists from U.K. and MIDDLE EAST were received in good time and proved invaluable. Simultaneous discharge of personnel and M.T. was not however always possible owing to losses at sea and the delay in the opening of the port of CATANIA.

15. The MALTA ferry service of craft, operating under a Ferry Control, was a very great success, and its flexibility enabled day to day planning to meet changing needs. Full details of this organisation are contained in Desert Air Force report on the Operation.

16. Shipments of unit and Air Force supplies from NORTHWEST AFRICA was not so successful, owing to control of R.A.F. and U.S.A.A.F. bids by the U.S.Army Transportation Organisation, which on this operation did not appear to appreciate Air Force priorities.

17. The U.S.A.A.F. is entirely dependent upon the U.S. Army Transportation Branch (S.O.S) for stowage plans and loading. It has no representatives of the Air Copps in the stowage division or on the quayside. R.A.F. units and supplies destined for U.S. Army beaches had to conform to U.S.A.A.F. practice, except that an R.A.F. Embarkation Staff was set up at each of the main ports of loading and R.A.F. Beach Bricks were included in the Order of Battle. But neither had any real power to influence priorities.

18. It was extremely difficult to persuade the Army Task Force (Force 343) to allocate sufficient tonnage to the Air Forces to carry over their minimum requirements in personnel, vehicles and supplies necessary to operate the airfields in accordance with the Air Plan. It was quite impossible to influence the stowage of Air Force units and supplies, to gain the desired tactical dispersal of these units and supplies between ships and craft, or to exact details of an unloading schedule. Had any one ship containing Air Force supplies been sunk, the supply position would have been seriously jeopardised owing to bad tactical loading.

19. It is most strongly recommended that in future operations utilising shipping under U.S. Army control, the R.A.F. and U.S.A.A.F. are given proper representation at the Task and Sub-Task Commanders meetings on bidding, a recognised air member on the stowage committee, and air representatives at the docks to "progress" the loading of Air Force units and supplies.

20. In amphibious operations involving short sea voyages, it is most desirable that the Air Forces are allotted in the follow-up convoys the exclusive use of specified L.S.Ts. Thereby flexibility in the calling forward of Air Forces to meet the operational picture is attained, which is impossible when it is

/ necessary to

necessary to pre-stow units on M.T./Store ships.

PART II. DISEMBARKATION PHASE.

GENERAL.

21. A very full commentary on the R.A.F. beach organisation has already been made by Advanced Headquarters Desert Air Force in its administrative report. For this reason it is not intended to enter into repetitive detail here, but as Desert Air Force report was mainly confined to landings on 8th Army beaches, it is informative to record that observation of the landings on 7th Army beaches affirmed the conclusions reached by Desert Air Force on the Eastern beaches.

22. It was proved that it was most desirable for an advanced administrative element of the Air Task Force Headquarters to be landed as early as possible. This advance party should be headed by the D.A.O.A. or his equivalent, and include officers from the Equipment and Movements Staff. Its main purposes are to co-ordinate movement of units and supplies and to make local decisions as occasion may demand. It should be fully mobile in Jeeps, and be provided with pack wireless communication.

BEACH BRICKS.

23. Three types of Beach Brick were used in HUSKY, created respectively by U.K., NORTH AFRICA and MIDDLE EAST.

(i) U.K. Beach Organisation was composed of two Bricks under a Sub-Base H.Q. It included two large M.T. repair sections of 18 men each to deal with drowned vehicles. This was unnecessarily large, and could have been reduced to one quarter of the total personnel established for this purpose by Air Ministry.

(ii) NORTH AFRICAN Beach Organisation operated with a Sub-Base H.Q. and three Bricks. It is felt that the Brick establishment of 2 officers and 24 ranks in each Brick, with an operational Sub-Base H.Q. of one Squadron Leader and a small Staff, was about one third below the ideal. This is particularly true when one Brick may have to operate on a beach some distance away from the Sub-Area. This occurred on the DIME landing. The Bricks operated very successfully as advisory and liaison units to the U.S.Army Engineer Shore Battalions.

(iii) MIDDLE EAST Bricks consisted of 5 officers and 35 other ranks, including 2 officers and 17 other ranks for explosives duties and earmarked for eventual transfer to the A.A.P.

Among certain of the Beach Bricks there was a tendency to allow the R.A.F. personnel to be absorbed into the different sections of the Army Beach Bricks. As a result they tended to be regarded as so many extra bodies by the Army. This is considered a most undesirable misuse of the R.A.F. elements. It increases the difficulty of the R.A.F. Beach Brick Commander in maintaining operational movement control, and destroys all unit spirit in a type of operation which calls for high morale and good leadership.

24. The choice of personnel was not altogether successful. Although officers had been most carefully picked, a surprisingly large number of other ranks proved to be physically unfit or temperamentally unsuitable for the work. This appears to be the result of indiscriminate drafting. This would not have occurred if volunteers had been called for, and medically examined before selection.

/ 25. Desert Air

25. Desert Air Force's recommendation that the Beach Brick Commanders should be brought into the picture during relatively early stages of the planning is fully endorsed. It is recommended that Brick Commanders should be attached to the Divisional P.M.L.O's through whose beaches they are to work, as soon as the P.M.L.O. and his A.M.L.Os start detailed planning. Thereby they can advise and check on R.A.F. loading and stowage, and carry right through to disembarkation with the full picture. They could then advise locally on any unexpected alteration in priority of unloading in the knowledge of R.A.F. needs vis a vis those of the Army.

26. The control of priority of unloading through 7th Army beaches at CENT and DIME was completely absent after the specialist assault troops in the first flights had gone ashore. L.S.T.s which had been carefully pre-stowed to a programme in NORTH AFRICA, were arriving off the beaches and standing off shore until such time as by chance they were called in for unloading. At DIME beaches no advices of consignments and priorities were being received from N.W.A. by the Beach Organisation ashore as late as D+9. Consequently Air Force disembarkation suffered equally with Army troops in an haphazard call forward to the beach. Two examples of this lack of control will suffice. The Servicing Commandos and A.L.G. Signals Section embarked for BISCARI on the D+4 convoy did not discharge until D+7 and D+9 respectively.

BEACH TRANSPORT.

27. On certain beaches the lack of Army load carrying vehicles to transport R.A.F. supplies was again a general complaint. It is quite clear that the R.A.F. in amphibious operations must be given shipping space for a small number of M.T. from an S. & T. Column or A.A.P. to be included on the assault convoy. These would be shipped with balanced initial loads of P.O.L., S.A.A. and oxygen and would remain under the operational control of the R.A.F. throughout.

28. The recommendation by Desert Air Force that an advanced section or sections of an A.A.P. should land as soon as any Beach Brick has been successfully established, is strongly supported. This in effect is analogous to the U.S.A.A.F. Service Command Organisation, which controls its own Quartermaster Truck Companies and Ordnance Companies, and is not dependent on Army transportation or dumps.

29. Beach Brick unit transport was not satisfactory. Too much reliance was placed on motor cycles, or, as in the case of the U.K. Bricks, on pedal cycles. Both are useless on sand. A unit establishment of one Jeep, one four wheel drive three tonner and one motor cycle per Brick is recommended.

BEACH COMMUNICATIONS.

30. Communications between beaches and Force H.Q. were not satisfactory. No special facilities were planned other than through Field Force H.Q. Signals Sections. As a result, stock returns and notifications of units which had landed, did not get through to the controlling H.Q. This must be remedied in future operations.

31. It is recommended that one pack-set and the necessary operators be established for each Brick, for communication back to H.Q., together with "walkie-talkie" sets for inter-brick communication.

SIGN POSTING AND INFORMATION.

32. As Desert Air Force have already stressed, the importance of good sign posting cannot be over emphasised. Sub-Base H.Q. should also set up a general R.A.F. information bureau to cover locations of units, sources of supplies, staging areas and analogous points of urgent interest. This is particularly important on beaches under the control of an Allied Force.

TRANSIT CAMPS.

33. A Transit Camp is required for each principal port area. The Transit Camp Commander should be given the opportunity to plan his requirements with the Army Base Sub Area Commander prior to the operation. His personnel camp and M.T. parks should be sited as close together as possible.

/ 34. An effort

34. An effort to set up a satisfactory R.A.F. Transit Camp in HUSKY was frustrated by the holding back of M.T. store ships in MALTA on which were loaded all domestic equipment including mosquito nets. Personnel were landed several days before any unit tentage or cooking utensils arrived at the ports. It is understood that Army units carry a percentage of their G.1098 equipment on board troop-ships and it is recommended that in future R.A.F. units are accompanied by a small scale of domestic equipment ; also that mosquito nets (when required) are made a personal issue prior to embarkation on a deep sea voyage.

CONCLUSION.

35. The operation fully justified the creation of the R.A.F. Beach Brick for the task of controlling R.A.F. movement of personnel, vehicles and supplies through Army beach-heads. Great praise is due to the officers and personnel of these Bricks, who used initiative and unflagging zeal to overcome local difficulties and the inevitable fog of an assault landing. The experience gained in HUSKY has been invaluable, and a new type of R.A.F. organisation has proved a success.

PART III. SUPPLIES AND LONG RANGE TANKS.

36. The rapid advance by the ground forces, and the success with which the aerodrome construction groups and aviation engineer battalion prepared strips, enabled a speedy build-up of Squadrons in SICILY, as supplies were available or supplemented where necessary from MALTA. The lesson to be drawn appears to be that supplies should always be planned on an optimum build-up, to enable advantage to be taken of a good ground situation. Air Force tonnages involved even on this basis was only represent, relative to Army tonnages, a small fraction of the overall shipping lift.

37. Although less than 25% of the total long range tank stocks were expended during HUSKY, it would be dangerous to take this as the yardstick for future operations. Long range tank stocks must be planned in relation to the anticipated air opposition and likely availability of ground strips. They should be capable of meeting 100% expenditure if necessary on this basis.

PART IV. MAINTENANCE

SERVICING COMMANDOS

38. Desert Air Force has reported in full on the activities of the Servicing Commandos. With the exception of No. 3201, No. 3202 and No. 3203 Servicing Commandos from NORTHWEST AFRICA, all were newly formed units and it would appear more Commando minded than Servicing. The three N.W.A. units were, however, highly trained technical units who had been operating continuously in N.W.A. since the TORCH landings. No. 3202 Servicing Commando operated with 31st Fighter Group, XII Air Support Command, to whom they were a great assistance.

39. The fact that Servicing Commandos were not employed to the extent anticipated, was due to the delay in the availability of landing grounds, to the lack of casualties, and to the extreme flexibility of the MALTA ferry.

AIR STORES PARKS.

40. No. 40 and No. 135 Air Stores Parks were both planned to discharge their "A" Parties with one month's pack-up about D+14. The use of the MALTA ferry enabled No. 40 A.S.P. to land a small Detachment on D+3. This Detachment carried propellors, sparking plugs, compressors, tyres, tubes and other highly consumable items, and this departure from original plan was an unqualified success, which must be repeated in future operations. In this specific operation cannibalisation was not heavy. As this was entirely contrary to anticipation, much of the credit must go to No. 40 A.S.P. Detachment and the subsequent spares set-up.

/ REPAIR AND SALVAGE UNITS.

REPAIR AND SALVAGE UNITS.

41. Desert Air Force have recommended that an advance party of an R.S.U. or F.S.U. be landed as early as possible after aircraft have flown in. This proposal appears sound, and is recommended for future action.

42. Similarly it appears desirable that an advance element of an M.T.L.R.U. be landed as quickly as the shipping position permits, as any means which assists in keeping up the level of unit M.T, is invaluable.

SCALES OF EQUIPMENT.

43. It is the general view that light assault scales were made unnecessarily meagre, and that much more equipment could have been packed in unit transport without overloading the available vehicles.

44. The Administrative Instructions made no differentiation in scales between units landing on D day and units in follow-up convoys, cutting the latter to an unnecessarily low level of tentage, domestic equipment and clothing. As the Army were unable to make up the deficit in these items, units suffered unnecessary inconvenience with no gain.

MECHANICAL TRANSPORT.

45. Difficulty was experienced in shipping and unloading signals vehicles and trailers. Two G.C.I. stations were non operational for five days, awaiting their trailers aerial which had to be shipped in L.C.T.s. specially ordered for the purpose. L.S.T.s cannot conveniently take vehicles over 11 feet high, and these aerials were over 13 feet.

46. Trailers of any description are undesirable in the early stages of amphibious operations, as they slow down the rate of loading, and cause great anxiety in beach landings.

ADMINISTRATION.

47. A number of R.A.F. RADAR units were attached to XII A.S.C. for the Operation, and operated in the Western area. It was extremely difficult for A.H.Q., D.A.F. to administer them, owing to the distance involved and to their operation in the 7th Army area. Should a similar position again arise, it is recommended that an M.S.S.U. also be attached to service these units and act as their administrative headquarters.

CONCLUSION.

48. This report has avoided as far as possible unnecessary repetition of points discussed in the Administrative Appendix to the A.H.Q., D.A.F. report. Comment has however been made on points that called for particular praise or criticism, or that are peculiar to the Western Assault.

17th September, 1943.

APPENDIX "F"

LESSONS LEARNT FROM OPERATION HUSKY.

AIRFIELD CONSTRUCTION.

1. The Deputy Chief Engineer (Airfields) who is the Chief Engineer's senior staff officer and a specialist in Airfield Construction should be brought in on the early stages of any planning as details of plant units and equipment required for any operation requires much consideration so as to avoid waste of space. It is his responsibility to see that the Chief Engineer is informed as early as possible as to the D.C.E's minimum requirements in all matters so that the C.E. may incorporate these demands with all his other commitments prior to any bidding.

2. In Operation HUSKY the D.C.E.(A) was only brought in at the end of the planning with the result that:-

(a) The A.O.C. of Desert Air Force had no knowledge of the methods the D.C.E.(A) intended to employ causing difficulties there for both parties concerned.

(b) One Airfield Construction Group came in from the U.K., formed to the standard pattern and the other from the Middle East. The latter's formation was quite different, and far too big and unwieldy for operating in forward areas. This resulted in the necessity of reforming the Group during operations. A difficult and unsatisfactory state of affairs.

(c) Neither Groups were briefed properly, and tended to be rather overflooded with information which was apt to cause mild confusion.

3. R.A.F. Liaison Officers. During First Army operations it was found that one R.A.F. L.O. with each group and one at army level was quite satisfactory. In "Husky" there were, all told, six L.O's. Two had had experience with the First Army, one had come direct from the U.S. and had something of the correct training, but no operational experience, one who had been with the Middle East had operational experience, but little training in airfield design and layout, and two more who had had no previous experience or training of any sort whatsoever. This was quite an impossible situation and three of these officers were therefore posted, leaving the two first named and the officer from the Middle East, as it was decided that as an operational pilot with some experience of airfield construction, he would be easier to train in the necessary qualifications required, rather than the G.D. officer from the U.K. who had no operational experience, only Air Ministry training and was too slow for active operations.

One instance occurred of an R.A.F. L.O. controlling the movement of an Airfield Construction Group's Plant and Equipment. This is an Engineer matter and must be controlled only by the C.R.E. of the Group.

4. It was recently decided that an R.A.F. L.O. at army level was unnecessary. Delays have since occurred of up to twenty-four hours owing to the D.C.E. (A) being unable to get R.A.F. advice on possible sites, but this should be easily remedied when all R.A.F. commanders realise the need for prompt advice. Delays may also occur when airfields for bombers are being constructed in a fighter area, as if there is any doubt, a representative of the bomber command should give the desired decision and not the fighter command, but the remedy is as above.

5. Signals. The signal system employed by D.C.E. for the use of the R.A.F. L.O. with the construction group was not entirely satisfactory as most of the messages did not get through. The messages were to go either from the R.A.F. L.O's set to a station called "old man" and thence on to advanced air headquarters, or be handed in direct to "old man". One of the results of this was that the Chief Engineer was not kept informed of progress and Pachino airfield was not utilised [illegible] operational.

British MOST SECRET
equals American SECRET

It is felt that the best method of signalling information back is through R.E. and Army channels Chief Engineers of Corps realise the importance of this and will give any relative signal very high priority It will then go through operations to the controlling Air Formation concerned and should be repeated to the Chief Engineer of the Army and the R.A.F. Superior Headquarters.

6. Appendix "A" gives the names and positions of airfields constructed or repaired in Sicily, from July 10th to August 31st.

7. Appendix "B" gives the reorganised establishment of an airfield construction group, determined as a result of this operation.

- AIRFIELDS IN SICILY -

	NAME.	MAP REF.	SIZE & DIRECTION OF RUNWAYS.	REMARKS
B.N.	AGNONE P.L.S.	H955590	1300 x 100 N-S 1500 x 100 E-W	5 miles NE of Lentini.
U.S.N.	AGRIGENTO P.L.S.	G655525	2000 x 50 ENE-WSW	3½ miles SSE of Agrigento.
U.S.N.	BARCELONA P.L.S.	D045520	1500 x 50 NE-SW	5 miles SW of Milazzo.
U.S.E.	BISCARI P.L.S.	H440334	1233 x 150 NNE-SSW	5 miles N of Biscari. Ground tends to be soft.
U.S.E.	BORIZZO P.R.	A715225	1300 x 77 N-S	8½ miles NE of Marsala.
B.N.	CASSIBILE P.L.S.	J101212	1500 x 100 NW-SE	7 miles SSW of Siracusa.
B.	CASALLA P.L.S.	H855705	1500 x 100 E-W	Gerbini Plain.
U.S.E.	CASTELVETRANO. P.L.S. & P.R.	F920986	PLS continuation of PR. giving 2000 x 77 total.	1 mile W of Castelvetrano.
B.E.	CATANIA P.R.	H937749	1780 x 63 E-W	2 miles SSW of Catania
U.S.E.	COMISO P.R.	H542220	1890 x 55 NE-SW	3 miles N of Comiso.
B.N.	CUTICCHI P.L.S.	H750665	1900 x 200 NW-SE	Gerbini Plain.
U.S.N.	DIRILLO P.L.S.	H333227	2000 x 50 ENE-WSW	8 miles SE of Gela.
B.E.	DITTAINO P.L.S.	H875670	2000 x 200 E-W	Gerbini Plain.
U.S.E.	FALCONE P.L.S.	C975475	1333 x 50 ENE-WSW	2 miles E of Falcone.
B.N.	FARO P.L.S.	H755685	1500 x 200 E-W	Gerbini Plain.
U.S.N.	GELA EAST P.L.S.	H246297	2000 x 67 WNW-ESE 2175 x 100 NE-SW	1 mile E of Gela.
U.S.N.	GELA WEST P.L.S.	H200323	1850 x 50 } NW-SE 1930 x 60 } 1870 x 60 NNE-SSW	2 miles NW of Gela.
B.E.	GERBINI PR & PLS.	H765750	2000 x 200 E-W	11 miles W of Catania.
B.N.	LENTINI EAST PLS.	H837565	1200 x 80 NE-SW 1250 x 100 E-W	3 miles NW of Lentini.
B.N.	LENTINI WEST PLS.	H805570	1200 x 175 WNW-ESE	4½ miles NW of Lentini.
U.S.N.	LICATA SOUTH PLS.	G916365	2000 x 67 NW-SE	2 miles NW of Licata.
B.N.	MAUCINI P.L.S.	N962890	1200 x 100 ENE-WSW	1½ miles WSW of Pachino.
U.S.	MAZARA P.L.S.	F842977	2000 x 50 NE-SW	5 miles ENE of Mazara.
U.S.N.	MILAZZO EAST. PLS.	D100563	1270 x 50 NNW-SSE	1½ miles SE of Milazzo.
U.S.N.	MILAZZO WEST. PLS.	D072561	1333 x 50 NNE-SSW	1½ miles SSW Milazzo.
U.S.N.	MT LUNGO P.L.S.	H155338	2000 x 50 } ENE-WSW 1500 x 50 }	5 miles WNW of Gela.

	NAME	MAP REF.	SIZE AND DIRECTION OF RUNWAYS		REMARKS
B.E.	MALAVENTANO P.L.S.	H860650	2000 x 200	WNW-ESE	Gerbini Plain.
B.E.	MADDELENA P.L.S.	H795705	1500 x 200	E-W	Gerbini Plain.
B.E.	PACHINO P.L.S.	N960915	1400 x 300 1100 x 200	NW-SE NNE-SSW	½ mile W. of Pachino.
B.N.	PALAGONIA P.L.S.	H605580	1250 x 125	NNW-SSW	11 miles NE of Caltagirone.
U.S.E.	PALERMO P.L.S.	B4004464	1330 x 50 1330 x 50	NNW-SSE	2 miles W. of Palermo.
B.N.	PANEBIANCO P.L.S.	H790635	1500 x 100	E-W	Gerbini Plain.
U.S.N.	SAN ANTONIO P.L.S.	D0144496	1500 x 50	NE-SW	7 miles SW of Milazzo.
U.S.E.	SCIACCA P.L.S.	G180870	1730 x 83	WNW-ESE	5 miles N. of Sciacca.
B.N.	SAN FRANCESCO PLS	H826547	1100 x 50	NE-SW	3½ miles W. of Lentini.
B.N.	SCORDIA P.L.S.	H790545	1400 x 100	E-W	1½ miles ESE of Scordia or 6 miles W of Lentini.
B.E.	SIGONELLA P.L.S.	H815686	2000 x 200	E-W	Gerbini Plain.
U.S.N.	TERMINI EAST PLS	B875323	2000 x 50	ENE-WSW	12 miles NE of Termini.
U.S.N.	TERMINI WEST PLS	B815304	1980 x 50	E-W	4 miles E. of Termini.
U.S.E.	TRAPANIA/MILO P.L.S.& P.R.	A755350	PLS 2000 x 50 PR 1230 x 77	WNW-ESE WSW-ENE	3 miles ESE of Trapani.
U.S.N.	COMUNELLI P.L.S.	H123367	2000 x 67	NE-SW	7 miles NW of Gela.
U.S.E.	PONTE OLIVO P.L.S.& P.R.	H282372	PLS 2000 x 83 PR under construction.	NE-SW	5½ miles ENE of Gela.

NOTE:-

P.L.S.	is Prepared landing strip.
P.R.	is Paved runway.
B.	is British.
U.S.	is American.
N.	is New Airfield.
E.	is Existing Airfield.

APPENDIX "B"

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equals American SECRET.

ESTABLISHMENT OF AN AIRFIELD CONSTRUCTION GROUP

C.R.E. with H.Q. Airfield Construction Group.

1 Artizan Works Co.

1 Mechanical Equipment Section.

1 Bomb Disposal Section.

1 Light Aid Detachment.

2 Pioneer Coys.

1 Platoon. Gen. Transport Co., R.A.S.C.

1 Tipper Platoon, R.A.S.C.

This reorganised establishment is to be used for future operations.

A further modification may be made which is to do away with the Artizan Works Coy and 2 Pioneer Coys and replace them with 3 Road Construction Coys, thus making the group an entire R.E. set-up.

Appendix "A"

MOST SECRET

HEADQUARTERS,
NORTHWEST AFRICAN TACTICAL AIR FORCE.

Reference:
TAF/AIR/24/8.

26th May, 1943.

TO: Air Vice Marshal H. Broadhurst, D.S.O., D.F.C., A.F.C.

OPERATIONAL DIRECTIVE FOR HUSKY OPERATION No. 1.

1. INFORMATION.

The plan for the employment of all Northwest African Air Forces issued by N.A.A.F. Headquarters provides a full background for Operation "HUSKY"; copies numbers 83 to 88 have been issued to you. No further comprehensive operational plan will be issued by this Headquarters, but periodic directives will be issued to implement the plan for the responsibilities allocated to Tactical Air Force.

2. ROLE OF TACTICAL AIR FORCE.

Operation "HUSKY" can be divided into three specific phases. These phases, and role of the Tactical Air Force in each, are as follows:-

(i) PHASE I - PREPARATORY PERIOD OF OPERATIONS.

(a) Air forces based in Tunisia.

With escorted light bomber attacks by day against aerodrome objectives in Western Sicily combined with continued pressure by night bombing to assist the available air effort from the mainland to neutralize the enemy air forces.

Shipping protection.

The T.A.F. elements employed in this phase will be the Tactical Bomber Force and elements of XII Air Support Command, possibly reinforced by No. 7 South African Wing (if re-equipped) and 324 (U.S.) Group.

(b) Air Force (T.A.F.) elements based in Malta.

Air fighting to establish the local air situation in our favour.

Escort for medium day bomber attacks on objectives in Eastern Sicily.

Shipping protection.

(ii) PHASE II - PERIOD OF THE ASSAULT.

To provide protection by night and day over shipping and beaches with air forces based in Malta and Pantellaria.

(iii) PHASE III - ESTABLISHMENT OF A BRIDGEHEAD FROM LICATA TO CATANIA.

Continued air effort to neutralize enemy air forces and protection of shipping and beaches.

When air forces can be located in Sicily, direct support to assist the advance of the land forces.

3. COMMAND OF AIR FORCES FORMING TACTICAL AIR FORCE.

(i) Preliminary phase and for period of the assault.

Operational control of all Tactical Air Force elements located in Malta and Pantellaria will be undertaken by Air Officer Commanding Malta under direction of Air Officer Commanding Tactical Air Force.

Operational control of units located on the mainland will be undertaken by Tactical Air Force Headquarters and exercised through Rear Headquarters, A.H.Q. Desert Air Force, Rear Headquarters XII Air Support Command, and Tactical Bomber Force Headquarters.

(ii) The advance into Sicily.

When air forces (Desert Air Force and XII Air Support Command) are located in Sicily operational control of all units is undertaken by Air Officer Commanding Desert Air Force under direction of Air Officer Commanding Tactical Air Force until it is practicable to have a second control. When these circumstances arise, XII Air Support Command will form a separate entity with direction of effort and co-ordination with Desert Air Force undertaken by Tactical Air Force.

Operational control of the units remaining on the mainland will be as in the preliminary phase until light bomber forces can be located in Sicily. When this stage is reached the light bomber force may be centrally controlled under Tactical Air Force Headquarters or subordinated to Air Officer Commanding Desert Air Force or XII Air Support Command dependent on the development of operations.

4. COMPOSITION OF TACTICAL AIR FORCE.

The order of battle of the Tactical Air Force is given in Tactical Air Force Provisional Order of Battle 'D' Day (flying units only) dated 24th May, 1943, a copy of which is attached at Appendix "A".

5. EMPLOYMENT OF AIR FORCES.

The policy for the employment of the Tactical Air Force is given in Force 141 (Air) signal AP/25 dated 19th May, 1943. A copy of this signal is attached at Appendix "B".

This policy may be adjusted from time to time in accordance with the development of operations.

6. FIGHTER CONTROL.

The policy for fighter control is given in Force 141 signal S.94 dated 20th May, 1943, copy of which is attached at Appendix "C".

7. DETAILED OPERATIONAL PLAN.

Within the framework provided by Headquarters N.A.A.F. Operational Plan and the instructions given above, you are to formulate a detailed operational plan to cover your air operations during "HUSKY" up to the completion of phase III. Your plan, together with any recommendations you wish to make, is to be submitted to me for approval as soon as possible.

8. In making your plan you are also to take into account the following requirements:-

(i) Co-operation with Air Officer Commanding Malta.

Operational control will pass to you from Air Officer Commanding Malta immediately air forces are established in Sicily. Accordingly, your link with Air Officer Commanding Malta must be very close so that no abrupt change in the policy of employment of units will occur and the change over of control is effected without break. It is essential that you work in close harmony with Air Officer Commanding Malta and mutually agree on the best employment of air forces. You must take steps to dovetail your detailed operational plan into that of Air Officer Commanding Malta.

Concerning night fighter aircraft, Air Officer Commanding Malta will continue as the main control for these aircraft until they can be established in Sicily. When that time arrives a Wing Headquarters (No. 325) can be made available to assist you in undertaking night defence, and you are to state if this Headquarters will be required by you.

Regarding your units which will eventually be based in Malta and operating in direct support of land operations, you are to arrange suitable communication channels for the issue of your instructions to these units in the most expeditious manner.

While Air Officer Commanding Malta is fully occupied in the control of air forces operating from Malta and unable to maintain frequent contact with the Army Commander in Cairo, it is desirable that you should be in a position to represent his views to this commander and conversely represent to the Air Officer Commanding Malta particular Army requirements.

Your attention is drawn to the directive issued to Air Officer Commanding Malta, a copy of which is attached.

(ii) Dispatch of air forces to Sicily.

The initial decision to dispatch Desert Air Force units from Malta to Sicily is to be made by you in agreement with Air Officer Commanding Malta.

To assist in making this decision you are to ensure that reports of the security and suitability of the landing grounds are available.

For the move to Sicily of further units of your force after you have established your Headquarters in Sicily you are to make arrangements with Air Officer Commanding Malta.

(iii) Move of reinforcing units from mainland to Malta.

It has been agreed that fighter bombers can be moved forward from the mainland to Malta when airfield space is available as a result of the fighter force being established in Sicily.

You are to indicate to Air Officer Commanding Malta the units you wish to call forward if possible before you move to Sicily. When airfield space is available Air Officer Commanding Malta will take executive action to call these units forward through your Rear Headquarters and inform Tactical Air Force Headquarters of action taken, and will subsequently confirm arrival and readiness for operations with you.

At a later stage if you require to move fighter bomber units from Malta to Sicily you will issue instructions through Air Officer Commanding Malta.

In the final phase you may require light medium bombers moved to Malta or Sicily. Your requests for such units is to be made direct to Tactical Air Force Headquarters repeated Malta.

(iv) Co-operation with ground forces.

Air Officer Commanding Malta is being directed to collaborate with the G.O.C's Eastern and Western Task Forces in preparing his detailed plan for the initial assault.

Your plan is to provide continuity from this point with these army formations.

You are to satisfy yourself that the arrangements for air support are satisfactory for both Eastern and Western Task Forces; the lateral air support link between these formations being of particular importance. Innthis connection, the responsibility of directing the employment of the Desert Air Force or XII Air Support Command is an important requirement in relation to the American ground forces.

Your attention is drawn to the directive issued to Colonel Hickey, XII Air Support Command, in this connection, a copy of which is attached.

Concerning the employment of Tactical Bomber Force when you are located in Sicily, it is the intention that a forward bomber control will be located with your Headquarters and your requests for light and medium bomber effort are to be made through this control direct to Tactical Bomber Force Headquarters. Operation instructions covering the employment of the tactical bomber effort at this stage will be issued by me at a later date. A copy of the directive issued to Air Officer Commanding Tactical Bomber Force is attached.

Demands for heavy day bomber attacks by the Strategic Air Force and for night bomber effort by Tactical Bomber Force and Strategic Air Force are to be made direct to Tactical Air Force Headquarters.

Regarding reconnaissance, it is evident that strategic visual reconnaissance information cannot be obtained with the present equipment of Strat/Recce Flight and no adequate replacement is available. Consequently, you are to consider the possibility of having up to six P-51 aircraft attached to 40 Squadron to provide increased range. Your recommendations on this matter are awaited.

The necessity for moving important Army personnel by air from Malta to Sicily after the assault should be considered and your proposals on the practicability of such a scheme are to be notified to this Headquarters.

(v) Flexibility.

Within the limits imposed by the administrative considerations your plan should allow the exchange of fighter units with different types of aircraft to meet operational demands, or the use of alternative airfields. A particular requirement in this latter connection is the development of lateral communication to permit the transfer of supplies. You are to keep this point under active consideration in the opening phases of the occupation of Sicilian aerodromes.

(vi) Instructions to units of your force embarking in the U.K.

Certain of your units, particularly Signals and the M.O.R.U. and M.A.R.U. together with an Air Defence Commander for the defence of the Eastern Sicilian ports, are embarking in England. You are to prepare your instructions to these units as soon as possible and forward them to this Headquarters for onward despatch.

(vii) Airfield construction.

You are to satisfy yourself that adequate arrangements have been made for the repair and construction of airfields in Sicily and that adequate communications are provided between airfield construction parties and Malta in the first instance and later to your Headquarters.

In view of the importance of the Pachino area specific instructions are being given by this Headquarters to the Chief Engineer, Force 141, for the development of the maximum number of sites in this area as rapidly as possible after capture.

(viii) Defence of airfields in Sicily.

Your are to ensure that arrangements are planned for the defence of airfields in Sicily and that A.A. defence is established at each airfield before it is brought into use. Such measures are to include W.O.U. screens and R.D.F. warning where possible.

(ix) Routeing instructions for transport aircraft to Sicily.

On occupation by you of airfields in Sicily it may be necessary to send Air Transport aircraft to these airfields. You are to nominate the airfields which are to be used and the routeing instructions for aircraft enroute to and from them in the neighbourhood of Sicily. A large Air Transport force will be available.

9. SPECIAL TRAINING.

Special combined training exercises are being held by the Eastern and Western Task Forces in connection with the operation. You are to take advantage of these combined exercises to test out your operational organisation, and also take the opportunity of including appropriate elements of your force in such exercises to acquire experience of the difficulties that may have to be overcome. Staff Officers from your Headquarters should be encouraged to attend the exercises.

In addition, you are to initiate whatever training exercises you consider necessary to test the efficiency of elements of your own force.

10. AIR SEA RESCUE.

Air Sea Rescue arrangements are being made by Mediterranean Air Command for the theatre of operations, and comprehensive instructions will be issued by this formation. You are to ensure that all aircrew personnel are aware of the arrangements made and are in possession of the items of equipment required.

11. You are to inform this Headquarters immediately of any difficulties you may find so that action can be taken to assist you.

12. Acknowledge.

for Air Marshal,
Air Officer Commanding,
N.A.T.A.F.

Copy to:
A.O.C., Malta.
A.O.C., T.B.F.
C.O., XII A.S.C.
Force 545 (Air).
Force 343 (Air).
A.O.C.-in-C., Med. Air Command.
C.G., N.A.A.F. H.Q.
Force 141.

APPENDIX "A" to Operational Directive for Husky Operation No.1.

BIGOT HUSKY MOST SECRET

TACTICAL AIR FORCE
PROVISIONAL ORDER OF BATTLE 'D' DAY.
(FLYING UNITS ONLY)

H.Q. NATAF (Tunis Area)

- A.O.C. (FINANCE) — Adv. H.Q. Desert Force (FINANCE)
  - 211 Group (FINANCE)
    - 244 Wing (5½ Sqdn Spit)
    - 322 " (5 " ")
    - 324 " (5 " ")
    - 40 Sqdn Tac/R (Spit)
    - 600 " (Night Beau.)
    - Ground Parties (239 Wing, 57 Group, 79 Group)
  - (HOBGOBLIN)
    - 33 Group (3 Sqdn P-40)
    - 111 Sqdn U.S. Tac/R P-51 (Provisional)
  - Read H.Q. Desert Force (Tripoli)
    - 239 Wing (5 Sqdn. P-40)
    - 57 Group (3 " P-40) Aircraft only.
    - 79 " (3 " P-40)
    - 285 Wing (Recce)
    - 6 Sqdn (H.2D.)
    - Air Transport Wing Detachment (R.A.F.)
- Adv. H.Q. XII A.S.C.
  - (i) At Sea
  - (ii) At Sea Spare H.Q. Ship.
- Rear H.Q. XII A.S.C. (Cap Bon Area)
  - 31 Group (3 Sqdn Spit) Less ground parties
  - 27 " (4 " A-36) of 3 Squadrons
  - 86 " (4 " A-36) already embarked.
  - 324 Group (3 Sqdn P-40)
  - 7(SA) Wing (3 " Kitty I or III)
  - 99 Sqdn (U.S.) P-40.
- H.Q. T.B.F. (Tunis Area)
  - 326 Wing (2 Sqdn Boston)
  - 232 " (2 " Baltimore)
  - 3(SA) Wing (2 " Boston, 1 Sqdn Baltimore)
  - 47 Group (4 " A-20)
  - 12 " (4 " B-25)
  - 340 " (2 " B-25)
  - 225 Sqdn Tac/R Spit) Reserve
  - 241 " Hurribomber) Squadrons.
- 325 Wing and 255 Sqdn (Night Beau) (Cap Bon Area)
- Air Transport Sqdn from U.S. Transport Command (Provisional). (Tunis Area)

Rear T.A.F.
24. 5. 43.

Originated by: G.R. BEAMISH. Security Classification:

Authentication: AIR COMMODORE. BIGOT HUSKY - MOST SECRET.

To: ADV. A.H.Q. W.D. = A.H.Q. MALTA = FORCE 545 AIR = FORCE 343 AIR = XII A.S.C. = T.B.F+ Repeated M.A.C. = H.Q. R.A.F. M.E. = ADV. N.A.A.F. = FORCE 141 LAND = N.A. TACTICAL AIR FORCE H.Q.+

From: FORCE 141 (AIR)+

Ref. No: AP/25 Date/Time 191800 MAY 1943 Precedence: IMMEDIATE+

BIGOT HUSKY MOST SECRET+ PERSONAL FOR A.O.C., C.G. XII A.S.C., G/CAPT. BRUCE BENNETT, COL. HICKEY FROM S.A.S.O. N.A.T.A.F+ FOLLOWING IS OPERATIONAL POLICY OF A.O.C. TACTICAL AIR FORCE FOR OPERATION HUSKY+ PARA. ONE+ COMMAND+ IN PRELIMINARY PHASE OPERATIONAL CONTROL OF UNITS LOCATED IN FINANCE AND HOBGOBLIN WILL BE UNDERTAKEN BY A.O.C. MALTA UNDER DIRECTION OF A.O.C. T.A.F+ UNITS LOCATED ON THE MAINLAND WILL BE UNDER OPERATIONAL CONTROL OF T.A.F+ THIS CONTROL WILL BE EXERCISED THROUGH TACTICAL BOMBER FORCE AND THE REAR H.Q. OF A.H.Q. W.D. AND XII A.S.C+ NECESSARY THEREFORE FOR THE REAR H.Q. OF THESE FORMATIONS TO HAVE OPERATIONAL AND ADMINISTRATIVE ECHELONS+ WHEN AIR FORCES (DESERT AND XII A.S.C.) ARE LOCATED IN HORRIFIED THE OPERATIONAL CONTROL OF THESE UNITS IS UNDERTAKEN BY A.O.C. W.D. UNDER DIRECTION A.O.C. T.A.F. UNTIL IT IS PRACTICABLE TO HAVE SECOND FIGHTER CONTROL WHEN XII A.S.C. WILL FORM SEPARATE ENTITY WITH DIRECTION OF EFFORT AND CO-ORDINATION UNDERTAKEN BY T.A.F+ OPERATIONAL CONTROL OF THE UNITS REMAINING ON THE MAINLAND TO CONTINUE AS FOR PRELIMINARY PHASE+ PARA. TWO+ EMPLOYMENT OF AIR FORCES+ IN PRELIMINARY PHASE TACTICAL BOMBER FORCE TO UNDERTAKE ESCORTED LIGHT BOMBER ATTACKS BY DAY AND NIGHT BOMBING WHEN MOON ASSISTS AGAINST SELECTED OBJECTIVES ON WESTERN AREA OF HORRIFIED AND MEDIUM BOMBER ATTACKS AGAINST OBJECTIVES ON EASTERN AREA+ ESCORT TO BE PROVIDED FROM MAINLAND FOR LIGHT BOMBERS AND FROM FINANCE FOR MEDIUMS+ FIGHTER FORCE IN FINANCE TO BE EMPLOYED IN AIR FIGHTING USING EVERY ARTIFICE TO SECURE COMBAT WITH THE ENEMY AIR FORCES+ ON D MINUS ONE DAY HEAVY CONVOY PROTECTIVE COMMITMENT WILL BE IMPOSED ON FIGHTERS IN FINANCE+ IN INITIAL ASSAULT MAIN REQUIREMENTS FROM FINANCE AND HOBGOBLIN ARE PROTECTION OF CONGESTED BEACHES AND SHIPPING LYING OFF BY DAY AND NIGHT+ NIGHT FIGHTER OPERATIONS WILL INCLUDE INTRUDER ACTIVITY AGAINST MAIN ENEMY AERODROMES ON HORRIFIED+ DURING THIS PHASE FIGHTERS FULLY COMMITTED AND SUPPORT BOMBING ONLY POSSIBLE IN EXCEPTIONAL CIRCUMSTANCES+ ON MOVEMENT OF AIR FORCES FROM FINANCE TO HORRIFIED HEAVY PROTECTIVE COMMITMENT FOR BEACHES REDUCED AND FIGHTER BOMBERS BECOME AVAILABLE FOR SUPPORT BOMBING BASED IN FINANCE AND LATER IN HORRIFIED+ AT THIS STAGE ESCORTED LIGHT AND MEDIUM BOMBER EFFORT BY DAY FOR PRE-ARRANGED ATTACKS PRACTICABLE AND BY NIGHT LIGHT AND MEDIUM BOMBER EFFORT CONTINUES AGAINST SELECTED OBJECTIVES+ PARA. THREE+ FIGHTER CONTROL+ DAY+ IN PRELIMINARY PHASE FIGHTER CONTROL UNDERTAKEN BY FINANCE+ ON MOVEMENT OF AIR FORCES TO HORRIFIED CONTROL OF ALL FIGHTERS IN BATTLE AREA UNDERTAKEN BY A.O.C. W.D. THROUGH 211 GROUP MAIN AND FORWARD CONTROLS+ XII A.S.C. TO PROVIDE HOMING FACILITIES AND PROTECTION FOR OWN AERODROMES+ NIGHT+ DURING PRELIMINARY PHASE BEAUFIGHTERS WILL BE CONTROLLED FROM FINANCE+ IN ASSAULT STAGE FINANCE CONTINUES THIS CONTROL AND IN ADDITION SUBSIDIARY CONTROLS WILL BE ESTABLISHED WITH G.C.I. ON LANDING CRAFT AT MAIN ASSAULT BEACHES AND WHERE POSSIBLE WITH G.C.I. ESTABLISHED ON SHORE+ ACKNOWLEDGE+

HEADQUARTERS, FORCE 141.

BIGOT HUSKY / MOST SECRET.

To: 545 (Air) = A.H.Q. Western Desert = A.H.Q. Malta = Rep. Adv. H.Q. N.A.A.F. = N.A.T.A.F. H.Q. = Force 343 (Air)+

From: Force 141+

S.94 20 May 1943 IMMEDIATE.

BIGOT HUSKY MOST SECRET+ From S.A.S.O. N.A.T.A.F.

1. Following are the principles on which fighter control in "HUSKY" is to be based.

2. Assault phase. All fighters to be under the control of A.O.C. FINANCE including those operating from HOBGOBLIN. H.Q. Ships will provide forward direction with V.H.F. R/T as follows. In ACID North and South and BARK East area H.M.S. DULOLO. In BARK SOUTH and BARK West area H.M.S. LARGS with H.M.S. HILARY in reserve. In CENT, DIME and JOSS area U.S.S. MONROVIA with U.S.S. ANGON in reserve. Subordinate to U.S.S. MONROVIA and providing visual direction off CENT, DIME and JOSS beaches are U.S.S. LEONARD WOOD, CALVERT and BISCAYNE respectively. Reserve F.D. ships will direct fighters only if the main F.D. ships become casualties or on the instructions of A.O.C. FINANCE. Night fighters will operate under G.C.I. control FINANCE and also under G.C.I. control in L.S.T's concerning which further information will be circulated at a later date.

3. After departure of H.Q. Ships from HORRIFIED and until establishment of H.Q. 211 Group ashore, A.O.C. FINANCE will continue to control all fighters. Forward controls will be provided by HOMESPUN information centre and CENT, RATAPLAN, and LADBROKE sectors. These sectors will relieve the H.Q. Ships of their fighter direction duties. They will also be able to undertake G.C.I. control of night fighters.

4. On approximately D + 3 day nucleus A.H.Q. Desert Air Force and H.Q. 211 Group will commence to operate in the RATAPLAN area and will control R.A.F. Squadrons on PARKHEAD, QUEENBEE and RATAPLAN airfields. At this stage A.H.Q. will be integral with H.Q. 211 Group and will use their communications. Until the air warning, G.C.I. and communications systems can be centralized in 211 Group. Sectors subordinate to 211 Group will continue to operate in QUEENBEE and LADBROKE areas. A forward fighter control will operate in advance of 211 Group. Forward and subordinate sector controls will be linked to 211 Group by H/F R/T and W/T until land line is established. On D + 3 day also nucleus H.Q. XIIth Air Support Command with its information centre will be ashore and operating. This formation will provide fighter control both forward in support of land operations and for the defence of airfields and beaches. A.O.C. Desert Air Force will control the 31 s/t Group in the HOMESPUN area through this agency.

5. After the capture of FUSTIAN area, three U.S.A.A.F. Fighter Groups will be operating in HORRIFIED probably from FIBULA, HOMESPUN, PARKHEAD and QUEENBEE airfields under control as specified in para. 4 until such time as it is practicable to establish a second fighter control in HORRIFIED.

6. No. 211 Group will move North to the FUSTIAN area and continue to operate fighters in support of the land operations leaving behind a defensive sector at RATAPLAN.

7. Arriving at FUSTIAN at this stage from U.K. is a mobile operations room and air raid reporting unit commanded by a Group Captain with a Wing Commander as his Deputy. This unit will set up in the FUSTIAN area and will be responsible under A.O.C. Desert Air Force primarily for day and night defence of FUSTIAN, LADBROKE and GEUTTON for convoy protection and night defence of airfields

A.O.C. Desert Air Force is to allot to this role defensive night fighters and a proportion of day fighter effort and is to co-ordinate employment.

8. Outline R/T and W/T call sign and address sign book to cover all British and American units in "HUSKY" is in production and will be issued shortly.

9. H.F. frequency allocation will be in accordance with 141 signal S.84 15 May. V.H.F. frequency allocation for fighters will be signalled as soon as possible.

10. This instruction cancels all previous signals on this subject and detailed planning is to proceed on these lines.

Appendix "B"

DECLASSIFIED

MOST SECRET

HEADQUARTERS
NORTHWEST AFRICAN TACTICAL AIR FORCE

Reference:
TAF/AIR/24/G.

26th May, 1943.

TO: Colonel L. Hickey, U.S. Air Corps.

OPERATIONAL DIRECTIVE FOR HUSKY OPERATION No. 1B.

1. INFORMATION:

The plan for the employment of all Northwest African Air Forces issued by Northwest African Air Force Headquarters provides a full background for Operation "HUSKY"; copy numbers 89 to 94 have been issued to XII Air Support Command and copy numbers 182 to 187 to Force 343. No further comprehensive operational plan will be issued by this Headquarters, but periodic directives will be issued to implement the plan for the responsibilities allocated to Tactical Air Force.

2. ROLE OF TACTICAL AIR FORCE:

Operation "HUSKY" can be divided into three specific phases. These phases, and role of the Tactical Air Force in each, are as follows:-

(i) PHAST I - PREPARATORY PERIOD OF OPERATIONS.

(a) Air forces based in Tunisia.

With escorted light bomber attacks by day against aerodrome objectives in Western Sicily combined with continued pressure by night bombing to assist the available air effort from the mainland to neutralize the enemy air forces.

Shipping protection.

The Tactical Air Force elements employed in this phase will be the Tactical Bomber Force and elements of XII Air Support Command, possibly reinforced by No. 7 South African Wing (if re-equipped) and 324 (U.S.) Group.

(b) Air Force (T.A.F.) elements based in Malta.

Air fighting to establish the local air situation in our favour.

Escort for medium day bomber attacks on objectives in Eastern Sicily.

Shipping protection.

(ii) PHASE II - PERIOD OF THE ASSAULT.

To provide protection by night and day over shipping and beaches with air forces based in Malta and Pantellaria.

(iii) PHASE III - ESTABLISHMENT OF A BRIDGEHEAD FROM LICATA TO CATANIA.

Continued air effort to neutralize enemy air forces and protection of shipping and beaches.

When air forces can be located in Sicily, direct support to assist the advance of the land forces.

3. COMMAND OF AIR FORCES FORMING TACTICAL AIR FORCE.

(i) Preliminary phase and for period of the assault.

Operational control of all Tactical Air Force elements located in Malta and Pantellaria will be undertaken by Air Officer Commanding Malta under direction of Air Officer Commanding, Tactical Air Force.

Operational control of units located on the mainland will be undertaken by Tactical Air Force Headquarters and exercised through Rear Headquarters Desert Air Force, Rear Headquarters XII Air Support Command, and Tactical Bomber Force Headquarters.

(ii) The advance into Sicily.

When air forces (Desert Air Force and XII Air Support Command) are located in Sicily operational control of all units is undertaken by Air Officer Commanding Desert Air Force under direction of Air Officer Commanding Tactical Air Force until it is practicable to have second control. When these circumstances arise, XII Air Support Command will form a separate entity with direction of effort and co-ordination with Desert Air Force undertaken by Tactical Air Force.

Operational control of the units remaining on the mainland will be as in the preliminary phase until light bomber forces can be located in Sicily. When this stage is reached the light bomber force may be centrally controlled under Tactical Air Force Headquarters or subordinated to Air Officer Commanding Desert Air Force or XII Air Support Command dependent on the development of operations.

4. COMPOSITION OF TACTICAL AIR FORCE.

The order of battle of the Tactical Air Force is given in Tactical Air Force Provisional Order of Battle 'D' Day (flying units only) dated 24th May, 1943, a copy of which is attached at Appendix "A".

5. EMPLOYMENT OF AIR FORCES.

The policy for the employment of the Tactical Air Force is given in Force 141 (Air) signal AP/25 dated 19th May, 1943. A copy of this signal is attached at Appendix "B".

This policy may be adjusted from time to time in accordance with the development of operations.

6. FIGHTER CONTROL.

The policy for fighter control is given in Force 141 signal S.94 dated 20th May, 1943, copy of which is attached at Appendix "C".

7. DETAILED OPERATIONAL PLAN.

Within the framework provided by Headquarters Northwest African Air Force Operational Plan and the instructions given above, you are to concert with the Western Task Force Commander to determine the air requirements of his force during the actual operation. You are to be guided in your discussions by the following factors:-

(i) In the preliminary phase the available air effort will be directed to achieve the neutralization of the enemy air forces. Until this aim is attained any diversion of air forces to other tasks can only be considered in exceptional circumstances.

(ii) Fighter protection for the sea borne troops will be provided from their ports of assembly to the assault beaches by aircraft based in Tunisia, Malta and possibly Pantellaria.

(iii) In the assault phase all available fighter effort will be directed towards protection of concentrations on beaches and shipping. No fighter aircraft will be available for low flying attacks or for the protection of direct support aircraft.

It may be possible to employ fighter bomber (A-36) aircraft with the dual function of providing protective cover and attacking selected objectives, but no reliance can be placed in the availability of these aircraft to attack specific objectives if the enemy air forces are active over the patrol areas.

(iv) Fighter cover for the protection of the Joss and Dime landings will be provided mainly from units of XII Air Support Command based in Pantellaria and reinforced by high fighter cover from Malta. The Cent assault will be covered by air forces based in Malta.

(v) Requests for protective air cover during the assault phase are to be made to Air Officer Commanding, Malta.

(vi) Until air forces are established in Sicily aircraft will not be available to provide direct support for the land forces by day. When air forces are so established requests for air support are to be made to Air Officer Commanding Desert Air Force. A copy of the directive issued to Air Officer Commanding Tactical Bomber Force is attached.

(vii) After the assault stage requests for heavy bomber attacks by day (by Strategic Air Force) and for night reconnaissance or bombing by Strategic ? Air Force or Tactical Bomber Force respectively are to be made direct to Tactical Air Force, Headquarters repeated to Air Officer Commanding, Desert Air Force and Air Officer Commanding Malta. Co-ordination of this effort will be undertaken by Tactical Air Force Headquarters.

8. After analysis of the air requirements of the Western Task Force Commander on the above basis, you are to forward your recommendations for meeting the demands in the form of an outline operational plan for agreement by this Headquarters.

9. In formulating your plan you are to pay particular attention to the following requirements:-

(i) Co-operation with A.O.C. Malta and Desert Air Force.

The need for good understanding and co-operation between you and Air Officer Commanding, Malta and Air Officer Commanding Desert Air Force is of particular importance for the success of the air plan for the operation.

You are to take suitable opportunities to discuss matters personally with these Air Officers Commanding prior to the operation. Additionally, you are to ensure that adequate communications are available between you at all stages.

Your attention is drawn to the directive issued to Air Officer Commanding Desert Air Force and Air Officer Commanding Malta, copies of which are attached.

(ii) Organisation of XII Air Support Command Headquarters

You will be required to provide three branches of XII A.S.C. as follows:

(a) to accompany Western Task Force Commander in Headquarters Ship and later on shore. This portion of Headquarters is to represent the foundation on which the complete Headquarters will eventually build.

(b) a skeleton Headquarters on the standby Headquarters Ship.

(c) a Rear Headquarters in Tunisia with operational and administrative echelons

You are to satisfy yourself that adequate communications are planned to link the different portions of the Headquarters.

(iii) Operational readiness of units

You are personally to ensure the full operational readiness of your units. In this connection, you must take every opportunity to visit units and supervise their training and preparation.

(iv) You are to bear in mind that the A-36 Squadrons will require extensive training in their particular role and make suitable arrangements for such training.

(v) Control of Pantellaria

On the capture of Pantellaria it is the intention to locate 33 Group and also establish a refuelling base on the island

33 Group will operate under the direction of A.O.C. Malta in the assault stage and must therefore be linked adequately to Malta; at a later stage the Group will move into Sicily

The control of air operations from this base under direction of Air Officer Commanding, Malta is to be vested in the Group Commander. You are to instruct the Group Commander to visit Air Officer Commanding, Malta as soon as possible after his Group is established at Pantellaria.

(vi) Location of 111 Observation Squadron

Number 111 Squadron has been allocated to undertake the Tac/Recce requirements of Western Task Force. You are to disouss with Western Task Force Commander the location for this unit to meet most effectively the Tac/Recce requirements.

Pantellaria has been suggested as a probable location, but in this connection you are to bear in mind the difficulty of providing full information of the ground situation to this base. Consequently, the briefing and interrogation of sorties would be incomplete and reconnaissance results proportionately weak.

The advantage of locating the squadron near Rear Headquarters XII Air Support Command and using Pantellaria as an advanced refuelling landing ground would appear the best solution.

(vii) Moves of units of XII Air Support Command into Sicily

It has been agreed that Xii Air Support Command units are to move into Sicily in the following order:-

No. 31 Group
No. 111 Squadrons (as required by development of situation)
No. 33 Group
No. 27 Group
No. 86 Group

The moves of these units to Sicily must be made dependent on the security and suitability of airfields and the establishment of A.A. defence and communication at them before occupation.

You are to satisfy yourself that adequate arrangements are planned to this end.

The decision to move units of Xii Air Support Command into Sicily is to be made by Air Officer Commanding Desert Air Force in response to a request from you. In making this request you will assure Air Officer Commanding Desert Air Force that measures for the defence of landing grounds are confirmed.

Following agreement by Air Officer Commanding Desert Air Force, you will order the moves of units through your Rear Headquarters repeating the orders to Tactical Air Force Headquarters.

The location in view, at present, for your Group is not to be regarded as final and will be subject to amendment in accordance with the situation. You are, therefore, to have in mind alternative sites for units of your force, within the limits of administrative arrangements and the transport available for the transport of supplies.

(viii) Fighter control in Sicily

From the outset of the establishment of your H.Q. in Sicily you are to undertake fighter control for the defence of your occupied airfields and for homing facilities for your own aircraft.

This control will form the nucleus of a main fighter control which will be established at a later date if the need arises.

The control of your fighter aircraft over the battle area will be undertaken by 211 Group under direction of A.O.C. Desert Air Force.

(ix) Airfield construction

You are to ensure that satisfactory arrangements are planned for the repair of enemy airfields or alternatively for the construction of new airfields and that communications are established between the Aviation Engineers and your Headquarters.

10. Special training

Special combined training exercises are being held by the Western Task Force Commander in connection with the operation. You are to take advantage of these combined exercises in collaboration, if practicable, with Air Officer Commanding, Desert Air Force to test out your operational organization, and also take the opportunity of including appropriate elements of your force in such exercises to acquire experience of the difficulties that may have to be overcome. Staff Officers from your Headquarters and Group Commanders should be encouraged to attend the exercises.

In addition you are to initiate whatever training exercises you consider necessary to test the efficiency of elements of your own Force.

11. Air Sea Rescue

Air Sea Rescue arrangements are being made by Mediterranean Air Command for the theatre of operations and comprehensive instructions will be issued by this formation. You are to ensure that all aircrew personnel are aware of the arrangements made and are in possession of the items of equipment required.

12. You are to inform this Headquarters immediately of any difficulties you may encounter so that immediate action can be taken to assist you.

13. Acknowledge

T. L. Leonard A/Cdr
Air Marshal,
Air Officer Commanding,
N.A.T.A.F.

Copy to: (less appendices)
A.O.C. Malta.
A.O.C. T.B.F.
A.O.C. D.A.F.
Force 545 (Air).
Force 343 (Air).
A C.-in-C., Med. Air Command.
C.G., N.A.A.F., H.Q.
Force 141.

Appendix "C"

DECLASSIFIED

MOST SECRET.

HEADQUARTERS,
NORTHWEST AFRICAN TACTICAL AIR FORCE

Reference:
TAF/AIR/24/8.

26th May, 1943.

TO: Air Vice Marshal Sir Keith Park, K.B.E., C.B., M.C., D.F.C.

OPERATIONAL DIRECTIVE FOR HUSKY OPERATION No. 1A.

1. INFORMATION.

The plan for the employment of all Northwest African Air Forces issued by N.A.A.F. Headquarters provides a full background for Operation "HUSKY"; copies numbers 148 to 153 have been issued to you. No further comprehensive operational plan will be issued by this Headquarters, but periodic directives will be issued to implement the plan for the responsibilities allocated to Tactical Air Force.

2. ROLE OF TACTICAL AIR FORCE.

Operation "HUSKY" can be divided into three specific phases. These phases, and role of the Tactical Air Force in each, are as follows:-

(i) PHASE I - PREPARATORY PERIOD OF OPERATIONS.

(a) Air forces based in Tunisia.

With escorted light bomber attacks by day against aerodrome objectives in Western Sicily combined with continued pressure by night bombing to assist the available air effort from the mainland to neutralize the enemy air forces.

Shipping protection.

The T.A.F. elements employed in this phase will be the Tactical Bomber Force and elements of XII Air Support Command, possibly reinforced by No. 7 South African Wing (if re-equipped) and 324 (U.S.) Group.

(b) Air Force (T.A.F.) elements based in Malta.

Air fighting to establish the local air situation in our favour.

Escort for medium day bomber attacks on objectives in Eastern Sicily.

Shipping protection.

(ii) PHASE II - PERIOD OF THE ASSAULT.

To provide protection by night and day over shipping and beaches with air forces based in Malta and Pantellaria.

(iii) PHASE III - ESTABLISHMENT OF A BRIDGEHEAD FROM LICATA TO CATANIA.

Continued air effort to neutralize enemy air forces and protection of shipping and beaches.

When air forces can be located in Sicily, direct support to assist the advance of the land forces.

3. COMMAND OF AIR FORCES FORMING TACTICAL AIR FORCE.

(i) Preliminary phase and for period of the assault.

Operational control of all T.A.F. elements located in Malta and Pantellaria will be undertaken by A.O.C. Malta under direction of A.O.C., Tactical Air Force.

Operational control of units located on the mainland will be undertaken by Tactical Air Force Headquarters and exercised through Rear Headquarters, A.H.Q. Desert Air Force, Rear Headquarters XII Air Support Command, and Tactical Bomber Force Headquarters.

(ii) The advance into Sicily.

When air forces (Desert Air Force and XII Air Support Command) are located in Sicily operational control of all units is undertaken by Air Officer Commanding Desert Air Forces under direction of Air Officer Commanding Tactical Air Force until it is practicable to have second control. When these circumstances arise, XII Air Support Command will form a separate entity with direction of effort and co-ordination with Desert Air Force undertaken by Tactical Air Force.

Operational control of the units remaining on the mainland will be as in the preliminary phase until light bomber forces can be located in Sicily. When this stage is reached the light bomber force may be centrally controlled under Tactical Air Force Headquarters or subordinated to Air Officer Commanding Desert Air Force or XII Air Support Command dependent on the development of operations.

4. COMPOSITION OF TACTICAL AIR FORCE.

The order of battle for the Tactical Air Force is given in Tactical Air Force Provisional Order of Battle 'D' Day (flying units only) dated 24th May, 1943, a copy of which is attached at Appendix "A".

5. EMPLOYMENT OF AIR FORCES.

The policy for the employment of the Tactical Air Force is given in Force 141 (Air) signal AP/25 dated 19th May, 1943. A copy of this signal is attached at Appendix "B".

This policy may be adjusted from time to time in accordance with the development of operations.

6. FIGHTER CONTROL.

The policy for fighter control is given in Force 141 signal S.94 dated 20th May, 1943, copy of which is attached at Appendix "C".

7. DETAILED OPERATIONAL PLAN.

Within the framework provided by Headquarters N.A.A.F. Operational Plan and the instructions given above you are to prepare a detailed operational plan to cover the operations of the elements of Tactical Air Force under your command, during the preparatory phase and the initial assault up to the time of handing over command of the elements to Air Officer Commanding Desert Air Force.

Your plan, together with any recommendations you may wish to make, is to be submitted to me for approval as soon as possible.

8. In formulating your plan you are also to give consideration to the following points:-

(i) Direction of operations by Tactical Air Force Headquarters.

Periodical directives will be issued to you by Air Officer Commanding Tactical Air Force.

In principle the policy for the employment of air forces will be as indicated in Appendix "B" attached; but operational demands may dictate a change of plans at short notice.

The establishment of rapid communication by W/T with Tactical Air Force Headquarters is a primary requirement.

It is the intention that the Air Officer Commanding or Senior Air Staff Officer, Tactical Air Force Headquarters, will be at Malta during the critical period of the operation.

(ii) Co-operation with Army and Air Force Commanders.

It is appreciated that the employment of air forces located in Malta will necessarily demand your presence in Malta. It is, however, in the interests of the operation as a whole that personal relations should be established with the Army Commanders concerned for a full exchange of views. The Air Force Commanders will be instructed to visit you in Malta. In addition, it is desirable that an officer from your Headquarters should be detached to Force 545 to ensure that you are fully acquainted with the development of the assault plans of that force.

Commanding Officer XII Air Support Command is being requested to visit you in Malta to make any essential arrangements to meet requirements of the Western Task Force Commander.

You will have the opportunity of full discussion with Air Officer Commanding Desert Air Force on tactical employment of air forces when he is located at your base.

Your attention is drawn to the directives issued to Air Officer Commanding Desert Air Force and to Commanding Officer XII Air Support Command, copies of which are attached.

(iii) Assault convoy protection.

The full details of the commitment for your air forces for convoy protection for Operation "HUSKY" will be ordered by Mediterranean Air Command. It is the intention of this formation to call a conference in the near future to allocate responsibilities.

From a brief examination it is appreciated that exceptionally heavy demands on aircraft will be made on D-1 day and night D-1/D for the protection of the assault convoys. The employment of air forces for this important task is to reduce to the minimum comensurate with security and based on your appreciation of the enemy air situation at that time.

(iv) Control of operations of air forces located in Pantellaria.

It is the intention that No. 33 Group, equipped with P-40 aircraft at a strength of 75, approximately, should be located in Pantellaria and operate during the assault stage under your control to provide protection for the JOSS and DIME landings.

In view of the relatively poor performance of these aircraft, high cover in the general area will be essential in support of their operations.

In controlling the operations of this Group it is desirable that a pre-arranged programme be agreed as far as possible.

The Group Commandor will be the responsible authority in Pantellaria through whom you will exercise control. He is being instructed to visit you prior to the operation.

(v) Escort for medium bombers by day.

In the preliminary phase of operations medium bombers of the Tactical Bomber Force will be attacking objectives in Eastern Sicily. You will be required to provide fighter protection for these raids.

Your recommendations as to rendezvous and procedure for picking up fighter escort are to be notified to this Headquarters by signal repeated Tactical Bomber Force as well as being included in your operational plan.

A copy of the directive issued to Air Officer Commanding Tactical Bomber Force is attached.

(vi) Night operations.

You will be responsible for the operation of night fighter aircraft to afford protection for beaches and shipping. You are, therefore, to indicate the system of control you require forward of Malta.

You are aware of trials carried out with C.C.I.'s mounted in L.S.T.'s and your agreement to this method of control is awaited.

Group Captain Atcherley has been co-opted to the staff of Force 141 to co-ordinate night defence requirements, and he will be available to assist you in making arrangements at this end.

The detail of night bombing operations by Strategic and Tactical Air Forces will be made known to you daily by 1700 hours approximately from this Headquarters during the preparatory period and throughout the operation. Your recommendations as to special routeing for these aircraft are requested.

You will be responsible for briefing night fighter aircraft located in Malta of night bomber activities.

(vii) Calling forward of units to Malta.

The availability of airfield space at Malta will be determined by you. Consequently when Air Officer Commanding Desert Air Force is located in Sicily and requires additional forces to be called forward from the mainland to Malta, his requests are to be directed to you. You are then to give the executive order for this movement through Rear Headquarters Desert Air Force.

(viii) Air Support Links.

When Air Officer Commanding Desert Air Force is located in Sicily and fighter bombers are operating from Malta, you are to agree with Air Officer Commanding Desert Air Force on the Method to be adopted to pass support calls to these units as expeditiously as possible.

You are also to make available to these units the details of the ground situation as known to you.

(ix) Movement Liaison Section at Malta.

During the preparatory and assault stages reports of movement of our air forces operating against Sicily and Southern Italy will be of particular importance to you. The volume of movement will be extensive. You are to consider the ability of your limited movement liaison staff to handle effectively the information on friendly aircraft and make such recommendations as you consider necessary for the strengthening of this staff.

9. SPECIAL TRAINING.

Combined training exercises are being held by the Eastern and Western Task Forces in connection with the operation. It is desirable that representatives from your Headquarters should attend these exercises so that lessons learned may be represented to you with the full background of the experience gained.

10. AIR/SEA RESCUE.

Air/Sea Rescue arrangements are being made by Mediterranean Air Command for the theatre of operations, and comprehensive instructions will be issued by this formation. You are to ensure that all aircrew personnel are aware of the arrangements made and are in possession of the items of equipment required.

11. You are to inform this Headquarters immediately of any difficulties you may find so that action can be taken to assist you.

12. Acknowledge.

H. Eaker

Air Marshal,
Air Officer Commanding,
N.A.T.A.F.

Copy to: A.O.C., T.B.F.
A.O.C., Desert Air Force.
(less appendices) C.O., XII A.S.C.
Force 545 (Air).
Force 343 (Air).
A.C.-in-C., Med. Air Command.
C.G., N.A.A.F. H.Q.

Appendix "D"

MOST SECRET

HEADQUARTERS,
NORTHWEST AFRICAN TACTICAL AIR FORCE

Reference:
TAF/AIR/24/8

26th May 1943.

TO: Air Commodore L. Sinclair, G.C., C.B.E., D.S.O.

OPERATIONAL DIRECTIVE FOR HUSKY OPERATION No. 1C.

1. INFORMATION.

The plan for the employment of all Northwest African Air Forces issued by Northwest African Air Force Headquarters provides a full background for Operation "HUSKY"; a copy will be made available to you from Headquarters, Northwest African Tactical Air Force. No further comprehensive operational plan will be issued by this Headquarters, but periodic directives will be issued to implement the plan for the responsibilities allocated to Tactical Air Force.

2. ROLE OF TACTICAL AIR FORCE.

Operation "HUSKY" can be divided into three specific phases. These phases, and role of the Tactical Air Force in each, are as follows:-

(i) PHASE I - PREPARATORY PERIOD OF OPERATIONS.

(a) Air Forces based in Tunisia.

With escorted light bomber attacks by day against aerodrome objectives in Western Sicily combined with continued pressure by night bombing to assist the available air effort from the mainland to neutralize the enemy air forces.

Shipping protection.

The Tactical Air Force elements employed in this phase will be the Tactical Bomber Force and elements of XII Air Support Command, possibly reinforced by No. 7 South African Wing (if re-equipped) and 324 (U.S.) Group.

(b) Air Force (Tactical Air Force) elements based in Malta.

Air fighting to establish the local air situation in our favour.

Escort for medium day bomber attacks on objectives in Eastern Sicily.

Shipping protection.

(ii) PHASE II - PERIOD OF THE ASSAULT.

To provide protection by night and day over shipping and beaches with air forces based in Malta and Pantellaria.

(iii) PHASE III - ESTABLISHMENT OF A BRIDGEHEAD FROM LICATA TO CATANIA.

Continued air effort to neutralise enemy air forces, and protection of shipping and beaches.

When air forces can be located in Sicily, direct support to assist the advance of the land forces.

3. COMMAND OF AIR FORCES FORMING TACTICAL AIR FORCE.

(i) Preliminary phase and for period of the assault.

Operational control of all Tactical Air Force elements located in Malta and Pantellaria will be undertaken by Air Officer Commanding, Malta under direction of Air Officer Commanding, Tactical Air Force.

Operational control of units located on the mainland will be undertaken by Tactical Air Force Headquarters and exercised through Rear Headquarters Desert Air Force, Rear Headquarters XII Air Support Command, and Tactical Bomber Force Headquarters.

(ii) The advance into Sicily.

When air forces (Desert Air Force and XII Air Support Command) are located in Sicily operational control of all units is undertaken by Air Officer Commanding, Desert Air Force under direction of Air Officer Commanding, Tactical Air Force until it is practicable to have second control. When these circumstances arise, XII Air Support Command will form a separate entity with direction of effort and co-ordination with Desert Air Force undertaken by Tactical Air Force.

Operational control of the units remaining on the mainland will be as in the preliminary phase until light bomber forces can be located in Sicily. When this stage is reached the light bomber force may be centrally controlled under Tactical Air Force Headquarters or subordinated to Air Officer Commanding, Desert Air Force or XII Air Support Command dependent on the development of operations.

4. COMPOSITION OF TACTICAL AIR FORCE.

The order of battle of the Tactical Air Force is given in Tactical Air Force Provisional Order of Battle 'D' Day (flying units only) dated 24th May 1943, a copy of which is attached at Appendix "A".

5. EMPLOYMENT OF AIR FORCES.

The policy for the employment of the Tactical Air Force is given in Force 141 (Air) signal AP/25 dated 19th May 1943. A copy of this signal is attached at Appendix "B".

This policy may be adjusted from time to time in accordance with the development of operations.

6. FIGHTER CONTROL.

The policy for fighter control is given in Force 141 signal S.94 dated 20th May 1943, copy of which is attached.

7. DETAILED OPERATIONAL PLAN.

During the preparatory period and in exceptional circumstances in the assault stage the Tactical Bomber Force will be required to provide light and medium bomber attacks by day and night against selected objectives (mainly enemy airfields) in Western and Eastern Sicily to augment the scale of attack developed by Strategic Air Force.

During the advance into Sicily support bombing may be required to assist the land forces.

8. Within this framework you are to prepare an outline plan for the employment of your force. In making your plan you are to have in mind the following factors.

(i) Fighter Escort.

Escort for light bomber attacks against objectives in Western Sicily will be provided by XII Air Support Command units operating from TUNISIA.

Escort for medium bomber attacks against objectives in Eastern Sicily will be provided from Malta.

You are to make arrangements with the authorities specified concerning rendezvous and procedure for picking up fighter escort.

(ii) Night Bombing.

Limited fighter escort only will be available for day bombers. Consequently your force is likely to be employed more intensively at night, particularly during the period when the moon offers some assistance.

You are, therefore, to ensure the readiness of your force for night operations.

(iii) Bomber Tactics.

It will be the policy to operate light and medium bomber aircraft in a number of strong formations of up to 18 aircraft attacking targets simultaneously. You are to direct your training to meet this requirement.

(iv) Forward bomber control: Employment of Tactical Bomber Force after assault stage.

Light bomber effort by day is likely to be required on the successful completion of the assault stage. Requests for light bombers will be initiated by Air Officer Commanding, Desert Air Force. You are to provide a forward bomber control with Air Headquarters, Western Desert to make these requests and arrange the fighter escort requirements. This forward control is to have direct W/T communication with Tactical Bomber Force Headquarters.

Operation Instructions covering the employment of Tactical bombing during this phase will be issued by me at a later date.

(v) Ground Recognition.

You are to discuss the means to be employed (smoke, etc.) to assist the recognition of our ground forces with the Eastern and Western Task Forces, and ensure that all visual signals are known to the flying crews of your units.

9. Special Training.

Special combined training exercises are being held by the Western Task Force Commander in connection with the operation. You are to take advantage of these combined exercises in collaboration, if practicable, with Air Officer Commanding, Desert Air Force, to test out your operational organisation, and also take the opportunity of including appropriate elements of your force in such exercises to acquire experience of the difficulties that may have to be overcome. Staff Officers from your Headquarters and Group Commanders should be encouraged to attend the exercises.

In addition you are to initiate whatever training exercises you consider necessary to test the efficiency of elements of your own force.

10. AIR SEA RESCUE.

Air Sea Rescue arrangements are being made by Mediterranean Air Command for the theatre of operations and comprehensive instructions will be issued by this formation. You are to ensure that all aircrew personnel are aware of the arrangements made and are in possession of the items of equipment required.

11. You are to inform this Headquarters immediately of any difficulties you may encounter so that immediate action can be taken to assist you.

12. Acknowledge.

G. d. Beamish. AM

Air Marshal,
Air Officer Commanding,
N.A.T.A.F.

Copy to: A.O.C., Malta.
A.O.C., Desert Air Force.
(less appendices) C.O., XII Air Support Command.
Force 545 (Air)
Force 343 (Air)
A. C.-in-C., Med. Air Command.
C.G., N.A.A.F. H.Q.
Force 141.

Appendix "E"

MOST SECRET
BIGOT HUSKY.

COPY No. .....

HEADQUARTERS,
NORTHWEST AFRICAN TACTICAL AIR FORCE

Reference:
TAF/AIR/24/1.

13th June, 1943.

OPERATION INSTRUCTION No.113.

Emergency move for 57 & 79 Groups.

1. INFORMATION.

In the event of a critical land situation arising during the assault stage of Operation "HUSKY" it will be essential for the available offensive air effort under Tactical Air Force to be employed to influence the situation in our favour. Consequently, it will be necessary to move Nos. 57 & 79 Groups from the TRIPOLI area, where they are being held to provide an air striking force to assist land operations in SICILY, to locations on the CAPE BON peninsula where they can operate over the assault areas.

2. In order to retain 57 & 79 Groups at the highest state of readiness for operations in HORRIFIED, at a later stage, it is desirable that these formations should not be moved from their present locations (TRIPOLI area) until the likelihood of a critical situation arising is apparent. In consequence, the move of these units must be planned to be completed rapidly.

3. INTENTION.

In certain circumstances to move 57 & 79 Groups to SCALEA WEST (K7464) with overflow on SCALEA EAST (K7764) by air.

EXECUTION:

4. ORDERS FOR MOVE.

The warning and executive orders for the move of 57 & 79 Groups will be issued by Tactical Air Force Headquarters by 'Most Immediate' signal to Rear Air Headquarters Desert Air Force, 57 & 79 Groups, repeated Advanced Air Headquarters Desert Air Force, Rear Headquarters XII Air Support Command, 3rd Service Area, and 324 Group, in the form of the codewords "PUPPY" and "RINTIN" respectively.

5. ACTION ON RECEIPT OF WARNING ORDER.

The following action is to be taken on receipt of warning order:-

57 & 79 Groups.

(i) Serviceable aircraft to be fitted with long range tanks. Pilots and aircraft to be held at one hours notice to move.

(ii) Key personnel and equipment to be prepared for move by air transport.

Rear Air Headquarters Desert Air Force.

(iii) To order sufficient air transport from 249 Wing to move key personnel and kits (see Appendix "A") to be at one hours notice, for dispatch to BUGRARA L.G.

6. ACTION ON RECEIPT OF EXECUTIVE CODEWORD.

(i) By 57 & 79 Groups.

Dispatch Group aircraft to SCALEA WEST (K7464, with overflow on SCALEA EAST (K.7764)

Inform Rear and Advanced Air Headquarters Desert Air Force and Tactical Air Force Headquarters of numbers of aircraft moved.

(ii) By Rear Air Headquarters Desert Air Force.

Dispatch air transport aircraft to load key personnel at BUGRARA and proceed HAOUARIA L.G.

7. OPERATIONAL CONTROL AND READINESS.

On arrival at HAOUARIA 57 & 79 Groups will come under the operational control of Rear Headquarters, XII Air Support Command.

8. On landing Group Commanders are to report the arrival of their formations to Rear Headquarters XII Air Support Command, by telephone, and state the numbers of aircraft immediately available for operations.

9. ADMINISTRATIVE ARRANGEMENTS.

The following arrangements will be made by Tactical Air Force Headquarters for the reception of 57 & 79 Groups at HAOUARIA:-

(i) Stocks of fuel, ammunition, and 400 long range tanks will be established to allow for a maximum of 108 sorties per day for each Group for a three day period.

(ii) Northwest African Service Command will be asked to provide through No. 3 Service Area:-

(a) Refuelling and re-arming facilities to augment resources of 324 Group.

(b) Replacement aircraft, spares and equipment.

(iii) No. 324 Group will be located at HAOUARIA and will be asked to assist by the provision of:-

(a) messing and medical assistance.

(b) the allocation of three (3 ton) trucks and two jeeps per Squadron, and one jeep for the Group Headquarters. Total transport - eighteen (3 ton) trucks and fourteen jeeps.

(c) additional maintenance personnel as given at Appendix "B".

10. COMMUNICATIONS.

(i) Arrangements are to be made by Rear Headquarters XII Air Support Command for 57 & 79 Groups to be connected to Rear Headquarters XII Air Support Command by direct land line and a land line to be made available from proposed Group Headquarters site to Squadron dispersal areas.

(ii) Rear Headquarters XII Air Support Command will be supplied with a full set of Desert Air Force crystals and will be in a position to control aircraft on the most convenient channel.

11. Acknowledge.

for Air Marshal,
Air Officer Commanding,
N.A.T.A.F.

Distribution:-

External.

Rear A.H.Q. W.D.	Copy No.	1
Adv. A.H.Q. W.D.	" "	2
+ C.O., 57 US Group.	" "	3
+ C.O., 79 US Group.	" "	4
+ C.O., 324 US Group.	" "	5
C.G., Adv. N.A.A.F.	" "	6
C.G., N.A.S.C.	" "	7
+ C.O., 3rd Service Area.	" "	8
Force 141 (Air).	" "	9
Rear H.Q., XII A.S.C.	" "	10

Internal.

A.O.A.	Copy No.	11
G/Capt. Ops.	" "	12
C.S.O.	" "	13
C.S.O., A.F.S.	" "	14
Ops. Record Book.	" "	15)
	" "	16)
File.	" "	17

(116) (2)

+ To be held in sealed envelopes marked not to be opened until 1st July 1943.

APPENDIX "A".

List of key personnel for each Group is given below and is worked out for three Squadrons of 18, (i.e.) P-40 aircraft on the basis of 12 P-40's being continuously operational. Personnel to be drawn from "B" Party of each Group.

Armourers ...	18	Each with his own tool kit.
Crew Chiefs ...	18	Each with his own tool kit. Basis of 1 Crew Chief per two Squadron aircraft.
Radio Mechanics	6	Each with his own tool kit.
Operations Officer.	1	
Intelligence Officers	4	
Intelligence Clerks	4	
	51	

This load can be lifted by 4 D.C.3 or 9 Hudsons.

APPENDIX "B".

Additional personnel to be supplied by 324 Group to each of 57 and 79 Groups:-

Armourers ...	6
Crew Chiefs ...	18
Assistant Crew Chiefs	6
Radio Mechanics ...	6
Clerks ...	1

Appendix "F"

Copy No.

HEADQUARTERS,
NORTHWEST AFRICAN TACTICAL AIR FORCE.

Reference:
TAF/AIR/24/18.

29th June, 1943.

OPERATION INSTRUCTION No.4.

EMPLOYMENT OF THE TACTICAL AIR FORCE UNITS LOCATED IN TUNISIA FOR OPERATION "HUSKY".

Map reference:- 1/250,000 SICILY.
1/250,000 TUNIS.

1. INFORMATION.

Operation "HUSKY" is the code name given for the capture of SICILY.

2. On "D" Day, the date of which will be promulgated separately, eight simultaneous pre-dawn assaults will be made on the South Eastern corner of the island. Five of these assaults will be British and the remaining three American.

3. The areas of the assaults and their code names are:-

			Code Name.
(i)	AVOLA 2 assaults (British Forces).	-	ACID NORTH ACID SOUTH
(ii)	CAPE PASSERO area. 3 assaults (British Forces)	-	BARK WEST BARK SOUTH BARK EAST
(iii)	CAPE SCARAMIA (U.S. Forces).	-	CENT.
(iv)	GELA (U.S. Forces)	-	DIME.
(v)	LICATA (U.S. Forces)	-	JOSS.

4. In the initial stages the major threat to the success of the operation will come from the enemy air forces located in SICILY or using Sicilian landing grounds as advanced bases. Consequently, in the phase prior to "D" Day the aim of our air forces will be to neutralize the enemy air effort operating from SICILY and achieve a high measure of air supremacy over the assault areas.

5. To continue to hold this measure of air superiority during the assault and subsequent stages will be essential if we are to prevent major interference by the enemy air forces and to allow freedom of action for our air forces to assist directly the advance of the army.

AIR FORCES AVAILABLE.

6. The air forces allocated to undertake this task are:-

(i) Strategic Air Force.

(ii) Tactical Air Force units based in:-

(a) TUNISIA.
(b) MALTA (including GOZO)
(c) PANTELLARIA.

The Order of Battle for the Tactical Air Force is given at Appendix "A".

COMMENCEMENT OF OPERATIONS.

7. Strategic Air Force have already commenced heavy bomber attacks on the main airfields in SICILY, SARDINIA and SOUTHERN ITALY, and will continue with increasing intensity up to "D" Day.

8. From approximately D-7 Day Tactical Air Force will augment this scale of attack. The operational plan being fully co-ordinated with Strategic Air Force to achieve maximum effect on the enemy and for mutual benefit in splitting the enemy defence system.

INTELLIGENCE INFORMATION.

9. A study of the enemy air forces in SICILY indicates that the main enemy airfields may be classified in the following order of priority:-

WESTERN SICILY.	EASTERN SICILY.
TRAPANI/MILO	BISCARI/SAN PIETRO
TRAPANI/BORIZZO	CATANIA
SCIACCA	COMISO
CASTEL VETRANO	GERBINI MAIN
PALERMO/BOCCA DI FALCO (I.A.F.)	" Nos. 2 & 9 satellites.
	REGGIO (Toe of Sicily).

10. This priority may be changed at short notice by new airfield construction. Constant reconnaissance will be required to determine the enemy's main operational bases.

FACTORS AFFECTING THE EMPLOYMENT OF TACTICAL AIR FORCE UNITS.

AIR FORCES BASED ON THE MAINLAND AND PANTELLARIA.

11. Radius of action.

(i) Bombers.

The radius of action of each type of tactical bomber aircraft is approximately:-

	In formation.	Operating singly Night operations.	Proportion of Force.
Bostons	230 miles	300 miles	21%
A-20	170 "	220 "	21%
Baltimores	230 "	300 "	37%
B-25 (old type)	250 "	300 "	
B-25 L.R. tanks (reduced bomb load)	320 "	420 "	21%

(ii) Fighters.

The radius of action of the fighter type aircraft, making allowance for combat, is:-

	With normal tankage.	L.R. tanks.
P-40F	120 miles	200 miles
P-40L	95 "	160 "
A-36 with two bombs	200 "	
A-36 with 1 bomb & 1 L.R. tank	275 "	

OPERATIONAL AREA: TACTICAL BOMBER FORCE.

12. For escorted day bomber attacks, therefore, the Bostons, A-20's and Baltimores are restricted to attacks of objectives in Western and Central SICILY and only the B-25's fitted with long range tanks are available for operations

against Eastern SICILY. Strategic Air Force will, therefore, be asked to increase the scale of their attacks on Eastern SICILY and make a proportionate reduction against objectives on the Western and Central areas.

13. The main enemy airfields in SICILY are within operational range of all types for night operations.

FIGHTER AVAILABILITY: INFLUENCE ON BOMBER OPERATIONS.

14. Owing to the limited operational experience of the major proportion of A-36 Squadrons, the P-40 Squadrons of No. 324 Group, No. 99 Squadron and one Squadron from No. 7 S.A.A.F. Wing will be required to provide the main fighter escort from TUNISIA for the tactical bomber force. The A-36 Squadrons will be available for independent fighter bomber operations.

15. No. 33 Group based in PANTELLARIA will have heavy commitments from D-1 to D+3 Day approximately. As the operational readiness of this Group cannot be prejudiced it will only be available for limited operations in the preparatory stage. Operational control of 33 Group will be undertaken from 28th June by Air Headquarters, MALTA, and commitments for fighter escort for this Group must be co-ordinated with their plans.

16. It may be expected that the units in TUNISIA can provide a strength of 100 fighter aircraft approximately, daily.

17. This strength will impose a limit on the intensity of light bomber operations provided with escort from TUNISIA and demands the most economical use of fighters with large bomber formations.

18. The situation is assisted by fighter escort provided by Squadrons based in MALTA for that proportion of the tactical bomber force which can operate against Eastern SICILY.

FIGHTER/BOMBER STRIKING FORCE.

19. No. 239 Wing and Nos. 57 & 79 U.S. Groups are being held in the TRIPOLI area at a high state of operational readiness to move to MALTA to provide direct support for the land forces.

20. In view of their future important role it is not the intention to employ these units prior to the assault except in emergency. In such circumstances, Nos. 57 & 79 Groups are prepared to move by air, at short notice, to the CAPE BON peninsula and commence operations; two landing grounds are reserved for these formations in the CAPE BON area fully stocked to meet operational requirements. The arrangements for this move are given in this Headquarters' Operation Instruction No. 113 dated 13th June, 1943.

21. Advance parties of No. 239 Wing and 57 & 79 Groups are now located in MALTA. If required these Squadrons are available to move to MALTA at short notice and commence operations. With the restricted airfield capacity of MALTA the fighter bomber squadrons can only be based in MALTA if Spitfire Squadrons are moved out. Under present arrangements such moves can be undertaken rapidly and provide flexibility.

FIGHTER - BOMBER CO-OPERATION.

22. Against objectives in Western SICILY fighter escort can be provided from TUNISIA and normal rendezvous arrangements are to be made between Tactical Bomber Force and XII Air Support Command direct.

When No. 33 Group is required to provide fighter escort, arrangements will be made by this Headquarters with Air Headquarters, MALTA.

23. Against objectives in Eastern SICILY where escort is required to be provided from MALTA the course of the bomber formation and E.T.A. at a selected point are to be given to MALTA previously by Tactical Bomber Force direct.

NIGHT BOMBER OPERATIONS BY TACTICAL BOMBER FORCE.

24. 80% of the Tactical Bomber Force are trained in night operations.

Where any reduction in day bomber effort is imposed the weight of attack can be maintained by additional night effort.

25. Night bomber effort by the Tactical Air Force will be co-ordinated by this Headquarters with 205 Group (Strategic Air Force) and intruder activity from MALTA.

AIR SEA RESCUE ARRANGEMENTS.

26. During Operation "HUSKY" the majority of flying will be over the sea. Consequently, all units are to be made aware of the Air Sea Rescue arrangements given in Force 141 Memorandum 141F/RAF/245/Air (P) dated 11th June, 1943, copies of which have been distributed to all formations concerned.

ROUTEING INSTRUCTIONS: AVOIDANCE OF SHIPPING.

27. Detailed routeing instructions for each raid against objectives in SICILY are to be given by Tactical Bomber Force in agreement with the formation providing the fighter escort.

On D-2 and D-1 Day where friendly shipping is likely to be encountered the briefing instructions are to include the position of friendly shipping as far as known; aircraft are to be routed to avoid these positions. When aircraft are forced to fly over shipping this should be done at a minimum height of 6,000 feet.

Naval Liaison Officer, Tactical Air Force Headquarters, is to pass relevant information on shipping movements to Tactical Bomber Force.

DETAIL OF OPERATIONS.

28. General.

The operational schedule, for tactical air force units based on the mainland, set out in the following paragraphs and relevant appendices, forms only part of the complete Tactical Air Force effort. The remaining part is undertaken by units located in MALTA and controlled by Air Officer Commanding MALTA under direction of Air Officer Commanding Tactical Air Force. Separate instructions are issued for these units by Air Officer Commanding MALTA and should be read in conjunction with this schedule to get the full detail of air operations by Tactical Air Force.

PHASE:- D-7 to D-2.

29. Reconnaissance of main enemy air bases.

Continuous daily reconnaissance of enemy air bases is being undertaken by P.R.U. resources from MALTA, Strategic Air Force and No. 3 P.R.W. to determine the main operational airfields. A full exchange of information from these sources is arranged and bombing targets will be determined on this basis.

30. Schedule of operations.

The detail of operations by units located on the mainland for the period D-7 to D-2 is given at Appendix "B".

31. The targets specified are provisional and are dependent on the results of reconnaissance and the development of the situation. Changes of targets will be notified by this Headquarters direct to the formations concerned as far in advance as possible.

PHASE:- D-1 to D+2.

32. Schedule of operations.

See Appendix "C".

33. For "D" Day and while the situation remains critical, it is probable that two P-38 Groups will be made available to Tactical Air Force from Strategic Air Force. The tasks allotted to these aircraft are not specified but it is the intention, subject to the situation obtaining at the time, to employ these aircraft

to attack enemy reserves moving towards the assault areas with the object of imposing delay and disorganization.

34. Airborne operations.

On the night of D-1/D paratroop operations involving a very large number of aircraft will be operating over the South Eastern area of SICILY.

Bomber aircraft operating on that night are to be fully briefed as to the routeing of these aircraft, the height at which they will fly to and from the dropping zones, the detailed location of the dropping zones, and the times of the operations. This information will be passed by this Headquarters to Tactical Bomber Force. Aircraft not concerned with operations in support of the paratroop attack are to be routed clear of the areas concerned.

35. Emergency landing strips.

As an immediate measure when our land forces are established on shore crash landing strips will be constructed to provide emergency landing grounds on the seashore. Such landing strips will be marked with the letter "E" and standard corner markings.

When normal airfields are available in HORRIFIED the markings on the crash landing strips will be removed. Normal airfields will carry standard markings.

36. Day and night landmarks in the battle area.

To assist the employment of the tactical bomber force in the battle area by day and night, arrangements have been made with the land forces to establish landmarks in the form of letters of the alphabet constructed on the ground to act as navigational aids. The positions of these landmarks will be notified on the Air Support Link prior to operations. In addition, the land forces intend to mark the position of forward elements by day with smoke. The position from which this smoke can be expected, and the colour of the smoke, will be notified on the Air Support Link.

37. Further operational phase beyond D+2.

Dependent on the development of the operational situation further instructions will be issued.

38. Communications.

Communication arrangements covering the whole of Operation "HUSKY" are given in Tactical Air Force Headquarters' Signal Instruction No. 1 dated 15th June, 1943, copies of which have been issued to all formations concerned.

39. Administration.

Supply requirements to meet the operational intensity have been issued separately to III Air Service Area Command.

40. Acknowledge.

Air Marshal,
Air Officer Commanding,
N.A.T.A.F.

(For distribution - see next page).

DISTRIBUTION:-

External.		Method of distribution
M.A.C. (Command Post)	Copy No. 1.	By hand.
A.O.C., T.B.F.	" " 2.	" "
A.O.C., D.A.F.	" " 3.	" "
A.O.C. Malta.	" " 4.	" "
C.G., S.A.F.	" " 5.	" "
C.G., XII A.S.C.	" " 6.	" "
Force 343 (through C.G., XII A.S.C.)	" " 7.	" "
Force 545 (through A.O.C., D.A.F.)	" " 8.	" "
C.G.S., 15 Army Group.	" " 9.	" "
A.O.C., 205 Group.	" " 10.	" "
C.G., Adv. N.A.A.F. (for information)	" " 11.	" "
A.O.C., 242 Group (for information).	" " 12.	" "
N.L.O. 15 Army Gp. (for C.-in-C., Med.)	" " 13.	" "
Air Section, H.M.S. LARGS (thro' A.O.C., Malta)	" " 14.	" "
Air Section, H.M.S. NULOLO (thro' N.L.O. 15 Army Gp.)	" " 15.	" "
Air Section, U.S.N. MONROVIA (thro' Col. Hickey, XII A.S.C)	" " 16.	" "
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A.O.A.	" " 21.	" "
C.S.O.	" " 22.	" "
C.S.O., Air Formation Signals.	" " 23.	" "
Armament Officer.	" " 24.	" "

Pro-forma. R.A.F. Form 247. AIR/

RECEIPT FOR SECRET AND CONFIDENTIAL DOCUMENTS.

TO:- T.A.F. H.Q. (Adv.) FROM:-

Copy No. of N.A.T.A.F. Operation Instruction No. 4 dated 29.6.43.
Reference: TAF/AIR/24/18.

DATE:- .....

.....
Signature of Officer receiving documents.

T.A.F. ORDER OF BATTLE D-7.

Operational Units.

(a) TUNISIA.

Base	Wing/Group	Squadron Number	Aircraft	Remarks
Single Engined Fighters.				
XII AIR SUPPORT COMMAND.				
KORBA S. (K.7243)	27 Group U.S.	16 17 91	A.36 A.36 A.36	
BIR MESSAUDA (K.7051) (New L.G. under construction).	86 Group U.S.	309 310 312	A.36 A.36 A.36	
KORBA N.	-	111	P.51	
FARDJOUNA (K.7668)		99	P.40L	Squadron likely to operate from Pantellaria as reinforcement for 33 Group. during intensive operational period.
HAOUARIA (K.8086)	324 Group U.S.	314 315 316	P.40F P.40F P.40F	
HAOUARIA (K.8086)	7 SAAF Wing	2 Sqns.	P.40F	Squadron will move from Tripoli area when re-equipped. Probably not more than 1 Sqn. available.
SCALBA WEST (K.7464)	57 Group U.S.	64 65 66	P.40F P.40F P.40F	Move from Tripoli area in certain circumstances.
SCALBA WEST & SCALBA EAST (K.7764).	79 Group U.S.	85 86 87	P.40F P.40F P.40F	ditto.
TACTICAL BOMBER FORCE.				
GROMBALIA	326 Wing R.A.F.	18 114	Boston Boston	
ENFIDAVILLE REVILLE	232 Wing R.A.F.	55 223	Balt. Balt.	
SOLIMAN N.	3 SAAF Wing	12 21 24	Boston Balt. Boston	
SOLIMAN S.	47 Group (B) U.S.	84 85 86 97	A.20 A.20 A.20 A.20	
HERGLA	340 Group (B) U.S.	486 487 488 489	B.25 B.25 B.25 B.25	

Base	Wing/Group	Squadron Number	Aircraft	Remarks
HERGLA	12 Group (B) U.S.	81 82 83 424	B.25 B.25 B.25 B.25	
RESERVE SQUADRON				
BOU FICHA	R.A.F.	225	Spits.	Reserve Squadron
BOU FICHA	R.A.F.	241	Hurri-Bombers.	Reserve Squadron
(b) TRIPOLI AREA				
TRIPOLI AREA	239 Wing R.A.F.	3 250 260 450 112	P.40F P.40F P.40F P.40F P.40F	Wing held at readiness to proceed to FINANCE for operations to assist the advance of land forces.
TRIPOLI AREA	285 Wing	1437 Flt.	P.51	Strat/Recce.
TRIPOLI AREA	249 Wing	117 Sqdn.) 216 Sqdn.)	Hudson D.C.3	Air Transport.
(c) PANTELLERIA				
PANTELLERIA	33 Group	58 59 60	P.40L P.40L P.40L	
(d) MALTA (Tactical Air Force units exclusive of units in MALTA.)				
MALTA	244 Wing R.A.F.	1 92 145 601 417	Spits. Spits. Spits. Spits. Spits. Spits.	From W.D.
MALTA	322 Wing R.A.F.	81 154 232 242 43	Spits. Spits. Spits. Spits. Spits.	
MALTA	324 Wing R.A.F.	72 93 111 152 243	Spits. Spits. Spits. Spits. Spits.	
GOZO	31 Group U.S.	307 308 309	Spits. Spits. Spits.	
MALTA	285 Wing 325 Wing	40 ½ 600	Spits. Beaus.	From W.D. From Coastal.

APPENDIX "B" TO T.A.F.
OPS. INSTRUCTION No.4.

D-7 DAY. SCHEDULE OF OPERATIONS.

Ser. No.	Day or Night	Group	Number of Aircraft	Provisional Target	Escort	Time over Target	Remarks
1	Day	47 Group	36	Castel Vetrano	33 Group 99 Sqn. 27 Group	Approx. 1100 hrs To be adjusted to fit in with diversion with S.A.F.	Synchronized attack with low level approach to achieve surprise. Arranagements for use 33 Group to be made with A.O.C. Malta.
2	Day	3 SAAF Wing	36	Sciacca	324 Group 7 SAAF Wing 27 Group		
3	Day	340 Group	36	Comiso	Malta.	Approx. 1700 hrs.	
4	Day	86 Group (if available)	30	Selected objectives in Southern Sicily.	Nil.	0700 - 0900 hrs. 1800 - 2000 hrs.	Aircraft to operate in small numbers during times specified. Low approach to coastline.
5	Day	27 Group	12	ditto.	Nil.	1300 - 1600 hrs.	Targets to be ordered by T.A.F. H.Q.
6	Night	326 Wing	18	Comiso	Nil.	Just before dawn.	Marking target and bombing.
7	Night	12 Group	24	Comiso	Nil.	ditto.	

SCHEDULE OF OPERATIONS.

Ser. No.	Day or Night	Group	Number of aircraft	Provisional Target	Escort	Time over Target	Remarks
8	Day	340 Group 12 Group	24 24 } 48	Comiso	Malta. 33 Group to provide readiness a/c covering outward and return journey.	1030 hrs.	Rendezvous arrangements with Malta.
9	Day	47 Group 3 SAAF Wing	36 12 } 48	Vetrano or Sciacca	324 Group	1030 hrs.	Target to be selected dependent on success on D-7.
10	Day	47 Group 232 Wing	36 12 } 48	Milo	324 Group	1600 hrs.	Approach from West from seaward.
11	Day	86 Group	6	Vetrano or Sciacca	-	1520 hrs.	To reduce fighter opposition from these airfields for Serial 9.
12	Day	27 Group	6		-	1520 hrs.	ditto
13	Day	86 Group	12	As for Serial 4.			
14	Day	27 Group	12	As for Serial 5.			
15	Night	3 SAAF Wing	24	Borizzo	-	Just before dawn.	Marking target and bombing.
16	Night	326 Wing	18	Milo	-	ditto	Marking target and bombing.
17	Night	340 Group	24	Milo	-	ditto	
18	Night	12 Group	24	Borizzo	-	ditto	

SCHEDULE OF OPERATIONS.

Ser. No.	Day or Night	Group	Number of aircraft	Provisional Target	Escort	Time over Target	Remarks
19	Day	340 Group	36	Comiso	Malta.	1030 hrs.	To reduce fighter opposition for attack on Serial 20.
20	Day	12 Group	36	Biscari	Malta. 33 Group at readiness for outward & return journey.	1700 hrs.	
21	Day	47 Group 232 Wing	24 24 } 48	Milo	324 Group (two Sqns.) 7 SAAF Wing (one Sqn.)	1030 hrs.	Synchronized attack on East and West objectives. See Serial 19.
22	Day	47 Group 232 Wing	24 24 } 48	Borizzo	324 Group 99 Sqn.	Approx. 1700 hrs.	
23	Day	27 Group	36	Selected beach objectives on Southern coastline.	-	From first light to 1200 hrs.	Special target map prepared by Force 343 to be issued to XII A.S.C. for operations of 27 Group.
24	Day	86 Group	30	Selected beach objectives on Southern coastline	-	From 1200 hrs. to 1900 hrs.	ditto.
25	Night	3 SAAF Wing	24	Milo or Borizzo	-	Just before dawn.	Marking target and bombing.
26	Night	326 Wing	18	Biscari	-	ditto	Marking target and bombing.
27	Night	12 Group	12	Milo	-	ditto	
28	Night	340 Group	12	Biscari	-	ditto	

(128)

D-4. SCHEDULE OF OPERATIONS.

Ser. No.	Day or Night	Group	Number of aircraft	Provisional Target	Escort	Time over Target	Remarks
29	Day	47 Group	36	Sciacca	33 Group 99 Sqn.	1030 hrs.	
30	Day	232 Wing 12 Group	24) 24) 48	Milo	324 Group 7 SAAF Wing	1100 hrs.	
31	Day	47 Group	36	Vetrano	324 Group 99 Sqn.	1500 hrs.	
32	Day	340 Group	36	Comiso	Malta.	1500 hrs.	
33	Day	27 Group	30	(i) Niscemi. (ii) Road comms.	-	0900 hrs. Throughout day.	Low approach.
34	Day	86 Group	30	Beach objectives. Road communications. R.D.F. Stations.	-	Throughout day.	Low approach. Operating in small numbers of aircraft.
35	Night	326 Wing	18	Boccia Palermo	-	Just before dawn	Marking target and bombing.
36	Night	3 SAAF Wing	24	ditto	-	ditto	ditto
37	Night	12 Group	24	ditto	-	ditto	ditto
38	Night	340 Group	12	ditto	-	ditto	ditto

D-3. SCHEDULE OF OPERATIONS.

Ser. No.	Day or Night	Group	Number of aircraft	Provisional Target	Escort	Time over Target	Remarks
39	Day	47 Group 232 Wing	24) 24) 48	Milo	324 Group 7 SAAF Wing	0930 hrs.	
40	Day	12 Group 340 Group	36) 12) 48	Biscari	Malta.	1130 hrs.	
41	Day	27 Group	36	Road communications. Beach objectives S.N. area.	-	Throughout day.	Small formations operating throughout the day.
42	Day	86 Group	36	Selected objectives Southern area.	-	Throughout day.	ditto.
43	Day	3 SAAF Wing	36	Borizzo	324 Group 99 Sqn.	1700 hrs.	
44	Night	12 Group	24	Comiso	-	ditto.	
45	Night	326 Wing	24	Biscari	-	ditto.	
46	Night	340 Group	24	Biscari	-	ditto.	

D-2. SCHEDULE OF OPERATIONS.

Ser. No.	Day or Night	Group	Number of aircraft	Provisional Target	Escort	Time over Target	Remarks
47	Day	47 Group	36	Selected airfield	99 Sqn. 324 Group	Selected.	
48	Day	340 Group	36	Selected airfield	7 SAAF Wing 324 Group	ditto.	Interval between Serial 47 and 48 required to ensure readiness of 324 Group.
49	Day	12 Group	36	Comiso	Malta. 33 Group at readiness to protect outward and return journey.	Selected.	
50	Day	27 Group	24	Beach objectives & road communications.	-	Throughout day.	
51	Day	86 Group	36	ditto	-	ditto	
52	Night	3 SAAF Wing	36	Selected objectives in garrison areas.	-	Landing in daylight.	Targets dependent on general air situation.
53	Night	340 Group	24	ditto	-	ditto	ditto
54	Night	12 Group	24	ditto	-	ditto	ditto
55	Night	232 Wing	12	ditto	-	ditto	ditto

(131)

APPENDIX "C" to T.A.F.
Ops. Instruction No.4.

DETAIL OF OPERATIONS BY UNITS BASED IN TUNISIA (NOT INCLUSIVE OF AIR FORCES CONTROLLED BY A.O.C. MALTA).

D - 1 Day.

Ser. No.	Day or Night	Group	Number of aircraft	Target	Escort	Time over Target	Remarks
1	Day	86 Group	Maximum effort	Niscemi. Road comms. Beach objectives at assault areas.	-	Throughout day	
2	Day	27 Group	ditto	Beach objectives at assault areas.	-		
3	Day	47 Group	36	Western area airfield objective.	324 Group 7 SAAF Wing	First light	
4	Day	47 Group	24	Selected airfield, Wn. or Central area or alternative target.	324 Group		
5	Day	340 Group	36	Comiso or selected airfield En. area or alternative target.	Malta	Early morning	
6	Day	12 Group	36	Gela or selected airfield	Malta	Late morning	To clear Tactical Bomber commitments for Malta escort by midday approx.
7	Night	3 SAAF Wing	36	Dummy parachutists (8 aircraft) (i) Gela (Ponte de Olivo) (ii) Niscemi (iii) Road junction 1½ miles N. of Gela.	-	2315 - 0045 hours. 2310 - 2320 hours.	Dummy parachutes and cover bombing. Attack on airfield. Airfield to be marked with incendiary bombs to provide beacon for paratroop operation. Crows feet may be part of bomb load.

(132)

CONTINUED.

D - 1 DAY (contd.)

Ser. No.	Day or Night	Group	Number of aircraft	Target	Escort	Time over Target	Remarks
8	Night	326 Wing	18	Catania	-	H - 30 mins. (To be confirmed).	To assist naval diversion at Catania. Bomb load to include Crows feet.
	CANCELLED BY NAVAL SIGNAL AS PASSED TO US.						
9	Night	232 Wing	18	Attack of selected airfield or alternative objective affecting assault.			Bomb load for attack of airfields to include crows feet.
10	Night	340 Group 12 Group	24 24 } 48	ditto.			
11	Night	326 Wing	6	Night recce. Areas to be nominated by T.A.F. H.Q. for Force 343.			

(133)

NOTE: No.111 Sqdn.(U.S.) will be located in the Cape Bon peninsula and at the disposal of 7th Army for Tac/Recce.

"D" DAY.

Ser. No.	Day or Night	Group	Number of aircraft	Target	Escort	Time over Target	Remarks.
12	Day	324 Group	12) 12)	Reinforce fighter cover over Joss Beach.	-	Dawn 30 mins.after dawn	
13	Day	86 Group	Maximum effort	Road communications	-	Throughout day.	
14	Day	27 Group		Road communications	-	Throughout day.	
15	Day	99 Squadron	Maximum strength	To reinforce 33 Group over Joss beach.		As selected by O.C. 33 Group in conjunction with A.O.C. Malta.	Aircraft to use Pantellaria to refuel.
16	Day	57 Group	Maximum effort	Selected operational areas.	-		If moved to Tunisia in emergency.
17	Day	79 Group	ditto		-		
18	Day	12 Group 340 Group	24) 24) 48	Formations at readiness for emergency calls.	324 Group		
19	Day	47 Group	48	ditto	7 SAAF Wing 324 Group		
20	Day	324 Group	12	Additional fighter protection at dusk for Joss beach.	-	Dusk.	Night landing Haouria.

(134)

CONTINUED.

Ser. No.	Day or Night	Group	Number of aircraft	Target	Escort	Time over Target	Remarks
21	Night	3 SAAF Wing	Maximum	Selected objectives dependent on general air or ground situation.	-	Throughout night.	
22	Night	12 Group	Maximum	ditto	-		
23	Night	232 Wing	Maximum				
24	Night	326 Wing	ditto				A proportion of effort (6 aircraft) likely to be required for night recce.
25	Night	340 Group	ditto				

NOTE: No.111 Sqdn.(U.S.) will be located in the Cape Bon peninsula and at the disposal of 7th Army for Tac/Recce.

D + 1 DAY.

Ser. No.	Day or Night	Group	Number of aircraft	Target	Escort	Time over Target	Remarks
26	Day	86 Group	Maximum	Selected objective in rear of battle areas.	-	Throughout day	
27	Day	27 Group			-	ditto	
28	Day	59 Group	ditto	Army targets	-		If aircraft in Tunisia.
29	Day	79 Group	ditto	Army targets	-		
30	Day	47 Group	36	Formations at readiness for emergency calls on Western area.	324 Group		
31	Day	12 Group 340 Group	36	ditto on Eastern area.	324 Group 99 Squadron 7 SAAF Wing		
32	Night	3 SAAF Wing	Maximum	Selected objectives.	-	Throughout night for selected pilots. Bulk of effort to have moon assistance for landing.	
33	Night	12 Group	ditto	ditto		ditto	
34	Night	232 Wing	ditto	ditto		ditto	
35	Night	326 Wing	ditto	ditto		ditto	

CONTINUED.

D + 1 DAY (Contd.)

Ser. No.	Day or Night	Group	Number of aircraft	Target	Escort	Time over Target
36	Night	340 Group	Maximum	Selected objectives	-	Throughout night for selected pilots. Bulk of effort to have moon assistance for landing.

NOTE: No.111 Sqdn.(U.S.) will be located in the Cape Bon peninsula and at the disposal of 7th Army for Tac/Recce.

D + 2 DAY

As for D + 1 depending on general situation. On this day a naval diversion may be staged against Western Sicily and require the allocation of some air effort from Tunisia.

Appendix "C"

BIGOT HUSKY MOST SECRET

NORTHWEST AFRICAN TACTICAL AIR FORCE.

Signals Instruction No. 1.

OPERATION HUSKY.

-----oOo-----

15th June, 1943.

NORTHWEST AFRICAN TACTICAL AIR FORCE.

SIGNALS INSTRUCTION No. 1.

CONTENTS.

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TAF/500/5/Sigs. BIGOT HUSKY MOST SECRET

Copy No.....

NORTHWEST AFRICAN TACTICAL AIR FORCE

SIGNAL INSTRUCTION No. 1.

OPERATION HUSKY

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INFORMATION

1. HUSKY is the code name for an operation, the object of which is to capture the island of SICILY. Details of the plan are given in the "PLAN FOR THE EMPLOYMENT OF NORTHWEST AFRICAN AIR FORCES AND ATTACHED AIR FORCES IN OPERATION HUSKY", which should be read in conjunction with this instruction.

2. In brief, British and U.S. forces will carry out assaults on the east and south coasts of SICILY with the object of establishing a base, and aerodromes, from which further operations can be conducted. The role of the air forces is to defeat the enemy air forces engaged, to provide cover for shipping, to provide cover over the beaches during the landings, and to provide support for the ground forces.

3. Northwest African Tactical Air Force, under the higher direction of a combined Command Post to be set up by Mediterranean Air Command and Northwest African Air Forces, is responsible for the conduct of the operations. The Air Forces engaged under Tactical Air Force are :

DESERT AIR FORCE
XII AIR SUPPORT COMMAND
TACTICAL BOMBER FORCE

4. During the opening phases of the assault the main fighter force will be established in MALTA and GOZO, and operations will be controlled by A.O.C., MALTA. When the attack has developed to such a stage that it is possible for Headquarters DESERT AIR FORCE to move into SICILY, A.O.C. DESERT AIR FORCE will take over the control of operations in SICILY from A.O.C. MALTA. During this period XII AIR SUPPORT COMMAND will come under the direction of DESERT AIR FORCE. At a later date to be determined by A.O.C. NORTHWEST AFRICAN TACTICAL AIR FORCE, XII AIR SUPPORT COMMAND will resume the functions of an independent command.

5. Fighter forces will also/operated from PANTELLERIA and TUNISIA. The TACTICAL BOMBER FORCE will operate from TUNISIA until such time as it is possible for them to move forward either to MALTA or to SICILY.

6. The landings to be made are :-

ACID NORTH ACID SOUTH BARK NORTH	Gulf of NOTO.	British.
BARK MIDDLE BARK WEST	South-eastern tip of SICILY.	British.
CENT	Scoglitti.	U.S.
DIME	Gela	U.S.
JOSS	Licata	U.S.

Contd.....

7. The BARK landings will secure the aerodrome at PACHINO. The CENT landing will secure the aerodrome at COMISO, and later the aerodrome at BISCARI. The DIME landing will secure the aerodrome at PONTE OLIVO. The JOSS landing will secure the port of LICATA and also the small aerodrome there. The ACID landings will first secure the port of SYRACUSE, and will subsequently move north to subdue the CATANIA area which will make available the GERBINI aerodromes. As soon as the port of CATANIA is in our hands the main signals sections will be shipped in through the port.

8. A list of Signals units engaged is given in Appendix 'A'.

INTENTION.

9. The intention is to lay down the signals policy to be followed by the DESERT AIR FORCES, XII AIR SUPPORT COMMAND and TACTICAL BOMBER FORCE.

EXECUTION.

W.T.COMMUNICATIONS.

10. General. The first network of W.T.Communication to be built up will be the MAIN STRATEGIC CHANNELS given in NORTHWEST AFRICAN AIR FORCES SIGNALS PUBLICATION No. 1. A certain number of these will be put into operations prior to D day and the entire schedule is to be completed as soon after all signals sections are landed in SICILY as possible. These channels are given at APPENDIX "B".

11. During the initial phases of the assault rearward communication will be available through the Headquarters Ships which will be lying off the beaches. There will be one ship for the ACID beaches, one for the BARK beaches, with a standby ship for ACID or BARK. Each of the U.S. beaches CENT, DIME and JOSS will have a Divisional H.Q. Ship, but all three will be under the control of a single main Headquarters Ship. One of the Divisional Ships will act as a standby. All H.Q. Ships, in addition to rearward communication to MALTA, will be in lateral communication with one another on H.F. and V.H.F. R/T.

12. As soon as possible after the beaches have been secured R.A.F. Field Force Headquarters Signals Sections are to be landed at ACID NORTH, BARK NORTH, BARK MIDDLE and CENT beaches. The function of these units is to act as R.A.F. Signals centres, and to relieve the H.Q. Ships of responsibility for communications. At the same time as these sections are landed, R.A.F. A.L.G. Sections are to be landed at BARK NORTH, BARK MIDDLE and CENT. The function of these sections is firstly to take over the control of fighters over the beaches so that H.Q. Ships may be released, and secondly to move forward to the aerodromes as soon as they are captured. It is essential that the A.L.G. Sections should be put into operation as soon as they are landed since it is imperative that the H.Q. Ships should withdraw at the earliest possible moment.

13. U.S. Fighter Control Squadron Detachments and Communication Squadron Detachments will be landed at DIME and JOSS to fulfil a similar function.

14. These assault communications are to be built up to the full scale required for the operation of the Air Forces as successive convoys bring in the main signals sections.

15. Frequencies. Frequencies are being allotted in blocks to the Eastern and Western task forces. The Main Strategic frequencies have already been laid down in N.A.A.F. Signals Publication No. 1. All Signals Officers are to take the utmost care to see that frequency regulation is strictly maintained. Frequency checks are to be made at frequent intervals.

16. Power output is to be kept as low as is consistent with good communication, and is on no account to exceed the maximum power allowed on any channel.

Contd.....

17. Procedure. W.T. Procedure to be adopted is as follows:-

(i) R.A.F. Procedure is to be employed between all British Units.

(ii) Combined US/British Procedure is to be employed whenever a British terminal is working a U.S. terminal.

(iii) Combined US/British Procedure is to be employed between all U.S. Units.

It is the intention at a later date to standardise Combined U.S./British procedure throughout the force.

PROCEDURE FOR HEADQUARTERS SHIPS DURING OPERATION "HUSKY".

18. (a) Paragraphs 18 - 23 cover the special use of call signs in H.Q. Ships and shore stations associated with them, to prevent confusion when a message (signal) of one service is passed over a channel manned by another service.

(b) It applies mainly to British H.Q. Ships and to their associated shore stations, but the same procedure may be used in H.S. H.Q. Ships if desired. It does not entail any action by the originators of the messages.

19. The following H.Q.s on board a H.Q. Ship and at associated shore stations will be allotted separate call signs :-

(a) Naval Commander. This call sign will be the call sign of all Naval WT terminal.

(b) Army Commander. This call sign will be the code sign allotted to the Army H.Q.

(c) Air Commander. This call sign will be the call sign of all Air Force WT terminals.

20. When signal personnel of one service require to pass a message over a channel operated by another service, the message will be passed as follows:-

(a) The initial call will be made using the normal procedure of the service operating the channel.

(b) Delivery instructions will then be sent showing to whom the message is to be passed and by whom it was originated.

21. The delivery instructions will consist of :-

(a) The call or code sign of the addressee to which is added a suffix, consisting of 'oblique stroke' and a letter indicating the service of the addressee. (See para. 5 below).

(b) "V".

(c) The call or code sign of the originator.

22. The following suffices will be used :-

(a) /N for a Naval addressee.

(b) /A for an Army addressee.

(c) /F for an Air Force addressee.

Contd .....

23. Example. A Message from an Army Headquarters (GHI) on board a H.Q. Ship for an Army addressee (JKL) ashore is passed by a Navy channel whose terminal stations are DEF (afloat) and ABC (ashore). The preamble would be :-

ABC V DEF - T - Z - JKL/A V GHI ---------- etc.

Thus the receiving station knows that JKL is an Army addressee.

Wireless Silence on H.Q. Ships during the Approach and Assault.

24. The Chief Signals Officers of the Task Forces will issue orders on the observation of wireless silence in ships during the approach and assault. These orders will be drafted in accordance with the following principles which have been agreed with the Army and Navy authorities concerned :-

(i) Wireless silence will be maintained on all channels in all ships and craft up to H Hour and will only be broken in emergency by order of the Senior Naval Officer or Master.

(ii) Wireless Silence will be broken on Air Force channels as necessary after H. hour.

(iii) Wireless Silence will be broken on Army channels after H. hour.

(iv) It is necessary that provision should be made for the breaking of wireless silence in emergency on aircraft channels and inter F.D.O. wave during the last half hour of the approach to the beaches.

(v) The breaking of wireless silence on a set in emergency will not be the signal for general breaking of wireless silence. When messages are passed in emergency prior to H hour, wireless silence will be resumed as soon as all essential signals have been made.

UTILISATION AND CONTROL OF EXISTING COMMUNICATIONS IN SICILY.

25. The following policy as regards existing communications is to be observed by the Task Forces and made known by Chief Signals Officers to all signals and communications officers within the task forces.

(i) Initially, each Task Force Commander will have complete control of all telecommunication facilities in areas occupied by his troops. This control will be exercised through his Chief Signal Officer who will co-ordinate the exploitation of these facilities and their allotment to the various services.

(ii) As a general rule, Naval and Air telecommunications installations should be made available for Naval and Air services if so required, since the equipment will usually be of specialised design.

(iii) All existing telecommunication services will be closed down immediately the installations are secured. Personnel will be evacuated and a guard mounted. Care will be taken to secure and preserve all records. Services will not be resumed except under the orders of the Commander.

(iv) The operation of all installations secured will be done by Signal personnel of the Allied Forces. Friendly alien personnel may be employed provided their integrity can be established, but they should not normally work without supervision.

(v) Broadcast transmitters will be taken over as military stations and will, if required, be used initially for communication purposes. This may be required also in the early stages of the operation for the broadcasting of announcements by the military commander. As soon as these stations can be released from purely military use, they will be handed over to P.W.S. Personnel of P.W.S., including technical personnel, will accompany each Task Force. The technical personnel will be available to operate broadcast stations in the initial period when the transmitters may be required for purely military communications.

Contd .....

(vi) No telegraph services will be operated in SICILY except those wholly controlled by the Allied Forces. No civilian will have access to any telegraph facilities except through AMGOT. (Allied Military Government of Occupied Territories, late Civil Affairs).

(vii) All civil telephone services will be discontinued as such. Local telephone services may be re-opened for military purposes wherever they can be operated under adequate control. To meet military requirements, certain public services or individual civilians may be allowed access to local telephone services. Among these will be included such civilian agencies or persons, for example, hospitals and doctors, as may be nominated by AMGOT. Such agencies or persons will have no direct access to long distance telephone services, but may be permitted by AMGOT to make calls when necessary from military offices.

TIME.

26. (i) 'B' time will be used throughout the theatre of operations and in Algeria, Tunisia, Malta and Tripolitania. The suffix B will be added to all date time groups in the times of origin and texts of Messages. In the case of a message containing many time groups the phrase "all times in B time " may be employed at the beginning of the text.

(ii) The suffix Z may be used in messages when it becomes an operational necessity to do so.

(iii) This instruction is to be brought to the notice of all units and headquarters taking part in the operation.

V.H.F. COMMUNICATIONS.

27. Crystals. All day fighter aircraft of the Tactical Air Force carrying V.H.F. are to be equipped as follows :-

(i)	BRITISH DAY FIGHTERS.	A 5950 B 6520 C 6450 D 6550
(ii)	U.S. DAY FIGHTERS.	A 5710 B 6350 C 6450 D 6550

Buttons A and B are Wing Operations I and II. Button C is for Convoy Escort, Ships Fighter Direction and essential communications between Bombers and their fighter escorts. Button D is for Air/Sea rescue and Emergency Homing only. At a later date, to be decided by H.Q. Tactical Air Force, this arrangement may be modified so that Button D becomes available as a forceguard.

28. Night Fighters are to be equipped as follows:-

Button A 5950 - Syracuse G.C.I.
B 6520 - Bark/Cent G.C.I.
C 6450 - H.Q.Ships and all SICILY sectors
D 6550 - Emergency Homing.
E 5840 - MALTA G.C.I. No.1.
F 6240 - MALTA G.C.I. No. 2.
G 5710 - DIME/JOSS G.C.I.
H 5620 - MALTA Sector.

Contd .....

29. Fighter Control - Day. Until A.O.C. Desert Air Force is established in SICILY all fighter aircraft based on MALTA will be controlled by MALTA. Fighters will be handed over to the forward control of the H.Q. Ships or A.L.G. Sections as necessary. In order to avoid confusion of a multiplicity of call signs fighters assigned to a particular beach will establish contact with their H.Q. Ship by giving the name of the beach concerned. H.Q. Ships in their turn will also use the beach name as a call sign : e.g. ACID FIGHTERS will call ACID SHIP. On the arrival of a new patrol the fighters taking over will refer to themselves as NEW ACID FIGHTERS until such time as the old patrol has left. In the case of DIME and JOSS beaches, each of which is covered by a separate fighter directing ship, but over both of which only a single standing patrol is to be instituted, the fighters are to call themselves NICKEL FIGHTERS and are to call the H.Q. Ship MONROVIA as NICKEL SHIP. Thereafter NICKEL SHIP will hand them over to DIME SHIP or JOSS SHIP as required. The fighters will continue to call themselves NICKEL FIGHTERS. In the event of an A.L.G. Section taking over the control function of an H.Q. SHIP before establishment at an aerodrome, it will refer to itself as ACID BEACH, or the appropriate beach concerned.

30. Fighter Control - Night. Until night fighters are established in SICILY they will be based on MALTA. MALTA will hand over night fighters to H.Q. Ships or local SICILY Sectors who will in turn hand them over to the requisite G.C.I.

31. Fighter Directing Ships. F.D. Ships are to be crystallised for the control of U.S. or British forces in accordance with the task force which they are to control. As far as possible ships should control on buttons A or B in order to avoid congestion on Button C, which will be in use for all convoy escorting. On no account is Button D to be used for fighter direction.

32. Procedure. Combined U.S./British R.T. Procedure is to be used throughout the force.

33. In view of the large number of aircraft to be employed it is essential that R.T. Chatter should be reduced to a minimum. All pilots are to be briefed to this effect.

CALL SIGNS.

34. W.T. and R.T. call signs of all Middle East Units engaged in Husky together with the W.T. and R.T. call signs of all Northwest African Units engaged will with the addition of new call signs for new units, be scrambled and re-issued as an addendum to the present call sign books. The only exceptions to this rule will be that all Main Stations, and also all units remaining in TUNISIA, will retain their present call signs.

MOVEMENTS OF AIRCRAFT.

35. The Friendly Aircraft Approach Code will be used to give warning of the movement of aircraft into the battle area. This code will be modified to include a height group and a position group.

LANDLINES.

36. Air Formation Signals and U.S. Signal Company detachments will be landed on D day to provide limited line communication for the Air Commanders ashore. The strength of these detachments will be built up in follow up convoys. Detailed line plans are to be included by C.S.Os in their Signals Instructions.

Contd .....

SIGNALS SECURITY.

37. W/T & R/T Aircraft Silence. Every possible effort must be made to deny to the enemy information which he can deduce from our R/T and W/T transmissions.

For this reason W/T and R/T Silence must be strictly observed on the outward journey of every mission. Care must be taken that no transmission is made indicating that aircraft are airborne. No transmission must be made which is not strictly operational.

38. Calibration of Aircraft. When calibration of aircraft W/T and R/T equipment is made, the signals officer must be instructed to arrange that such calibrations are not made at a time immediately prior to an operation, but at varying times during the day so that the calibrations are in no way related to impending operations. When calibrations are made, call signs unrelated to the unit or squadron call sign should be used. It is desirable that a fairly constant number of aircraft sets are calibrated daily, even if it is necessary to detune and retune a set a second time to give the impression that it is a different aircraft. The number of calibrations must in no way relate to the number of serviceable aircraft.

39. D/F Aids. To minimise the possible interception of our bombers by intruder aircraft, the use of D/F aids should be reduced to the minimum. They should not be used unless necessary, or when within 50 miles of the aircraft base.

40. Call Signs. Where call signs are scrambled, aircrew are to be instructed to pay strict attention to the call sign allocated for the operation and to avoid any possibility of compromise with the call sign previously used.

41. Documents in Aircraft. (i) Air Crews are to be briefed with an extract of the verification tables sufficient only for the duration of the mission and under no circumstances will official printed Tables be flown in aircraft.

(ii) Similarly only the relevant extracts from Recognition Tables are to be flown in aircraft, and under no circumstances will Recognition Tables, or extracts therefrom, for a period subsequent to the mission be carried. When in use, only the Syko Card for the day or any previous day will be carried.

(iii) All losses of documents or extracts likely to result in the compromise of the whole document must be immediately signalled to the Distributing Authority. (Rear N.A.A.F.)

42. Ground Stations.

(i) Procedure. Unit signals officers are to be instructed to ensure that all W/T Operators are familiar with the procedures given in paragraph 17. The use of plain language instead of the prescribed operating signals is strictly forbidden. All W/T Stations must be in possession of the Point to Point Verification Tables (CIME 0504) and when any possible doubt exists in the mind of the W/T operator as to the identity of the communicating station, he is to challenge the station concerned.

(ii) Call Signs. Unit Signals Officers are to be instructed to ensure that Call Sign lists are kept fully amended and that all changes are brought to the attention of the W/T Operators. They are also to ensure that the new and old call signs are in no way associated so as to constitute a compromise of the call sign. Similarly no call sign must in any way be associated with plain language so as to disclose the identity of the station.

Contd .....

43. R.D.F. and Radar Stations. When plots are being passed by W/T transmission must conform to the proper reporting code. Wherever possible, plots on our own outgoing aircraft should not be transmitted by W/T. Where plots of this nature are passed the filter officer should immediately request the cessation of the passing of the plots; but recording at the Station should still continue.

CODES AND CYPHER SECURITY.

44. General. R.A.F. and U.S. Systems.

(i) U.S. electrical cyphering machines are not to be viewed by R.A.F. personnel.

(ii) U.S. personnel are not permitted to use Typex except with inter-service setting.

(iii) U.S. personnel working in R.A.F. Code Rooms may use R.A.F. Book Cypher subject to the approval of the Senior Cypher Officer of the unit concerned, who is responsible that any U.S. personnel using R.A.F. Book Cypher in his cypher office are fully competent and duly observe all security precautions applicable to such cyphers.

(iv) The use of R.A.F. Book Cypher by U.S. Code Rooms is restricted to the following :-

(a) Interservice Book Cyphers.
(b) Such R.A.F. Cypher Vocabularies and Recyphering Tables as are from time to time directed by Mediterranean Air Command.

45. Personnel.

(i) The encyphering and decyphering of R.A.F. messages is to be restricted to such personnel as have been selected for and have passed the requisite standard course of training for such duties, or any officer competent to perform such duties.

(ii) The personnel permitted to encypher and decypher messages in the U.S. systems shall be restricted to citizens of the United States who have satisfactorily completed a course of instruction in cryptography in an authorised U.S. School.

46. Messages. With a limited number of cypher and cryptographic personnel available originators are to ensure that messages are worded as briefly as possible but consistent with clarity. Unnecessarily long messages increase the task of the cypher and signal staffs with the result that messages take longer to reach addressees.

47. Degrees of Security.

(i) The comparative degrees of secrecy or classification of messages is as follows:-

British.	U.S.
MOST SECRET	SECRET
SECRET	CONFIDENTIAL

(ii) Most Secret - (U.S.) Secret. All outgoing messages of this degree of secrecy are to be encyphered in the highest grade of cypher available to the originating station and to the addressee, and the Plain Language version is to be filed separately in a locked container.

The P/L version of all incoming messages of this degree of secrecy is to be passed in a sealed envelope direct to the department or individual to whom it is addressed. Any P/L version retained in the cypher office is to be filed separately in a locked container.

47. (ii) Continued.

Where specific instructions are issued, such as in the case of "Bigot" or "E.S.P." messages, the encyphering or decyphering is to be carried out by an officer only, and the regulations as to security of the P/L versions will be strictly adhered to.

48. Degrees of Priority or Procedure.

The comparative degrees of priority or precedence of messages is as follows :-

British.	SYMBOL.	U.S.	SYMBOL.
Most Immediate	O-U		
Emergency Air Attack	O-A	Urgent	O
Emergency	O		
Immediate	O-P	Operational Priority	O-P
Important	P	Priority	P
No Priority	---	Routine	---
Deferred	D	Deferred	D

All messages are to be handled by the cypher office in the order of their priority, provided always that an 'out' message will be handled before an 'in' message of equal priority.

49. Use of Cyphers.

(i) Cypher Books and Tables. Unit cypher officers are to be instructed to ensure that the correct vocabularies and tables are available for use. They are also to ensure that messages are encyphered in the correct system bearing in mind the systems available to the addressee.

(ii) Check Messages. Personnel encyphering messages will on every occasion check such encypherment thoroughly to ensure beyond all doubt that the message is decypherable by the addressee.

(iii) Stereotyped Beginnings and Endings. Originators of messages are to endeavour as far as possible to phrase signals so that they do not begin or end with words which through constant use have become stereotyped. Cypher personnel are to ensure that any message with a stereotyped beginning or ending is encyphered so that the stereotyped portion is included with the portion encyphered within the brackets of the message.

(iv) Routine Messages. Personnel encyphering messages of a regular routine form, such as is the case with 'Status' or 'Strength Returns', are to be instructed to ensure that the order of messages is scrambled so as to avoid repetition as from day to day, but in such a manner that the decyphered version is readily understood by the addressees.

(v) Length of Messages. All R.A.F. cypher personnel must observe the provisions of C.D.17, Appendix IV, Para.1, whereby the length of messages is restricted to the following :-

(a) Book Cypher. Parts are not to exceed in length 180 to 200 groups and different starting point indicators must be used for each part.

(b) Typex. Parts are not to exceed 300 to 350 groups and different sets of message settings must be used for each part.

Contd .....

49. (Continued).

(vi) Messages in Two Systems. Where it is necessary to encypher a message in two different systems, cypher personnel are to be instructed to ensure that the following precautions are observed :-

(a) What one P/L version is thoroughly paraphrased. Care must be taken that the true intention of the message is not disturbed.

(b) That a dummy T.O.O. is given to the second version and that within that second version, the true T.O.O. is encyphered.

50. Check and Repeat Service.

(i) U.S. Code Rooms. Recognised standard practice in securing service on corrupt messages must be strictly adhered to.

(ii) R.A.F. Cypher Room. Requests for repetitions of messages will be made in a standardised manner and will be divided into 3 main types:-

(a) Retransmission of signal to correct signalling errors. (Example 1.)

(b) Reference to Originating Cypher Officer to check :-

(1) Indicators of Message In Book Cypher (Ex. 2).

(2) Message and Machine settings of message in Typex. (Example 3).

(c) Reference to originating cypher office to check encypherment of part of a message. (Example 4).

Examples on Check and Repeat Procedure.

Example 1. Request for re-transmission.

To 299 Group

From "A" Force

Q.M.O. T.O.O. 010101B 2634 + 1924 +

Immediate T.O.O. 010501B

Example 2. Check indicators of a message in Book Cypher.

No 299 Group

From "A" Force

Q.M.J.1 T.O.O. 010101B 2634 + 1924 +

Immediate T.O.O. 010301B

Example 3. Check Message and Machine Settings of message in Typex.

To 299 Group

From "A" Force

Q M J 2 T.O.O. 010101B 02001 + XJXJX +

Immediate T.O.O. 010501B

Example 4. Check portion of message.

To 299 Group

From "A" Force

Q J M T.O.O. 010101B 2634/ Gr.61 to 93.

Immediate T.O.O. 010501B

Notes. No originators number is required on procedure signals.

+ means Groups one and two of the message.

- / means Group one of the message.

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51. Use of Telephone.

(i) Extreme care is to be exercised if use of telephone is made to make reference to any portion of a message that has been transmitted in cypher. If clarification of a section of a message can be obtained by the use of the telephone, the message must be identified by the originators reference number and not (R) NOT by the T.O.O.

(ii) Conversations must be most guarded, more particularly where lines pass through civil test-frames or switchboards. Unless lines can be certified as being solely military throughout, all lines must be regarded as suspect and conversations treated accordingly.

52. Documents.

(i) Storage. Officers having the custody of Secret and Confidential Documents must ensure that secure storage space is obtained and every possible precaution taken to safeguard the publications under their care. Most documents have world-wide distribution and their loss in this theatre will endanger operations and lives in all other theatres of war. Unit cypher officers are to arrange the storage of their documents in such a manner that those shown in the first line of priority in the event of emergency destruction are readily aocessible. Similarly those shown on lines two and three are to be stored together and available in their turn for destruction. (See Priority List in Appendix)

(ii) Loss or Compromise of Documents. Where any documents are lost or compromised, the unit cypher officer is responsible to make the fact known to the Distributing Authority (Rear N.A.A.F.) by Immediate signal. Delay in this respect is vital to the whole campaign and might well change the effect of all our operations.

(iii) Muster of Documents. While it is required that a muster of documents should be made at quarterly intervals, units in forward areas must constantly re-check their holdings so that loss if any can be reported immediately.

(iv) Documents on Loan. Where documents are issued on loan to other officers the existence and safety of such documents must be verified frequently.

(v) Amendments. Unit cypher officers are to be instructed to ensure that all documents are promptly amended so that the use of new and old significations, etc. cannot cause a compromise of any new amendment.

53. Routine Destruction.

(i) S & C. Publications. Unit cypher officers are to be instructed to ensure that all destructions as are from time to time ordered by the Distributing Authority, are promptly executed. Where documents are to be automatically destroyed at set periods, such destruction must be carried out promptly.

(ii) P/L and Cypher Versions. Unit cypher officers are to be instructed to ensure that P/L and cypher versions of messages are destroyed seven days after the date of receipt or despatch.

54. Emergency Destruction of Secret and Confidential Publications to avoid capture by the enemy.

(i) It will be the responsibility of all Chief Signals Officers and Senior Communications Officers of Headquarters and formations taking part in Operation 'HUSKY' to issue orders to all Signals Officers in their command on the subject of destruction of Secret & Confidential Publications in the event of a possibility of their capture by the enemy.

(ii) The use of Thermite Grenades (Incendiary) in a closed space as a ready means of rapid destruction of publications, especially at night where fire may lead to detection by the enemy, has been tried out with success in the U.K. Therefore, Chief Signals Officers and Senior Communications Officers will take steps to obtain suitable Thermite Bombs and include instructions for their use in the above quoted orders.

(iii) Where Thermite bombs are not available Unit cypher officers are to equip themselves with an adequate incinerator, preferably about the size of a 44 gallon drum. A supply of paraffin or petrol must be readily accessible to the Cypher Office for use in accelerating destruction.

(iv) Destruction of Cypher Machines. The emergency destruction of cypher machines and component parts is to be carried out by use of Thermite Grenades (Incendiary). Tests have proved that this method of destruction is speedy and effective. The bombs are described as follows :-

Thermite Grenades (Incendiary)
A N - M 14.

The following method of use is recommended:-

(a) Five thermite bombs will be wired together, side by side, caps extending in the same direction forming a bank of five bombs. Field wire W-110 can be used, keeping the wire well to the back of the bombs to prevent the bombs from becoming disconnected before burning is complete.

(b) Place the machine in such a position that the full effect of the bombs is obtained. The characteristic of these bombs is to burn directly downward and only about one inch in a lateral direction. Therefore, it is necessary to place the bombs in such a manner as to ensure the destruction of the intricate parts of the machine, i.e. over such parts.

(c) The centre bomb should be ignited by sharply striking the cap (English type bombs) or pulling the pin (American type bombs). The ignited bomb will start the remaining bombs burning.

(d) CAUTION. Although the bombs are comparatively safe to handle, it must be remembered that once they are ignited it is practically impossible to extinguish them or to make any adjustments in their physical position.

55. Codes.

(i) Unit cypher officers are to be instructed to make themselves familiar with all codes and cyphers issued to them, and try as far as possible to reduce the burden on cypher staffs and the cyphers themselves, by organising the use of codes designed for specific purposes.

(ii) Aircraft Movements Code. Wherever possible movements of aircraft are to be communicated in this code and is to be used by the officer in charge of the aerodrome or his clerk or the Duty Pilot of an airfield.

(iii) Air Transport Code. As and when issued to any unit, all messages effecting the air transport of supplies are to be signalled in this code.

(iv) Air Support Control Code. Personnel assigned to use this code are to make themselves thoroughly familiar with its mode of operation. The particular nature of the code demands accurate use being made of it and every possible effort must be made to signal the E.T.A. of aircraft in the one and only signal sent. The transmission of a second signal makes it clear to the enemy that the particular target has been accepted and will be attacked.

ARMY AIR SUPPORT CONTROL

56. Main Air Support Control. A Main Air Support Control net will be set up. One Army and one air link will be established at each of the following Headquarters.

Force 141/Tactical Air Force
Force 545/Desert Air Force
Force 343/XII Air Support Command
Tactical Bomber Force.

57. Army Air Support Controls. No. 2/5 A.A.S.C. will be located with Force 545/Desert Air Force, and will move with them. Tentacles will be deployed with Corps, Divisions and assault Brigades. Rear links will be deployed to Fighter Groups, Fighter Wings, Recce Wings and the Tac R Squadron of the Desert Air Force, to Tactical Bomber Force and some Bomber Wings.

58. Headquarters, XII Air Support Command will be located with H.Q. Force 343 and will deploy Air Support Parties to all Corps, Divisions and Combat Teams. They will also send an Air Support Party to act as a lateral link with 2/5 A.A.S.C.

59. Calls for support from British Tentacles will be dealt with in the normal manner. Calls for support from U.S. Air Support Parties will be filtered by XII A.S.C. and then passed on the lateral link to 2/5 A.A.S.C. who will take the appropriate action.

R.D.F. AND RADAR.

60. Light Warning Sets, G.C.Is. and C.O.L. are being landed in the assault and follow up convoys to ensure that adequate warning of enemy attacks, and adequate control of our fighters, both day and night may be exercised from the earliest possible moment.

61. C.S.Os. are to ensure that the most careful preliminary siting instructions are given to A.M.E.S. commanders before the operation. They are also to give orders that W.T. plotting is to be carried out from the moment R.D.F. stations are on the air. It cannot be too strongly stressed that landlines will inevitably be unreliable.

62. All A.M.E.S. commanders are to be given precise instructions as to their forward movements behind the advancing ground forces so that they may be able to maintain forward cover without the necessity for a continuous series of movement orders. A preconceived plan, although not necessarily providing ideal sitings from the outset, will undoubtedly provide better all-round cover in the difficult country which will be experienced than will haphazard ad hoc deployment.

63. The STANDARD AIR WARNING CODE will be used for R.D.F. broadcasting and point to point plotting. Mediterranean Area Fighter Operation Grid (MAFOG) is the only grid to be used.

RADIO COUNTER MEASURES

64. A plan for the use of RADIO COUNTERMEASURES has been prepared. The details of this plan are extremely secret and cannot be disclosed in this instruction. The forces to be employed will be coming from the United Kingdom. The Policy governing R.C.M. is directly controlled by Mediterranean Air Command; the tactical control and coordination of R.C.M. operations will be undertaken by Tactical Air Force.

65. These measures will accomplish the following :-

(i) Enemy R.D.F. Cover will be pushed back and limited to a range of 10 miles during the approach of our forces.

(ii) Enemy M.F. beacons will be rendered inaccurate, and unusable for the purpose of taking bearings.

(iii) Enemy aircraft will be unable to obtain accurate fixes from ground stations.

(iv) Enemy shadowing aircraft transmissions will be rendered unusable for homing by striking forces.

(v) Enemy night fighters H.F. control will be jammed.

COORDINATION OF SIGNALS DUTIES.

66. Policy. Signals policy will be directed by Headquarters, Tactical Air Force. It is the duty of all Chief Signals Officers to advise their Commanders on all matters relating to Signals, and to implement the policy laid down by Tactical Air Force.

67. In view of the fact, however, that the efficiency of the signals service depends not only on the efficiency within any particular command, but on the overall efficiency of Signals throughout all Commands of the Allied Air Forces in the theatre of operations, it is essential that there should be a rapid interchange of information between all signals units.

68. It is therefore the responsibility of C.S.Os. to call for periodical Situation Reports from all their units. These reports are to be consolidated, and the C.S.Os. of the DESERT AIR FORCE, XII AIR SUPPORT COMMAND, and TACTICAL BOMBER FORCE are to transmit a weekly Situation Report to C.S.O. Tactical Air Force. It is not the intention that these reports should be lengthy or stereotyped. They should merely contain brief details of any new developments found useful, failures (and the reason for them) and other items from which lessons can be learned with a view to future progress. It is most important that a location list of Signals Units should be kept up to date from the outset of operations.

(Sgnd) E. M. F. GRUNDY, G/Capt.,
for: Air Marshal,
Air Officer Commanding,
TACTICAL AIR FORCE.

Headquarters,
Tactical Air Force,
HAMMEMET.

15 th June, 1943.

APPENDIX "A"

LIST OF SIGNALS UNITS

United States

Provisional Air Warning Battalion
297th Signals Battalion, A.S.C.
3rd Air Support Communications Squadron
431st Signal Construction Battalion (Avn).
82nd Fighter Control Squadron.

British

No. 1 Field Force H.Q. Section
No. 2 " " " "
No. 3 " " " "
No. 4 " " " "
No. 1 A.L.G. Signals Section
No. 2 " " "
No. 3 " " "
No. 4 " " "
No. 14 W.U.
No. 49 W.U.
No. 87 W.U.
No. 90 W.U.
No. 239 Wing Signals Section
No. 244 " " "
No. 322 " " "
No. 324 " " "
No. 211 Group Signals Section
Advanced D.A.F. Signals Section
Rear D.A.F. Signals Section.

No. 380 W.U. (Y) (Det)
No. 4 F.U.
No. 5 F.U.
No. 305 M.S.S.U.

No. 6003 A.M.E.S.
No. 6004 "
No. 6008 "
No. 6011 "
No. 6037 "
No. 6038 "
No. 6039 "
No. 6040 "
No. 6041 "
No. 6042 "
No. 6043 "
No. 6044 "
No. 6045 "
No. 605 "
No. 621 "
No. 622 "
No. 623 "
No. 630 "
No. 631 "
No. 8016 "
No. 8023 "
No. 8028 "
No. 8035 "
No. 8043 "
No. 871 "
No. 873 "
No. 886 "
No. 887 "
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No. 4 Air Formation Signals

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INTERNAL

A.O.C.
D/A.O.C.
S.A.S.O.
A.O.A.

AIRFIELDS IN SICILY.

(Up to 31st July).

	NAME	MAP REF.	SIZE OF STRIPS	WORK COMMENCED	AIRFIELDS OPERATE.
+	(I) PACHINO	H.9691	1400 x 300. 1100 x 200	July 10th	July 14th
	(2) MAUCINI	H.9689	1200 x 100	July 13th	July 15th
	(3) LENTINI EAST	H.8457	1200 x 80	July 17th	July 22nd
	(4) LENTINI WEST	H.8057	1200 x 175	July 21st	July 25th
	(5) CASSIBILE	J.1021	1500 x 100	July 14th	July 16th
	(6) SAN FRANCESCO	H.8354	1100 x 50	July 27th	July 31st
	(7) AGNONE	H.9559	1200 x 100	July 18th	July 22nd
	(8) SCORDIA	H.7854	1200 x 100	July 26th	July 31st
	(9) PALAGONIA	H.6058	1250 x 125	July 29th	July 31st
	(10) AGRIGENTO	G.6552	1533 x 50	July 17th	July 20th
+	(II) BISCARI	H.4433	1400 x 150	July 16th	July 19th
+	(12) COMISO	H.5422	1800 x 55	July 12th	July 13th
+	(13) PONTE OLIVO	H.2837	1667 x 360	July 12th	July 15th
	(14) GELA WEST	H.2032	1850 x 50 1930 x 60 1870 x 60	July 16th	July 19th
	(15) GELA EAST	H.2429	2000 x 67 2200 x 100	July 12th	July 16th
	(16) LICATA SOUTH	G.9136	2000 x 67	July 11th	July 16th
	(17) MT. LUNGO	H.1534	2000 x 50 1500 x 50	July 21st	July 26th
	(18) COMUNELLI	H.1237	1667 x 67	July 18th	July 21st
+	(19) CASTELVETRANO	F.9299	1300 x 72	July 29th	July 31st
	(20) TERMINI EAST	B.8730	2000 x 50	July 27th	July 31st
	(21) TERMINI WEST	B.8130	2000 x 50	July 27th	July 30th

\+ Aerodromes in existence but needed repair or improvement.

Appendix "I"

DECLASSIFIED

SECRET.

BUILD-UP OF SQUADRONS WITHIN SICILY BETWEEN THE ASSAULT AND THE 6th AUGUST, 1943.

UNIT	DATE	AIRFIELD LOCATION	PROGRESSIVE TOTAL OF SQUADRONS	REMARKS
244 Wing. (114,145,92 Sqdns.)	13 July	PACHINO	3	
324 Wing. (43,93,243 Sqdns.)	14 July	COMISO		
(111, 72 Sqdns.)	15 July	COMISO	8	
31st (F) Group (U.S.) (307,308,309 Sqdns.)	16 July	PORTE OLIVO	11	
111 (Recce) U.S.	14 July	LICATA	12	
244 Wing. (601 Sqdn.)	14 July	PACHINO	13	
33 Group. (58,59,60 Sqdns.)	16 July	LICATA	16	
244 Wing. (417 Sqdn.)	16 July	PACHINO	17	
(40 Sqdn. 1439 Flight)	16 July	PACHINO	18½	
244 Wing (and Sqdns.)	17 July	CASSIBILE	-	Move of Wing and Sqdns. to newly constructed airfield to make room for further build-up of Squadrons.
40 Sqdn. 1439 Flight.	18 July	CASSIBILE	-	
31st Group (and Sqdns.)	18 July	AGRIGENTO	-	
27th (F) Group. (16,17,91 Sqdns.)	18 July	LICATA	21½	
99 Squadron.	19 July	LICATA	22½	
239 Wing. (3,112,250,260,450 Sqdns.)	19 July	PACHINO	27½	
57 (F) Group (U.S.). (64,65,66 Sqdns.)	19 July	PACHINO S.	30½	
27th Group (16,17,91 Sqdns.)	21 July	GELA E.	-	
239 Wing (and Sqdns.)	24 July	AGRIONE.	-	
86 Group (and Sqdns.) (309,310,312 Sqdns.)	20 July	GELA W.	33½	
322 Wing. (232,152,242,81,154 Sqdns.)	24 July	LENTINI E.	38½	
244 Wing (and Sqdns.)	25 July	LENTINI W.	-	
600 N/F Sqdn.	25 July	CASSIBILE.	39½	
31st Group.	26 July	TERMINI W.	-	
40 Sqdn., 1439 Flight.	31 July	S. FRANCESCO.	-	

UNIT	DATE	AIRFIELD LOCATION	PROGRESSIVE TOTAL OF SQUADRONS	REMARKS
79 Group. (85,86,87 Sqdns.)	31 July	PALAGONIA.	42½	
324 Wing (and Sqdns.)	31 July	PACHINO S.	-	
12 (B) Group. (81,82,83,434 Sqdns.)	4 Aug.	PONTE OLIVO.	46½	
340 (B) Group. (486,487,488,489 Sqdns.)	4 Aug.	COMISO.	50½	
326 Wing. (18,114 Sqdns.)	6 Aug.	GELA.	52½	
47 (B) Group. (84,85,86,97 Sqdns.)	6 Aug.	MALAVENTRANO.	56½	
232 Wing. (55,223 Sqdns.)	6 Aug.	SIGONELLA.	58½	