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DESPATCH
ON
AIR OPERATIONS

21st. JUNE 1943 TO 15th. NOVEMBER 1943.

BY

AIR CHIEF MARSHAL
SIR. R.E.C. PEIRSE. K.C.B., D.S.O., A.F.C.

AIR COMMAND. SOUTH EAST ASIA. MAR. 1944.

South East Asia Command

25th July, 1944.

Reference:-
C-in-C/144

Sir,

I have the honour to forward herewith a copy of a letter I have received from His Excellency Field Marshal the Right Honourable the Viscount Wavell, P.C., G.C.B., G.C.S.I., G.C.I.E., C.M.G., M.C., covering his last Despatch as Commander-in-Chief in India. This letter is being sent for record purposes.

I have the honour to be,

Sir,

Your obedient Servant,

A.R.C. Tedder

Air Chief Marshal,
Allied Air Commander-in-Chief,
South East Asia Command.

The Under Secretary of State for Air,
Air Ministry,
Whitehall,
LONDON, S.W.1.

CX3/7271

525

COPY

The Viceroy's House,
New Delhi,
6th July 1944.

My dear Richard,

Herewith a personal copy of my last Despatch on operations from India during the first six months of last year, up to the time when I gave up command.

We had about 18 months cooperation together at a difficult stage of the war, and I shall always look back with pleasure to our association, and I am most grateful to you for all the support you always gave me. Those were lean times, but I think on the whole we did the best that we could with the little we had.

Yours

(Signed) WAVELL

Air Chief Marshal
Sir Richard Peirse, KCB, DSO, AFC.

D E S P A T C H

O N

A I R O P E R A T I O N S

(including a report on the expansion and development of the Air Forces in India).

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2 1 st JUNE 1943 to 15th November 1943

B Y

AIR CHIEF MARSHAL SIR R.E.C. PEIRSE, KCB., DSO., AFC.

AIR COMMAND SOUTH EAST ASIA. MARCH 1944

TABLE OF CONTENTS

LIST OF APPENDICES

A. GENERAL APPENDICES

B. MAPS AND GRAPHS

AIR HEADQUARTERS INDIA

DESPATCH ON AIR OPERATIONS

BY AIR CHIEF MARSHAL

SIR RICHARD E.C. PEIRSE, K.C.B., D.S.O., A.F.C.

INTRODUCTION

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The Monsoon was already beginning by 21st June, and operations were to some extent limited until the beginning of October. The role of the Army in Eastern India became primarily defensive until the beginning of the present campaigning season, and in consequence the need for intensive air operations correspondingly diminished. None the less throughout the monsoon air operations continued in Eastern India and over the Bay of Bengal and the Arabian Sea in all conditions of weather.

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Three of this despatch has been written at some length, in order that every phase of our progress may be adequately recorded.

At Appendix I is shown the more senior Air Force Commands and Staff appointments in India with the names of the Officers holding them. In June, Air Marshal Sir Guy Garrod became Deputy Air Officer Commanding-in-Chief in place of Air Marshal Sir John Baldwin, who reverted to special duty. The original intention was that Air Marshal Baldwin should assume Command of the Air Force component of the newly-formed Indian Expeditionary Force. It transpired, however, that the formation of this Force was not an adequate solution of the strategical problems involved in the reconquest of Burma, and the Force was therefore reduced in size and designated for a less important assault role. Air Commodore F.J.W. Mellersh was to command it and during the summer some assault units were formed and trained. On the formation of South East Asia Command both the Expeditionary Force Headquarters and the R.A.F. Assault Wing were disbanded.

Air Marshal Baldwin remained on special duties throughout the period, fulfilling a very useful function by touring widely in the Command and inspecting and reviewing our various Air Force units and dispositions. At the end of the period Air Marshal Baldwin assumed Command in Bengal in place of Air Vice Marshal T.M. Williams, under whose fine leadership during the past year the two composite Groups of Bengal Command had developed into a formidable and well disciplined fighting force. In October Air Vice Marshal A.C. Collier, under whose energetic administration this Command had expanded twentyfold since the Spring of 1942, was posted back to the United Kingdom to become Deputy Air Officer Commanding-in-Chief of the new Transport Command. His place as Air Officer in charge of Administration was taken by Air Vice Marshal R.V. Goddard.

PART ONE

GENERAL.

1. Effect of the Monsoon on operations.

The advent of the monsoon in India has a marked affect on land and air operations. Not only are operations curtailed, but administrative disorganisation ensues from the flooding and breaking of rail and road communications, dislocation of signal channels, and the flooding of airfields, runways and domestic accommodation. The Japanese almost entirely discontinued air operations during the period and withdrew their units for training, rest and re-equipment. Our policy has been to use this period principally in preparing for the coming dry weather campaigns by training and re-equipping squadrons and by building up reserves of supplies. Subject however to the fulfilment of these tasks and despite the weather operations have been conducted against the enemy, in order that his administrative and reinforcement activities during the enforced operational lull should be dislocated to the maximum extent possible.

During the period under review, the monsoon varied in strength considerably. Conditions were normal until the beginning of July, when for a few days the monsoon was less active. During the remainder of July there were three major depressions over the Bay of Bengal and during August two. For the rest of the period monsoon conditions were normal, and for a period of eight days in the middle of August reasonably fine weather was encountered. Absolute curtailment of operations occurred only during the worst of the weather associated with the depressions.

From time to time all-weather runways were flooded, and throughout the period fair-weather strips were unusable.

Bad flooding washed away the most important rail and road links between Bengal and the rest of India at a vital time in the period when it had been intended to build up stocks for the forthcoming campaigning season. This breakage of communications also delayed the arrival of reinforcing units. The seriousness of the breakdown in communications within Bengal itself was to some extent alleviated by the improvement in internal air services. Daily services were maintained and important spares were often delivered to forward areas by air. Isolated units were often cut off by flooding, and supplies were dropped to them by air.

The monsoon period saw a considerable improvement in meteorological services, and useful information was gained about conditions over most of Burma. Monsoon conditions are never very bad over Central Burma and it is generally possible to locate communications targets. Provided reliable route forecasts of weather over enemy territory are given, night bombing is practicable over a wide area. The scale of operations obviously decreases; but good results obtained this year indicate that, provided sufficient radio and visual aids to navigation and adequate all-weather airfields are available, large scale operations can be undertaken even at the height of the monsoon.

Although the monsoon caused a great strain on maintenance personnel in operational squadrons, the figures shown in Appendix II indicate that there was no very severe decrease in serviceability during the worst months. It would be unwise however to deduce from these figures that the monsoon has no affect on serviceability, since so many other factors are involved. Fighter serviceability never sank below 67% of the average strength, and, except for one bad month (September), Bomber serviceability averaged well over 60%. A greater effect on serviceability is had by the rupture of communications due to bad weather, and the number of damaged aircraft under repair with Maintenance Units increased

correspondingly to the greater length of time taken to transport them from unit to base.

II. Effect of Geography on operations.

III.

Burma is separated from India by ranges of hills, which stretch almost down to the coast. In Northern Burma the country is mountainous, and we have been able to keep a certain amount of military control over the Fort Hertz and Sumprabum areas. Burma itself is scored by rivers flowing down from the hills to the Indian Ocean. It is for the most part an agricultural country, and the rivers form as important a means of communication as railways and roads.

With the exception of certain oilfields and isolated factories where cement or other materials are manufactured, there are few really good targets for strategic bombing. Thus the greater part of our bombing effort has been devoted to attacking the enemy's airfields, ports, and communications. As regards tactical bombing, since the terrain in the forward areas is for the most part covered with scrub or jungle, the targets are different from those, for example, that were encountered in the Western desert and are very hard to find. Aircraft are in general detailed to attack positions indicated to them by pin-points provided by the Army and not generally visible from the air. Pilots must become completely familiar with the territory over which they are operating before they can hope to achieve any degree of success. ~~It has also meant that~~ Moreover, results are very difficult to estimate.

The use of rivers and inland waterways for the transport of supplies has had a considerable influence on the tactical employment of aircraft at our disposal. Since every variety of boat is to be found from small sampans and country craft not more than twenty feet in length to large 200 feet river steamers, it has been possible to make increasing use of fighters in an offensive role. Hurricane 2 Cs and Beaufighters

with their 20 m.m. cannon have proved particularly successful, the Beaufighters with their longer range being able to strike far into Central Burma.

III. Aircraft Flow and its effect on operations.

The number of aircraft held under my command has risen from 2453 in June, 1943 to 3699 in November, 1943. Details are given in Appendix No.III, which shows not only the enormous increase in numbers but also the extent to which obsolescent types are being replaced by more modern aircraft. Of these 3699 aircraft 1585 were with flying units, sixty-seven per cent of them being serviceable with the remainder capable of being repaired at the unit. 2114 were under repair, under erection, or in storage, with non-flying units.

The most important of our aircraft reinforcements has been the extensive modernisation of our fighter strength. Hurricanes have risen from 667 to 1088, and Mohawks are gradually being entirely replaced. The number of Spitfires has increased from thirteen to 153, and this has had a most decisive effect on the course of operations. In November the new Spitfires went into action for the first time. As the aircraft were not supplied with long range tanks, their operations were confined to our own territory and during this period they had not a chance of meeting large enemy air forces. Previously the enemy had been able to carry out reconnaissance flights with impunity by flying at great heights and easily outdistancing the Hurricanes that tried to intercept. From the day however that the Spitfires first arrived in the forward area they destroyed all of three high-flying reconnaissance aircraft that were sent over by the enemy, who has not attempted a reconnaissance or a raid on the area where the Spitfires have been located since that time.

So important was the success of the Spitfires that I sent a personal signal to the Chief of Air Staff requesting him,

as far as possible, to increase the Spitfire flow. Necessity for this increase has been amply proved by the formidable successes achieved by Spitfires against large enemy formations since the end of the period under review. A copy of my signal is attached at Appendix No.IV.

Other points of interest concerning aircraft are that since June the number of Vengeances in the Command has risen from 437 to 572 and that we have gained considerable experience of their capabilities in action. The accuracy of bombing achieved by this type of aircraft has proved its value; and it is a most useful direct support weapon, particularly against the type of target presented by enemy positions in the forward areas. Its short radius of action is a limiting factor, and there has been no encounter with enemy fighters to test its fighting qualities. Apart from teething troubles it has proved simple to maintain, No.82 Squadron, as an example, maintaining an average of fifteen out of sixteen I.E. daily serviceable throughout October.

Two Halifaxes and two Lancasters have arrived. These aircraft have been constituted into a special Flight, No.1577, designed to test heavy bombers and their special equipment uder the conditions prevalent in this theatre of war. Liberators (B.24s) have increased from twenty to sixty-nine, and since the end of the period of this despatch have proved their value by long range operations such as mine-laying at Moulmein and Rangoon and the bombing of Bangkok. The limited number of Mitchells (B.25s) has been employed on photographic reconnaissance duties, but it is not likely that this type will be employed in any numbers by the R.A.F. Mosquitoes, too, are being used for long range photographic reconnaissance, and if their number were to increase would prove an admirable weapon for long range offensive reconnaissance and attacks on enemy communications. Beaufighters also, in addition to their employment as night fighters, have proved invaluable in the same role, and their number has practically

doubled.

The obsolescent D.C. 2 and 3 is being replaced by the Dakota, the total number of which has risen from twenty-nine to 100 within six months. Ansons are being employed increasingly for training duties and as communications aircraft. The number of Harvards, on which the I.A.F. receives its service flying training and which are used extensively for training purposes in squadrons and operational training units, has ~~also~~ doubled.

IV. Squadron Training.

As is usual in operational units, there has been difficulty in fitting in the time for flying training. In the case of Bengal this difficulty has been accentuated by the need for keeping the few fighter squadrons at a state of constant readiness. Moreover monsoon conditions make flying training expensive on aircraft. In spite of these drawbacks a certain amount of flying has been possible, and the enforced grounding of aircraft due to weather made it possible to increase the amount of ground training.

Lack of Liberator trained crews made it necessary to postpone bringing No.159 Squadron (the only Liberator squadron in June) up to full strength, and to direct the energies of one flight entirely to training. This flight was subsequently divorced completely from the Squadron and established as 1584 Conversion Flight. It is working satisfactorily, and its courses terminate in two or three short and medium range operational sorties before aircrews join their operational squadron.

Nos. 11, 34, 42, 60, and 113 Blenheim squadrons have been converted to Hurricanes. These Squadrons moved from Bengal to 225 Group for the purpose of re-equipping, and the change-over brought out many difficulties. Lack of training facilities, shortage of spare parts, a bad cyclone, and the decision to extend the training to fit the squadrons for a fighter role as well as that of fighter bombers, all

hampered the final process of conversion.

An Air Firing Training Unit was formed from the resources of Bengal Command in April and located at Amarda Road. This unit has proved its worth, an immediate improvement in the marksmanship of all pilots being noticeable after they completed the course. The procedure in the past has been that two pilots from each squadron have attended each course with their own aircraft. Cumulatively, this meant the equivalent of a complete squadron in pilots and aircraft being withdrawn from operations at any one time, a state of affairs that was admissable during the monsoon but which would unduly weaken the fighter force in normal times. It is hoped in future to provide aircraft for the A.F.T.U. for all courses. It is hoped also to provide Harvards for each Fighter Wing to be used for the dual training of fighter pilots.

The training of General Reconnaissance squadrons has suffered considerably because of heavy operational requirements and because most of the Flying Boat and Beaufort squadrons have small detached flights located at a great distance from their parent units. This has left insufficient aircraft for training purposes and is presenting a serious problem. It had been proposed to give each squadron a four weeks' rest from operations in which to complete its essential training; but although this was done in the case of 205 Squadron (when intensive anti-submarine tactical training was carried out both by day and night), it has not been possible to make similar arrangements for other squadrons, nor is it easy to see when it will be.

As is usual in a period of rapid expansion, equipment is scarce, particularly as regards flying and ground training. Lack of synthetic training facilities has been a great handicap. Nevertheless, by dint of continual improvisation most units have carried out satisfactory training and on the whole the standard within the Command is good. This is particularly the case

with ground training, since it has been possible, during those periods of the monsoon when flying had to be cancelled, to concentrate on this method of obtaining operational efficiency.

V. 10th U.S.A.A.F.

It would be appropriate at the outset to comment on the considerable increase in the striking power of the U.S.A. Air Force in this theatre. Headquarters of the 10th U.S.A.A.F. have been located at Delhi, and have maintained complete liaison with Air Headquarters. Bengal Command and Eastern Army Command have remained side by side and kept in constant touch with U.S.A.A.F. senior Staff Officers in Eastern India. There has been a good co-ordination of air operations between the two forces. In general, the 10th U.S.A.A.F. attacked distant objectives over Burma by day; R.A.F. medium and heavy bombers operated by night; and R.A.F. fighters and light bombers attacked all objectives within 260 miles of the forward airfields by day.

The growth of the 10th U.S.. A.A.F. is shown in the following table:-

AIRCRAFT TYPE	20th JUNE 1943		15th NOVEMBER, 1943.	
	ASSIGNED	READY FOR COMBAT	ASSIGNED	READY FOR COMBAT.
HEAVY BOMBER				
- B-24.	47	36	58	51
MEDIUM BOMBER				
- B-25.	47	38	55	40
FIGHTER BOMBER				
- A-36;	-	-	30	24
P-51;	-	-	22	20
FIGHTER				
P-40	76	67	80	62
P-38	-	-	8	8
PHOTO				
F-4, F-5	12	5	9	3
B-25	3	3	3	2
	185	149	265	210

The introduction of Mustangs (A.36s and P.51s) to augment our attacks on enemy communications in forward positions is particularly noticeable. The fighter strength of the 10th

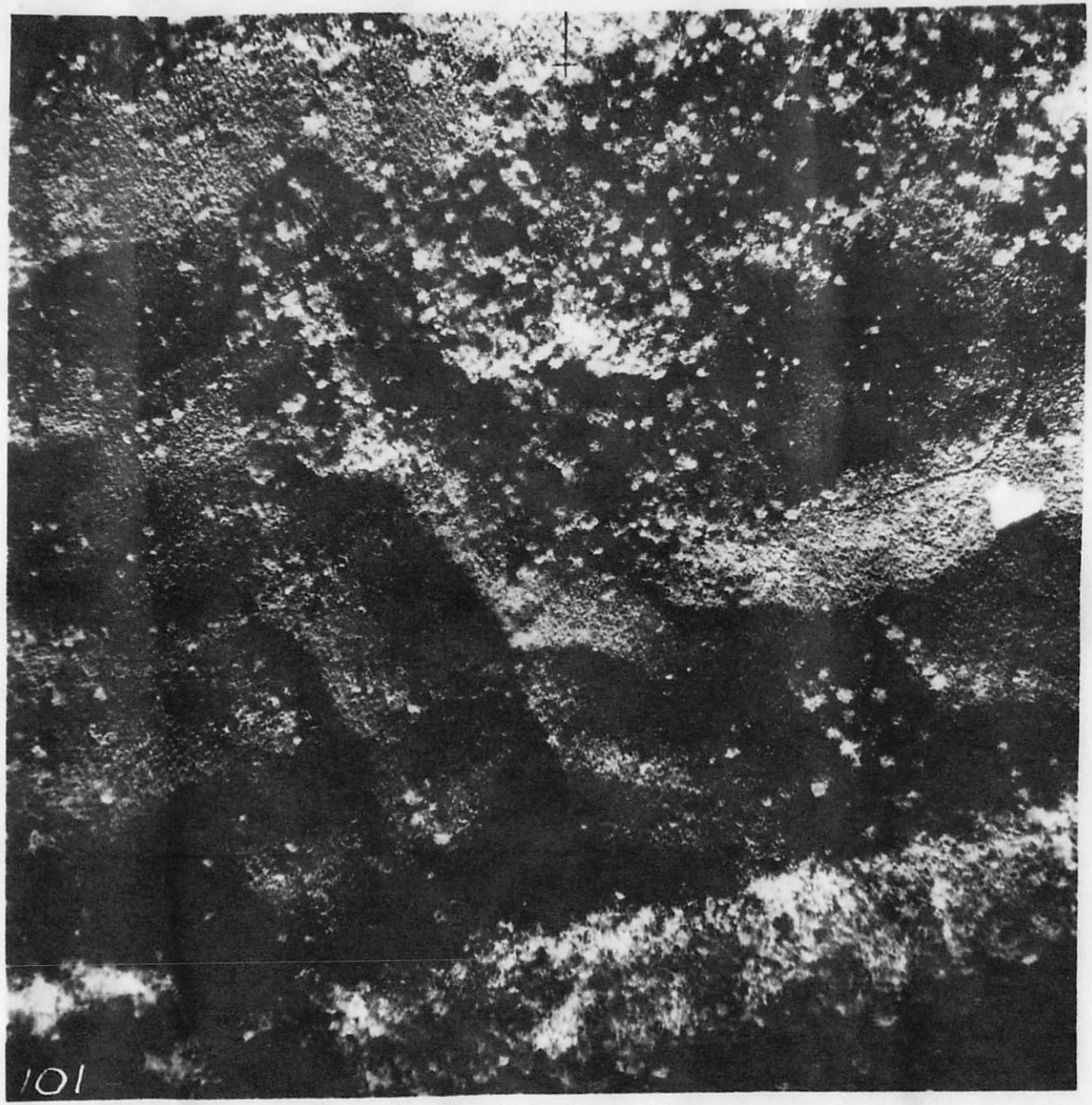
U.S.A.A.F. has been employed to protect the American controlled airfields of Assam and on occasions to escort day bombers and supply dropping aircraft. Throughout this period the India-China air supply route has been developed, a large tonnage being transported by land as far as the terminal airfields in Assam and thence by air to Kunming.

The American Order of Battle at the beginning and end of the period is shown at Appendix V. In the summer of 1943 the 14th U. S. A.A.F. was formed in China under General Chennault, and since that date no 10th U.S.A.A.F. squadrons have been located in China. By the end of November the 10th U.S.A.A.F. had seventeen squadrons and a detachment of the 11th Bomber Squadron (based in China) with which to operate from India.

Fuller details regarding actual operations undertaken are given in Part Two of this Despatch. Some indication of the scale of effort maintained by the 10th U.S.A.A.F. is, however, shown by the following figures:-

		SORTIES	TONAGE	U.S. LOSSES	ENEMY LOSSES
Period June 20 to Nov. 15.	Heavy	1346	1942	7	0
	Medium	2221	2396	4	0
	Fighter Bomber	656	174	3	0
	Fighter	600	115	0	24
	Recce	382	-	4	-
	TOTAL	5205	4627	18	24

During the period June to November inclusive the R.A.F. carried out a total of 2380 bombing sorties, 468 of them by night. Of the 1324 tons of bombs that were dropped, 763 tons were dropped on strategic targets and the remainder during tactical missions. The total number of R.A.F. sorties of all categories in this period was 10,547. It will be seen then that considering the squadrons and aircraft available to them the U.S.A.A.F. has maintained at least as


101

high a standard of effort throughout the monsoon period as the R.A.F.

VI. Enemy Activity

Appendix No.VI shows the estimated enemy scale of effort during the whole of 1943. It will be seen that during the monsoon period from June to September inclusive, with the exception of a few intercept sorties over Burma and reconnaissance flights over our own territories or the battle area, the Japanese practically ceased operations. Presumably the bulk of his squadrons had been withdrawn for rest or training. In October and November there was a marked increase of effort, and offensive raids were carried out on Chittagong, Agartala, Fenny Palel, Imphal, Khumbhirgram, and Tiddim. The general decrease of activity however greatly helped our daylight attacks on his lines of communications.

On two occasions enemy reconnaissance flying boats were over Madras, one of them probably being destroyed by a Beaufighter; and from time to time at the beginning and end of the period, when the monsoon was not fully active, reconnaissance aircraft were plotted over Ceylon. Two flying boats employed on such duties were destroyed by Beaufighters during October and November.

Fighter defences and the warning system in the Andaman and Nicobar Islands and over Northern Sumatra are in a fairly high state of efficiency. In each of these areas a number of Liberators (B.24s) engaged on photographic reconnaissance duties have been lost and are presumed to have been shot down.

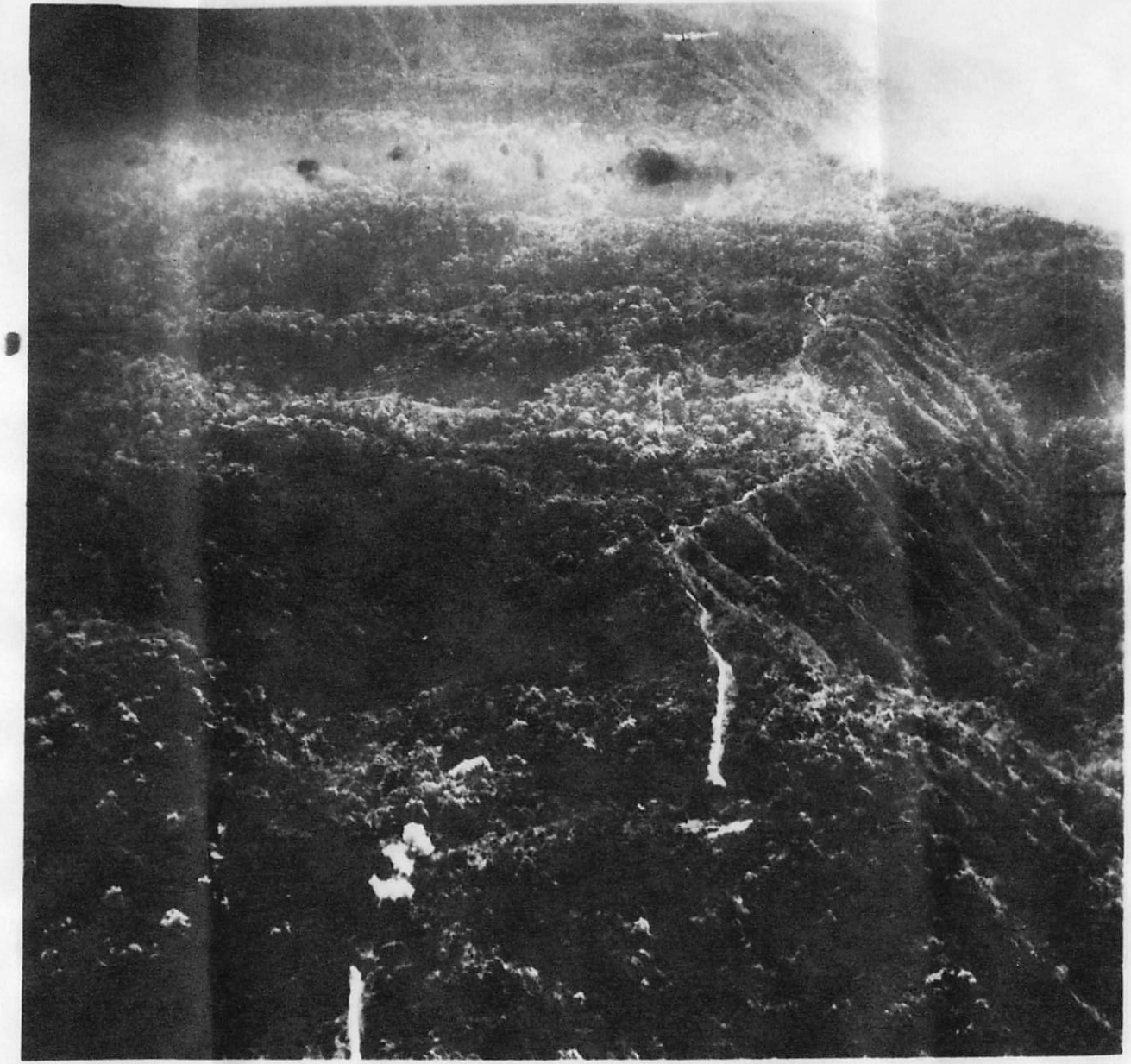
PART TWO - OPERATIONS

I. Operations - Bengal Command.

POSITION IN JUNE 1943 By June all forward positions in [redacted] Arakan had been evacuated by our troops. Maungdaw had been evacuated and our fighter squadrons moved to all-weather airfields further back. The air policy during these land operations had been directed towards gaining and maintaining a favourable air situation best calculated to assist the military object of securing forward positions in Arakan and holding them until the next dry season. Although the army had failed in its object and had retreated for the most part into Indian territory, air supremacy had in fact been maintained throughout the course of the fighting and direct support on a large scale provided to our troops. In addition, bombers and long range fighters had vigorously attacked enemy airfields and seriously dislocated enemy communications towards the theatre of operations by rail, road, and river.

FORCES AVAILABLE The forces available in the middle of June are shown at Appendix XI. In forward airfields at Agartala, Comilla, Fenny, and Chittagong there were five Hurricane squadrons, one Beaufighter, one Blenheim, and one Bisley squadron. At Cox's Bazaar a detachment of another Hurricane squadron was located. In Assam there were only two squadrons, one Bisley and one Mohawk. From second line airfields at Jessore and in the vicinity of Calcutta ten squadrons were operating, comprising three bomber squadrons, five fighter squadrons (the bulk of which were intended for the defence by day or night of Calcutta), one P/R squadron, and one Transport squadron. Three Vengeance squadrons were at Digri and Salbani, undergoing training. Until the weather became better at the end of September this Order of Battle remained substantially unchanged.

STRATEGY The policy regarding the employment of these forces during the monsoon period was laid down at the beginning of April as follows:-



To maintain a forward fighter offensive policy,
To ensure the continuance of local air superiority,
To protect our coastal shipping southwards from Chittagong,
To attack enemy occupied airfields wherever possible,
To attack enemy lines of communications and shipping in the enemy forward areas.

By the middle of May however it had become apparent that the Japanese were withdrawing the bulk of their air forces from the numerous forward airfields at their disposal, and that, for the few aircraft remaining on them, these airfields were well provided with protective and dispersal facilities. At the same time it was felt that, if damage could be done to the main enemy communications, not only would their current land operations be curtailed, but they might find it difficult to re-establish and repair the damage effectively during the monsoon. The result was that, while the maintenance of air superiority remained a primary task, the bulk of the medium and heavy bombers effort was diverted to attacking L of C targets. Such targets included the transit camps at Prome and Taungup and intervening road communications, since this was the main land route for supplying the forward Arakan areas. Further afield, railway installations at Mandalay, Maymyo, Myitnge, Ywataung, Thazi, and Kanbalu were to be attacked. Rangoon was to be a primary target for heavy bombers.

STRATEGIC BOMBING

In June heavy and medium bomber operations were limited by bad weather and shortage of spares to one sharp and effective attack by Wellingtons on Akyab. In July conditions made night attacks on aerodromes impossible even during the moon period, and efforts were therefore directed exclusively against communications and supply targets. Liberators (B.24s) were able to raid the vital railway and river objectives at Sagaing. Taungup and the terminus of the road from Prome to the Arakan coast were twice attacked by

Wellingtons and considerable damage was inflicted. The high percentage of successful sorties under difficult weather conditions during this period reflects great credit on the crews concerned. Akyab received two heavy raids during August, and bursts were seen in the neighbourhood of the waterfront and the jetty, starting large fires. Taungup was raided on 26th and 31st August; but the majority of the aircraft were unable to locate the primary targets owing to thick haze, and it was not possible to make a precise estimate of the damage inflicted.

Between June and August the 10th U.S.A.A.F., operating by day, inflicted considerable damage on the Thilawa and Syriam oil installations, and took heavy toll of rolling stock during a series of heavy and medium bomber attacks on railway targets. The Myitnge Bridge was cut and the Gokteik Viaduct damaged. Liberators attacked eight large vessels, off the coast of Burma and in the vicinity of the Andaman and Nicobar Islands. Two were claimed as sunk, the remainder being damaged.

In September there was little R.A.F. activity. As the monsoon ended, effort increased. Targets ranging from Kalewa to Rangoon, and from Akyab to Heho were attacked during sixty-three Liberator and 234 Wellington sorties carried out between 1st October and 15th November. Enemy aerodromes, port facilities, store dumps, railway centres, and Japanese encampments were raided. The introduction of flare-dropping aircraft to illuminate the target materially increased the accuracy of the bombing. The table of bomber sorties and the weight of bombs dropped is shown at Appendix XIII.

From September until November the 10th U.S.A.A.F. attacked the enemy L of C., rail and shipping installations, and manufacturing centres in Central and Southern Burma. The oil storage tanks and the filtration plant at Chauk suffered considerable damage during several attacks by heavy bombers,

Two camouflaged locomotives under cannon fire at PAYANGAZU.
27 Squadron 20 September 1943.

DOCUMENT 553

MISSING

and rail centres including Mandalay, Pyinmana, Myitkina, Monywa, and Thanbyuzamat were effectively bombed.

As a result of continued reconnaissance and opportune attacks on shipping, the use of the port facilities of Rangoon was almost completely denied to the enemy during the period. Two ships were extensively damaged and probably sunk; three others were damaged.

Medium bombers (B.25s), making many attacks, curtailed the enemy's use of railway facilities and obtained direct hits on the span and approaches of Zigon railway bridge. In addition they attacked warehouses and other storage and supply concentrations at Sagaing, Monywa, and Maymyo and caused much destruction.

During the whole period U.S.A.A.F. bombers shot down 24 enemy aircraft, probably destroyed eighteen, and damaged thirty one. An analysis of their effort has already been given in Part I of this Despatch.

TACTICAL BOMBING

Operating in support of IV Corps, No. 42 Squadron equipped with Blenheim Vs (Bisleys) was able to deliver effective attacks on the Japanese bases at Kalemyo, Kalewa, and other similar targets in that region. In August my light bombers co-operated with 63 Brigade based on Tiddim in operation "Smasher". The object of this Brigade's raid on enemy positions around Theizang was to obtain prisoners and identifications. A supply dump was also attacked. From the R.A.F. point of view it provided valuable data for ground-to-air operations and R/T control. The operation showed that existing arrangements for R/T control were inadequate, and that methods such as the use of smoke mortar bombs were essential for indicating targets close to our own troops and positions.

554

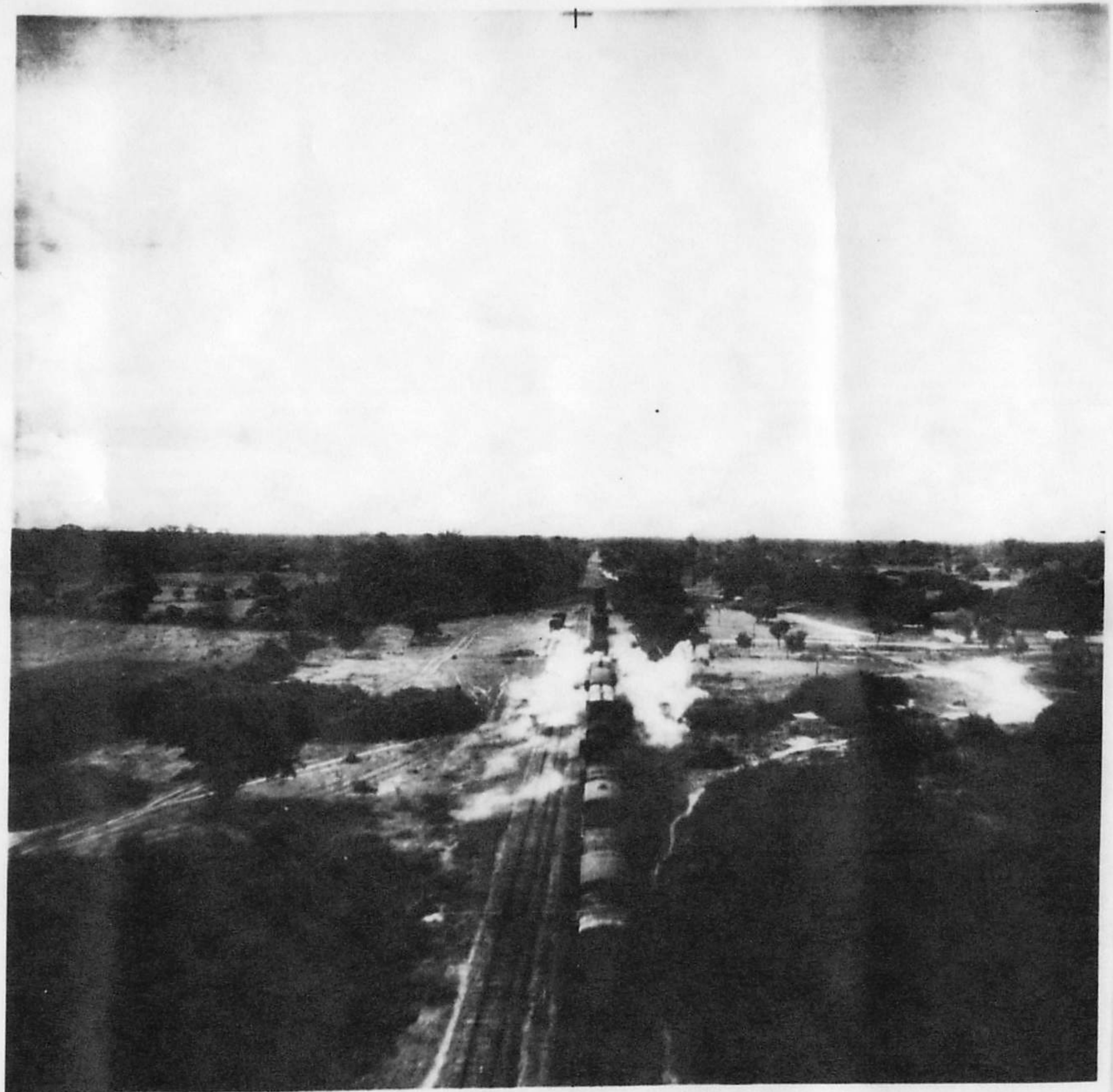
By the middle of September the last Blenheim squadron had been withdrawn for re-equipping, and day bombing fell almost exclusively to the Vengeances. The pilots became increasingly skilled in the identification and bombing of [redacted]

small camouflaged targets, and both in Arakan and the Chin Hills made accurate and effective attacks. The serviceability of Vengeances was high, which in part accounts for the high number of sorties they were able to mount. An analysis of day bombing activity is given at Appendix XIII. It will be seen that in October the number of day bombing sorties, the majority of which were directed against tactical targets, rose to 438, and in November to 562. In the same two months 142 and 182 tons of bombs were successfully dropped.

The squadrons themselves are convinced of the value of their bombing, and their morale is consequently high. I quote from No. 82 Squadron's Historical Records the estimate obtained from Army Intelligence sources of the number of casualties inflicted by it. Even if the estimate is high, it will indicate the pride that these squadrons take in their work and their conviction of its worth. The account reads as follows:

"Commencing 31st May, when an attachment operated from Chittagong, 1064 Japanese have been killed and eighty three wounded in bombing raids by No. 82 Squadron. Extracts from the signals emanating from H. Q., Bengal Command and from No. 224 Group and Army Situation reports give the following details:-

Date.	Place.	Killed.	Wounded.	Remarks.
3 June	Buthidaung	80		
10,12 "	"	40		
15 "	Ledwedit	16		
15 "	Maungdaw	104		Includes 100 Mughs.
24 Aug.	Baguna	50		
30 "	Maungdaw	6		Six funeral pyres seen. May have been six Senior Officers or six communal fires.
31 "	Buthidaung	170		
6 Sept	Hparabyin	100		
16 "	Buthidaung	60		
19 "	Razabil	-		Four lorry loads of dead carted away.
10 Oct.	Gangaw	57	40	
23 "	Buthidaung	200	3	
30 "	Kanyindan	21	2	
31 "	Zadidaung	6		
1 Nov.	Htindaw	50		
11 "	Chiradan	3	2	
14 "	Kagyabet	20	20	
24 "	Tatmin Chaung	19	3	
25 "	Maungdaw	62	13	
		1,064	83	



Attack on rake of waggons at [illegible] on Mandalay-Ye-U line.
27 Squadron 1[illegible] July 1943. 556

"It is possible that some of these reports are exaggerated, but the exaggeration may well be set against the many results which have not been ascertained, and the score is probably greater than less. Since 31st May 569 sorties have been flown on ninety one separate occasions against the enemy.

"The percentage on the above sorties is something over fifty killed in each raid. It could be argued, therefore, that on ninety odd operations a total of 4,500 Japs would have been killed."

FIGHTERS & FIGHTER BOMBERS EMPLOYED OFFENSIVELY

Aircraft were deployed to support the IV Corps front, which extends from Assam to the Southern Chin Hills, and the XV Corps front, which continues from there to the Arakan Coast near Maungdaw. Monsoon conditions prevented any intense ground activity and, as a result, fighters in an offensive role were restricted to answering calls for support of our ground patrols and to attacking enemy forward positions and the lines of communication immediately in the rear of the front line.

In July, 170 Wing supporting IV Corps, operated intensively to combat Japanese infiltration tactics. This effort was maintained as long as the fair-weather strips near the front line remained serviceable. Unfortunately the strip at Imphal broke up and Nos. 155 and 28 Squadrons had to be transferred to Agartala. From there they could still operate, but were handicapped by the fact that the battle area was near the limit of their range. The Mohawk Squadron (No. 155) carried out many attacks with guns, and 20 lb. and 40 lb. bombs on machine-gun posts, transport, and dispersed troops.

The improvement in the weather during October affected operations in the Kale Valley and the army called for and received increased air support. The Mohawks were reinforced as opportunity occurred by the Hurricanes of 258 and 146 Squadrons. From the beginning of November, No.34 Squadron, now fully operational after its conversion from Blenheims, brought its

The Paddle Steamer "[illegible]" burning furiously after being attacked 2 miles N.W. of ALON. 27 Sqdn, 1st Oct, 1943.

Hurricanes to augment both the offensive and defensive effort on this front.

Throughout the period the bomb-line on the XV Corps front was stabilised on the line Maungdaw - Buthidaung - Paletwa, but offensive air operations made the enemy progressively more cautious in the siting of his monsoon quarters. Our attacks considerably reduced his freedom of movement, and often there was no alternative for him but to move by night or in bad weather.

One feature of this static period was the readiness of the Japanese to open fire with L.M.G. and small arms. During active operations concealment of their position from the air by refraining from opening fire was their normal practice, but the harassing nature of our attacks evidently prompted them to forsake this principle.

Effective use was made of Beaufighters of No. 27 Squadron, and, from September onwards, of No. 177 Squadron in attacks on enemy communications, dumps, and installations. The main spheres of activity were the valleys of the Chindwin and the Irrawaddy from Homalin to Prome. These aircraft also attacked fourteen oil tanks in the Yenangyaung region, four of which were set on fire with spectacular results. Three out of the five large river steamers available to the enemy were also destroyed or immobilised, and a formidable total of M.T., locomotives, and small river craft attacked and damaged. The enemy reacted strongly to these attacks by placing L.A.A. and M. G. posts at or near all likely targets, and this type of attack proved the most expensive for our own aircraft. The damage inflicted upon the enemy, however, fully justified the losses we incurred.

MAINTENANCE OF AIR SUPERIORITY

Until almost the end of the period of this despatch the enemy was practically inactive in the air, and our aircraft were able to range over Burma with little interference. A proportion of our fighter squadrons maintained a constant state of readiness. During the monsoon

this imposes a great strain on pilots, and moreover weather conditions made attempts at interception very difficult. In October the enemy started bombing again, and between then and the middle of November attacked Chittagong, Agartala, Fenny, Palel, Imphal, and Kumbhirgram. The result of interceptions were generally disappointing because of advantages the enemy aircraft possessed over the Hurricanes that formed the bulk of the defensive force. Whenever contact was made, however, attacks were carried out with vigour, and losses as high as could be expected were inflicted by the Hurricanes.

In November the first Spitfires in the Command became operational and, as I have previously reported, have proved their value a hundredfold. In the first fortnight of November Spitfires of No.615 Squadron, shot down all three of Type 100 (Dinah) aircraft that came to reconnoitre the Chittagong area. Since then the enemy has not attempted a reconnaissance or a raid.

Fighter aircraft were also employed on the protection of incoming convoys. During these protective patrols no incidents took place. Claims and losses are given later in the Despatch under "Assessment of Results". An analysis of fighter sorties is given at Appendix XIV.

FIGHTER RECONNAISSANCE

Hurricanes of No. 28 Squadron accomplished a particularly satisfactory task in support of No. IV Corps. Their assignments included photographic reconnaissance of the forward positions in the Kale valley and to the West, tactical reconnaissance in tracing enemy movements to the immediate rear of their forward positions, and continual survey of the rearward lines of communication from the Shwebo-Myitkyina railway. This task was assigned to one detached flight of the Squadron, operating from Imphal. The Squadron maintained a second flight at Cox's Bazaar to operate on the XV Corps front. The work of both these flights was the subject of frequent commendation by both Corps Commanders.

561

RECONNAISSANCE OVER THE BAY OF BENGAL

In the period covered by this Despatch Bengal Command was responsible for seaward

reconnaissance to a depth of twenty-five miles from the coast along the whole Sunderbans and Arakan coastline from Calcutta to Pagoda Point. Two patrols were carried out daily with almost unbroken regularity by Wellington aircraft of No.175 Wing. This work, in the worst of monsoon weather, by pilots untrained in G.R. has been of outstanding merit.

Ultimately the responsibility for G.R. work round the coasts of India has fallen to No. 222 Group, in consultation, where necessary, with A.O. C. Bengal and A..O.C. No. 225 Group. Plans have also been made for the strengthening of the G.R. resources in the Northern Bay of Bengal area, since in the forthcoming campaigning season further G.R. effort in support of operations on the Burma coast may prove necessary. No. 354 Squadron, besides undertaking its photographic reconnaissance commitments from Cuttack, is employed on G.R. work; and plans have been made for No.160 Squadron to move to Cuttack in case of need.

SUPPLY DROPPING

In addition to carrying out regular mail and passenger runs between Calcutta and certain aerodromes in the forward areas, aircraft have been used to drop supplies to isolated Radar and Observer Corps posts cut off by the monsoon rains. The almost daily service to and from the forward areas proved particularly useful for transporting spares, the lack of which was grounding operational aircraft.

The main tasks, however, of No.31 Squadron were military. It followed up its outstandingly successful work in supplying the Long Range Penetration Group under Brigadier Wingate by an intense and consistent programme of supply dropping in inhospitable country where, without its aid, military operations would have been seriously curtailed. The intensity with which this Squadron had to operate can be judged from the fact that during the period of the Despatch it carried out 1,100 sorties, dropping nearly 1,200 tons of supplies. (See Appendix XIV).

II. Operations - No. 222 and 225 Groups.

FORCES AVAILABLE The forces available to these Groups are shown at Appendix XI, and comprised twelve squadrons actually engaged on operations. In Ceylon two Beaufort Squadrons carried out medium range general reconnaissance, and were ready for despatch on shipping strikes, being equipped with torpedoes; two Hurricane Squadrons were maintained at readiness to defend the island; and three Catalina Squadrons carried out long range general reconnaissance. Two Squadrons of Catalinas were located at Karachi, and one in the Madras area. A Liberator Squadron operated from Cuttack. This was the Order of Battle in the middle of September, and apart from the movement of some Beaufighters to Ceylon at the end of the period there were few alterations between June and November.

POLICY FOR EMPLOYMENT The tasks allotted to these forces were as follows:-

Defence of Southern India and Ceylon against seaborne attack;

Defence of ports in Ceylon and on the east coast of India against air raids;

Long range photographic reconnaissance of Northern Sumatra and the areas adjoining the Andaman and Nicobar Islands.

Medium and long range general reconnaissance over the Bay of Bengal, over trade routes south of Ceylon, and in the Arabian Sea as far West as the Gulf of Oman;

Anti-submarine patrols and shipping escorts.

OPERATIONAL ORGANISATION The forces available being limited, it has been necessary to exercise strict operational control in order that effort might not be wasted. With this end in view, A.O.C. No.222 Group has since July exercised, under my strategical direction, operational control of all G.R. aircraft in the Command, modified from time to time by mutual agreement with the

Commander-in-Chief, Eastern Fleet. For the G.R. Squadrons based in India this control is exercised through A.O.C. No.225 Group, with the exception that A.O.C. Bengal continues to be responsible for the patrolling of the strip of coast from Chittagong to Sandoway.

Control of operations in the Arabian Sea has been strengthened. A Naval Air Operations Room has been established at Bombay under an Air Force Officer of the rank of Group Captain, who is responsible, under the general direction of A.O.C. No. 225 Group, for co-ordinating all G.R. operations in the area of the East Arabian Sea. From here control will be exercised over the Operations Rooms at Korangi Creek, and over the attachments operating from Jiwani or from the advance bases at Trombay and Cochin. A.O.C. 215 Group has agreed that, although normal operations by aircraft based at Masira will be locally controlled, G.R. commitments in the Persian Gulf will be placed under the superior operational control of Bombay. Similar reorganisation, involving the establishment of an Operations Room at Red Hills Lake, the strengthening of Cuttack as a G.R. base, and the posting of an R.A.F. Liaison officer to work with the Naval officer in charge at Vizagapatam, have been carried out on the East coast of India.

This reorganisation has made it possible to carry out the tasks allotted with increased efficiency. The threat of seaborne attack against India from Ceylon has receded, and it is now anticipated that there will be at least two or three months' warning as a result of the initial concentration of the enemy's shipping. Moreover, if an invasion did become imminent, we should have at least eighteen hours warning of the final destination of convoys. It has, therefore, been decided to rely on existing strength for immediate defence but to take all measures such as the organisation of fighter control, installation of communications, etc, which do not

involve the holding of stock. If a further threat does occur, it will be possible to move in reinforcement squadrons quickly. Isolated seaborne raids, however, are still a possibility, and the reorganisation on the East Coast of India, combined with the strengthening of the control system, makes it likely that such raids, if they occur, will be adequately countered.

OPERATIONS Bombing raids are also a possibility, and the fighter defences at Madras, Vizagapatam, and Colombo have been strengthened. In the period under review, however, no bombing attacks were made, though two reconnaissance planes were shot down over Ceylon and one probably destroyed over Madras.

General reconnaissance has been carried out effectively in all weather. Submarines have been sighted and attacks have been made, though only one has been damaged. There have been shipping losses, but the numerous convoys escorted by our aircraft have arrived safely. Another activity in which our G.R. aircraft have helped considerably has been the rescuing of survivors from torpedoed vessels.

The strengthening of our island bases at Attol and Diego Garcia and, to a lesser extent, the garrisoning of the Cocos Islands have made it possible for our G.R. aircraft to fly further afield than hitherto. The large number of G.R. sorties carried out is shown under Appendix XVI. The peak was reached in October, when there were 315 sorties, involving over 2250 hours (operational flying).

III. Other Operational Activities.

PHOTOGRAPHIC RECONNAISSANCE One of the most notable features during this period has been the development of photographic reconnaissance. Strategical reconnaissance of enemy occupied territory in Burma, China, Assam, and the Andamans was carried out by 681 P.R. Squadron (Spitfire, Mosquito and B.25s) under the command of Wing Commander S.G. Wise, D. F.C. This Squadron was located in the Calcutta area and operated magnificently during the whole of the monsoon period. Regular cover was obtained of all the objectives, which included airfields, railways, rivers, ports, and the large towns. As a result of this effort we were able to make close estimates of enemy strengths and dispositions, and keep a close watch on his supply lines. Towards the end of the period Moulmein and the Burma-Siam railway (under construction) were covered, and regular visits were paid to the Andamans.

The main task, however, has been to provide Intelligence cover of Sumatra, Malaya, the Andamans, and Nicobar Islands. Without this vital information, the hazards of a seaborne assault across the Indian Ocean would be vastly increased. The Mosquitos of No. 681 Squadron were only able to cover the Northern Andamans. It has therefore been necessary to use Liberators also, based in Ceylon and on the East Coast of India. No. 160 Squadron operated from Sigiriya in Ceylon throughout the period, and by the middle of September No.354 Squadron, which had been equipping at Cuttack, became operational. Although these Squadrons performed useful work, their range and speed are inadequate. These factors, combined with the enemy's warning systems in Northern Sumatra and the Andamans, led to the loss of several aircraft. It was consequently decided to obtain future photographic reconnaissance of these areas by formations of three aircraft, whose combined fire power would minimise the dangers of enemy fighter interception. A flight of No.160 Squadron, therefore, began intensive formation training, and since the end of the period

under review has operated successfully.

This method of obtaining photographic cover is extremely expensive and, owing to limitations of range, will never provide all the information necessary. I have, therefore, been obliged to make repeated requests to the Air Ministry for the provision of aircraft more suitable for this role. So far this problem remains unsolved.

Appendix XVI shows, month by month, photographic sorties carried out in the Command. Activities were necessarily somewhat curtailed owing to monsoon conditions, which often obscured the areas intended to be photographed. In October, however, the weather improved and a total of 100 sorties was carried out.

N.W.FRONTIER OPERATIONS

During this period modern high speed aircraft have been used on the Frontier for the first time, their increased fire power having an encouraging effect on our own troops and acting as a deterrent on hostile tribesmen. Hurricanes have carried out over 150 sorties, principally in direct support of the Army but also for photographic and ~~road~~ road reconnaissances, for bombing and machine gunning areas which for political reasons have been proscribed, and for dropping mail or supplies to isolated outposts. Vengeances have not yet been employed but their aircrews have been able to gain knowledge of Frontier conditions. It has been decided that their role will be limited to the attacking of clearly defined targets such as villages in proscribed areas. The Frontier generally has been quiet despite the activities of the Faquir of Ipi in Waziristan. There is no doubt that the recent successes of the United Nations have had a chastening effect on the tribesmen.

567

Frontier operations are now an Indian Air Force commitment, and the area has served as a useful training ground for Nos. 1, 3, 4, and 7 Squadrons. Intelligence and photographic facilities have been developed, the Kohat runway extended, and other reorganisation undertaken with a view to modernising what

has hitherto been one of the few surviving Royal Air Force anachronisms.

BALLOON BARRAGE Balloons were flown, subject to weather conditions, continuously at Calcutta, for the protection of the Docks area and Howrah Bridge; at Jamshedpur, defending the Tata Iron and Steel Works (the most important in India); and at Colombo. The barrage at Trincomalee, Ceylon, originally intended for the protection of the oil tanks and consisting of some seventeen balloons only, was extended to include in its scope the whole Naval anchorage at Trincomalee - China Bay. Additional commitments undertaken at the end of the period under review include the defence of the anchorage and dock installations at Chittagong and balloon protection for Merchant shipping and Fleet auxiliaries.

Subsidiary operations have included the flying of balloons at 1,000 feet on patrol ships, which go out daily at dawn to guide friendly submarines into harbour. Captains of these submarines speak highly of the assistance in locating the patrol ship provided by the flying of these balloons. Submarines are frequently well off course, and time is saved and danger averted by this method of homing. Balloons have been flown for anti-aircraft, and Radar calibration and meteorological purposes.

In no cases have the areas afforded balloon protection been subjected to low level air attacks. Balloon barrage installations in the Calcutta Docks area suffered in the daylight attack of 5th December, but the Squadron concerned was operational again the same day. The operational lull during the monsoon period has been well used, and one new Squadron, absorbing the detached unit at Chittagong, and nine ancillary units have been formed since June.

AIR SEA RESCUE Owing to the shortage of Air Sea rescue aircraft and vessels craft, few units have become operational as yet, and the important work of locating the survivors of

shipwrecked vessels or aircraft down in the sea has devolved on operational squadrons. Twenty-two incidents have been recorded, ten of which occurred in the Bay of Bengal, two in the Arabian Sea, and eight off Ceylon, involving 111 persons, sixty-nine of whom were rescued. The credit for most of this work is due to G.R. Squadrons, but one of the Chittagong Air Sea Rescue units in its first operational sortie succeeded in rescuing three out of five members of a "ditched" Wellington. On a further occasion Lindholme dinghy gear, which has now been distributed, was successfully dropped to a distressed U.S.A.A.F. aircrew.

SPECIAL DUTIES — During this period 1576 Flight operated successfully dropping a number of agents over enemy territory.

IV. Estimate of Results.

ACHIEVEMENTS The decision to operate during the monsoon season has been more than justified by the results achieved. Bomb damage assessments have shown that attacks on airfields and railway centres have met with considerable success. Attacks on shipping by the U.S.A.A.F. and on the Port of Rangoon by both the U.S.A.A.F. and R.A.F. aircraft have more or less denied the use of this port to the enemy. Similarly, Akyab has been constantly bombed and is no longer supplied by sea to any considerable extent. This has meant that the bulk of the enemy's supplies from bases in Thailand have had to come by land. The enemy has constructed a new railway between Burma and Siam, but being of metre-gauge it will not handle bulk supplies as effectively as shipping would. Moreover, it only extends to Moulmein, and from Moulmein to the forward areas in Arakan and the Chin Hills rail, road, and river transport are themselves liable to attack and dislocation.

The extensive attacks on lines of communication have met with good success. The following "Game bag" for the period gives some indication of the manner in which transportation services have been harried:-

	Destroyed.	Damaged.
Sampans	160	2624
Power driven water craft and barges	12	193
Locomotives	9	143
Rolling stock	27	464
M.T.	42	142

Direct support operations in the forward areas, notably the bombing of barely discernible enemy positions and concentrations, have also met with considerable success. I was able, in the middle of September, to send the following signal to the Air Officer Commanding Bengal:-

"Intelligence reports indicate casualties inflicted on the Japanese by your offensive in Arakan since June last

amount to more than 500 killed and many more wounded or injured. These are conservative estimates, and the losses indicated take no account of the undoubtedly considerable effect of such attacks on the enemy's morale. Such a scale of damage to the Japanese forces, inflicted during the difficult conditions of the monsoon, may well have far reaching effects not only on local situation but on the strategic position when the time comes to renew our offensive in conjunction with the Army.

"Please convey to all ranks of squadrons taking part in these operations my appreciation of their highly successful efforts under very trying conditions. I feel sure the squadrons under your Command will acquit themselves to the same high standard shown by these results as the campaign and our strengths develops in the coming winter".

Last and by no means least, our air superiority has remained unchallenged, and owing to the reinforcement and re-equipment carried out is likely to remain so for the coming campaigning season. Our sea lanes have been effectively controlled and numerous convoys have been safely escorted, though increased enemy submarine activity has resulted in the loss of some shipping.

Our losses during this period total thirty-one, including four aircraft destroyed on the ground at the beginning of November. On the other side of the balance sheet we have been able to claim five multi-engined aircraft destroyed, one probably destroyed, and four damaged. Two of the aircraft destroyed were four-engined flying boats, two reconnaissance aircraft, and one a bomber or bomber transport. In addition two enemy fighters were claimed destroyed, one probably destroyed, and four damaged.

FINAL DEPLOYMENT OF FORCES

Appendix XII shows the deployment of our forces in Eastern India at the middle of November. It will be seen that fifteen squadrons and detachments of No. 31 Dakota and No. 28 Hurricane IIB Squadrons are located in forward areas in Assam and Bengal. Eight of these are Hurricane squadrons, three are equipped with Vengeances, two with Beaufighters, and one each with Mohawks and Spitfires.

At lay-back airfields in the Calcutta area and at Jessore ten squadrons are located, comprising two Wellington and two Liberator squadrons, two Spitfire fighter squadrons, and one Spitfire P.R. squadron, one Hurricane squadron, one night fighter squadron equipped with Beaufighters and Hurricanes, and No.31 Dakota Squadron. A Vengeance squadron is located at Charra and a Hurricane squadron at Kharagpur, but neither of these is operational. In South India and Ceylon the disposition of forces remained practically the same throughout the period.

Appendix VII indicates that the front line strength had not by November increased noticeably in number. There has, however, been a considerable increase in quality brought about by the introduction of Spitfires and Mosquitos in Bengal Command, and by the increase in Beaufighters. In all I have now a total of 519 aircraft, of which 370 are serviceable.

MORALE

There is no doubt that the double strain of carrying out operations and at the same time withstanding extremes of heat and humidity was reflected occasionally by a lowering of morale. This was noticeably the case with R.A.F. Regiment and Balloon Squadron personnel. It was remedied by maintaining a highstandard of training with the result that the fighting spirit of these units is now high. The behaviour of all ranks employed at Radar units and Wireless Observer posts is beyond praise for the magnificent manner in which they have carried on their duties during the monsoon and maintained an extremely high state of efficiency under bad weather conditions. Many of these posts were completely isolated for long periods, and

had to be maintained by air.

The conduct, work, and morale of all maintenance personnel during the period exceeded my expectations. The serviceability of operational aircraft was kept to a high standard (as is shown by the figures at Appendix II) and the example set by aircraft maintenance personnel has been reflected by all ground staff. The praise accorded by Air Vice Marshal T. M.Williams in his Order of the Day, issued when he handed over his Command, is well deserved, and I fully concur in it. A copy of the Order of the Day is attached (Appendix VIII).

PART THREE

EXPANSION AND DEVELOPMENT

I. Squadrons, Airfields and Manpower

SQUADRON EXPANSION By June the number of squadrons in the Command had grown to fifty-three. Thirty-eight of these were fully operational, comprising seventeen Fighter, seven Bomber, nine General Reconnaissance, one Photographic Reconnaissance, one Transport Squadron engaged on supply dropping operations, and three I.A.F. Squadrons employed on watch and ward duties on the North West Frontier. This compared very favourably with the position at the beginning of the year when there were only twenty-nine squadrons in the Command operational on modern types. The tendency shown clearly at Appendices XI, XII, and XV for squadrons to be removed from the front line for training or re-equipment during the monsoon period was already noticeable. In addition to the above, six other squadrons were engaged on refresher or "change of role" training and five were being re-equipped. By November no fewer than seventeen squadrons had re-equipped with various types of aircraft, seven of them also changing their role. Two other squadrons changed their role without being re-equipped, two Squadrons began forming in the Command, and two squadrons completed their formation. Three squadrons arrived complete with aircraft from the Mediterranean Air Command, and one from the U.K.

The two most notable features regarding fighter Squadrons during this period were firstly the conversion of light bomber squadrons, caused by a shortage of Blenheims and the availability of a considerable reserve of Hurricanes; and secondly the re-equipment of certain Hurricane squadrons, as the Spitfire flow increased. Nos. 11, 34, 42, 60 and 113 Blenheim Squadrons were equipped with Hurricane IICs for a fighter-bomber role. Nos. 607, 136 and 615 Squadrons

changed over from Hurricane IIBs and IICs to Spitfire VCs. Their success since going into action has more than justified the change-over. It also gives a strong indication of the need for similarly equipping further squadrons, since Hurricanes are now outmatched by the current Japanese types.

As a result of the policy of retaining Hurricane IIBs for Fighter Reconnaissance squadrons, Nos. 135 and 261 Single Engine Fighter Squadrons converted to Hurricane IICs. No. 5 Squadron also converted to this type since there is an absence of suitable targets in this theatre for the Hurricane IID "tank buster" to which, at the beginning of the period, it had changed over from Mohawks, which were both obsolescent and in short supply.

No. 89 Squadron, equipped with Beaufighter VI C/As, arrived fully operational from the Middle East, and celebrated its arrival within a few days by shooting down an enemy reconnaissance plane. No.211 Squadron was formed in this Command and also equipped with Beaufighters. No. 4 Squadron I..A.F. converted from the obsolete aircraft with which it had been working on the North West Frontier to Hurricane IICs, its role becoming Fighter Recce. At this time it was thought that the expanding I..A.F. squadrons were most suitable for fighter reconnaissance roles; so No. 20 Squadron, which had been engaged on fighter reconnaissance work with Lysanders, on being equipped with Hurricane IIDs changed its role from fighter reconnaissance to fighter bomber.

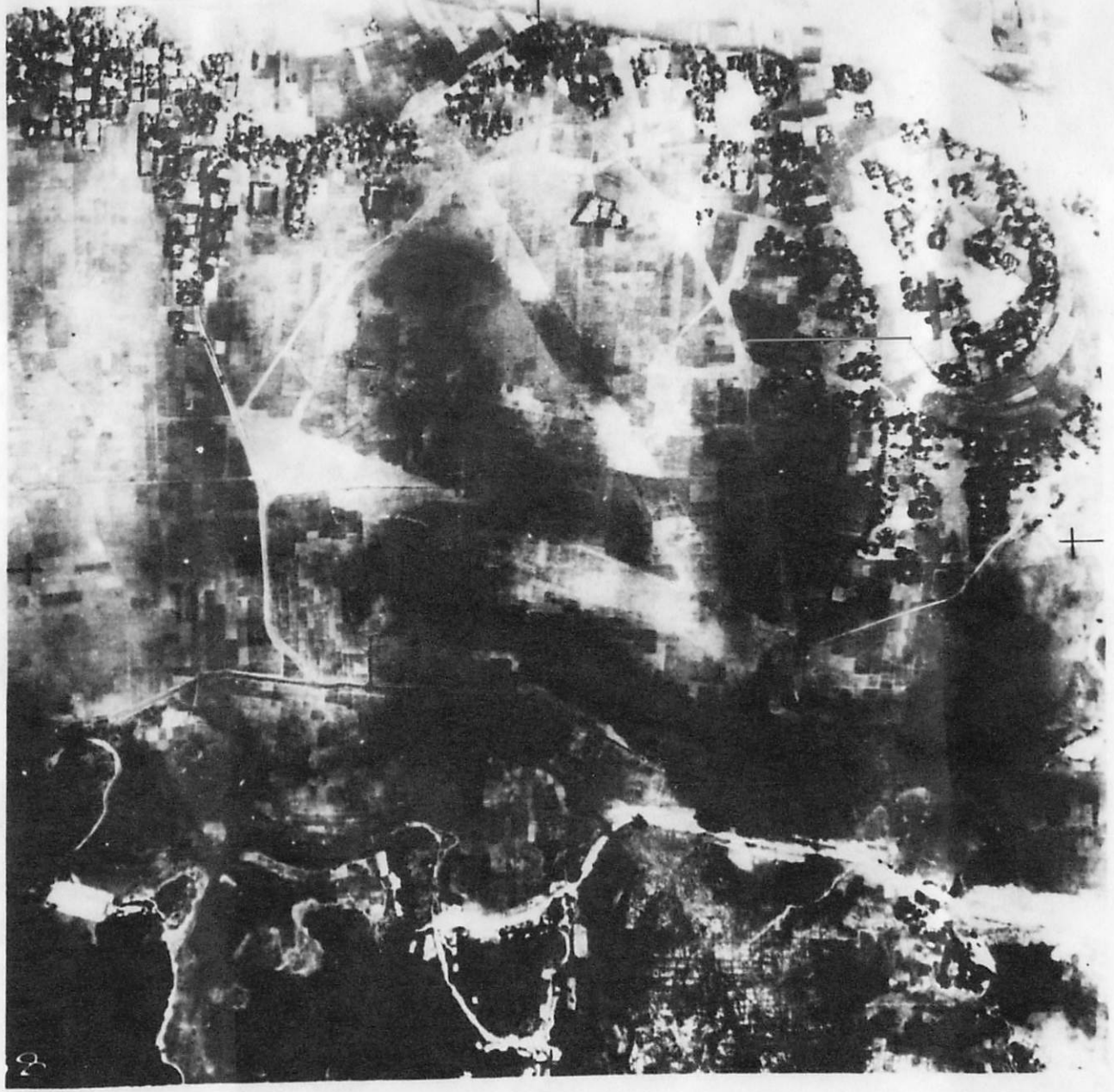
The place in the front line, vacated by the Blenheim Squadrons due to be re-equipped with Hurricanes, was taken by the Vengeance Squadrons which had been forming and training during the first six months of the year. The need for offensive aircraft in other theatres has limited reinforcement of this Command, with the result that No.355 Squadron was the only heavy bomber squadron to form in India since June. This Squadron, equipped with Liberators (B.24s), is based at Salbani and should be fully operational by the

end of November.

The diversion of No.62 and No. 353 Squadrons from General Reconnaissance to Transport duties, the recall of No. 36 Squadron to the Mediterranean Air Command, and the threat of seaborne attacks or raids during the Autumn made it necessary to re-inforce the G..R. units of this Command. There was throughout the period a serious shortage of Liberators modified for G.R. work, and most of the aircraft received in the Command were used to bring No. 160 Squadron up to strength and maintain it. No.354 Squadron, however, whose aircraft were flown from Dorval in Canada by crews trained in the Bahamas, was formed as an operational squadron at Cuttack, but it was never possible to allot to it its full number of aircraft. No.203 Squadron, equipped with Wellington XIIIs, was flown out from the Middle East in plane of No. 36 Squadron, and the Hudsons of No.217 Squadron have been replaced by torpedo carrying Beauforts.

The expansion of Transport Squadrons is dealt with later at greater length. During the period the number of squadrons rose from two to five. The flow of P..R. Spitfires was sufficient to equip one flight of No.681 Photographic Reconnaissance Squadron. No.684 P. R. Squadron, originally intended to operate with Mitchells and Mosquitos, will soon be entirely equipped with Mosquito IXs. One Air Observation Post Squadron, equipped with Austers and manned entirely by Army pilots, has arrived from home and is engaged on artillery observation duties.

The general position at the end of November was that there were forty-nine Squadrons trained and equipped up to the standard of modern operational requirements. In addition there were twelve Squadrons at various stages of training and equipment but not yet operational, and one Transport Squadron operating on internal air routes in India. The number of aircraft available in the Command since the beginning of the year had risen from 1,443 to 3,699 distributed



as follows:-

Hurricanes	1088	Lysanders	41	Dakotas	100
Spitfires	153	Austers	4	Hudsons	117
Mohawks	65	Vengeances	572	D.C.s 2 & 3	8
Beaufighters	163	Liberators	69	Catalinas	61
Beauforts	96	Halifaxes	2	Harvards	298
Blenheims	229	Lancasters	2	Ansons	82
Mosquitos	12	Wellingtons	160	Miscellaneous	377

43% of these aircraft were with Squadrons or units; and the remainder with maintenance or storage units, either immediately available as replacements or in varying stages of repair.

The target sanctioned as the general basis of administrative planning up to the end of 1943 was 76 Squadrons. For detailed planning however the targets agreed upon from time to time with the Air Ministry have been used. The defect of this system is that the information often reaches this Command too late for executive action to be taken.

AIRFIELD EXPANSION

At the beginning of 1943 the main airfield construction programme in India envisaged the building of 215 standard all-weather airfields. Some of these were to be "operational" and built to full scale with two runways and accommodation for two squadrons; others were planned to "lay-back" scale with reduced accommodation for two squadrons. Of this programme, initially arranged in March 1942, five operational airfields were complete in all respects, and 88 had one all-weather runway (over 1600 yards in length) ready by the end of 1942. In addition, sixty fair-weather strips or landing areas had been completed. The programme included a certain number of airfields previously under the control of the Director of Civil Aviation, and allowed not only for strategic considerations in the East and the North West but also for training maintenance, aircraft storage, and air transport and reinforcement routes.

The lessening danger of invasion from the North West or East made it possible during the first quarter of 1943 to modify the original programme, thus enabling engineering and constructional resources to be diverted to more urgent operational projects in the East. It was decided that satellites should not be provided for airfields in lay-back areas. Seventeen airfields, some not sited and others with very little work done on them, were abandoned in areas west of Long. 88° east. In the same areas it has been possible to substitute fair-weather strips for secondary runways or for both runways; to cancel or limit taxi tracks, hard standings, and buildings on which work had not been begun; to reduce dispersal generally; and to discontinue the erection of pens. Later in the year a further twelve fair-weather airfields were abandoned in Western and central India, and scales of construction and accommodation limited in the case of a number of incomplete airfields in the Southern, Western, and Central areas, so that even though runways and strips should be completed three months notice could be given before buildings and dispersals were erected. In certain cases projects were limited merely to the completion of runways and strips.

The increasing scale of offensive operations throughout 1943 has necessitated far more construction in the East than was envisaged under the original plan. For operational purposes during the dry weather a number of fair-weather airfields have been prepared in forward areas with limited shelter type accommodation and tentage. The decision to conduct operations throughout the monsoon period made it necessary to develop some of these as all-weather airfields with increased accommodation and ancillaries. A number of airfields constructed either in the original plan or at the request of the U.S.A.A.F. have been completed in North East Assam to handle supplies to China, and on the

supply route from the West for the same purpose. In the same area certain airfields have been developed from which the Americans can operate heavy bombers or defensive fighters. The maintenance and reinforcing of the American Squadrons in Assam have involved further construction in the Southern, Western, and Central areas. By the time South East Asia Air Command was formed a total of 34 all-weather airfields and eleven fair-weather strips had been handed over to the U. S.A.A.F., and facilities given to them in certain other R.A.F. airfields.

In March, 1942, there were only sixteen airfields possessing all-weather runways, of which only four were operational by modern standards, and twenty fair-weather strips. By November 1943, however, 285 airfields were completed with fifteen others under construction. Of this total no less than 140 were complete in all respects; sixty-four airfields had one all-weather runway ready; and a further seventy-one had fair-weather strips or landing areas, and were equipped in varying degrees with dispersals and domestic and technical accommodation.

There have been great difficulties in the execution of this programme the cost of which has been in the neighbourhood of fifty million pounds. There has been shortage of suitable constructional equipment and supervisory staff. Much of the work carried out by civilian contractors has been shoddily or dishonestly performed, and in all areas there has been delay due to bad communications or inadequate control. In the Punjab and United Provinces the Provincial Governments have given great assistance, but in East India, where the need was greatest, there has been less enterprise and efficiency. The fact remains, however, that the Air Forces in India can now expand rapidly with the sure confidence that there are suitable bases from which to operate, and I wish to record my gratitude to the many military and civilian engineers whose devoted work has made this possible.

THE MANPOWER SITUATION Perhaps the greatest problem in the expansion of the Air Forces under my Command has been caused by the acute shortage of suitable manpower. Other theatres of war, the more imperative needs of which have quite rightly been given priority, have exhausted the available manpower on the United Kingdom with the result that this Command has often seemed to be situated at the wrong end of a badly leaking pipe-line. To combat this difficulty the substitution scheme, whereby local manpower is recruited and trained to fill existing vacancies in R. A.F. non-operational units, was decided upon at the end of 1942 and implemented during the first half of this year. The output of trained manpower under this scheme was, however, not sufficient to meet the requirements that arose from the expansion of the Command, which had as a result to subsist mainly on whatever drafts became available from time to time from the U.K. or from other Commands.

As a result of the manpower shortage throughout the R.A.F. an establishment ceiling has been imposed on the Command. This ceiling will limit the personnel expansion of the Command to a total of approximately 90,000 R.A.F. and 10,000 I. A.F. personnel, to meet a target of 73 Squadrons. Any personnel above 10,000 recruited into the I.A.F. under the substitution scheme will not be counted against the ceiling. The 140 Squadron target will only become operative after Germany has been defeated and personnel become available again from the West.

In January of the year the manpower available to meet expansion requirements totalled 54,779, or if followers are included about 69,000, made up as follows:-

British Officers	- 5,700	
B.O.R's	- 45,228	
Indian Officers	- 778	
I.O.R's	- 3,073	
Followers	- 14,000	- 15,000

By July the total manpower available in the Command had risen to 94,672. But the Command was still deficient of trained strength by about 882 Officers and 6,205 airmen. Clerical and some filter and signals trades were especially short. On the other hand in other trades there was a surplus of about 4,500. A limited number of these are in the process of remustering; but it is not possible to carry out remusterings on a large scale, since training facilities are already stretched to the limit and any additional burden will involve a reduction in the training capacity allotted to the I..A.F. A possible solution to the problem created by surpluses would be a greater degree of exchange between the different Commands. Shipping, however, is a limiting factor here.

By November the manpower available had risen to 119,952, as is shown in the following statement:-

	July '43.	Nov. '43.
R.A. F. Officers Aircrew	1,718	1,851
" " ground	3,250	4,314
I.A.F. Officers Aircrew	320	432
" " ground	453	694
B.O.Rs Aircrew	2,290	3,621
" ground	61,005	74,929
I. O.Rs ground	4,894	8,072
Enrolled Followers	9,142	10,338
Temporary Followers	7,202	11,410
N.C.S. personnel	1,266	1,345
W.A.C(I)s	1,060	1,346
Civilians	1,142	1,600
	94,672	119,952

Total increased availability

(a) Jan - June 25,672

(b) June - Nov 25,280

582

The position now is that the manpower ceiling has almost been reached in respect of R.A.F. personnel; our future expansion in this Command will depend either upon cutting down existing establishments to a degree at which they will cease to be fully efficient, or on increasing the rate of Indianisation. Unless either of these alternatives is put into force, or instead Air Ministry is able to send us W.A.A.F. or further

R.A.F. personnel, a situation may arise after the completion of hostilities in the West, in which numerous squadrons become available for immediate employment in this theatre but cannot be received or operate owing to inadequate administrative or maintenance organisation.

A further difficulty has been caused by the increased variety of aircraft now operating from India, and the consequent multiplication of requirements for different categories of aircrew trained for each type. As advanced aircrew training facilities are strictly limited in the Command, the main solution to this problem consisted in placing far more accurate and detailed demands on the Air Ministry for the personnel required. To achieve this a separate Organisation Section has been formed to watch and control the aircrew flow. At the same time training facilities have been developed and utilised to the maximum extent for converting surplus aircrews from one type of aircraft to another. Nos. 151 and 152 O.T.U's, in addition to their Indian Air Force commitments, have given initial or refresher training to twenty-nine I. A.F. and 206 R..A.F. personnel on Hurricanes or Vengeances. 1584 Conversion Flight provides advanced heavy bomber training, and the General Reconnaissance and Air Navigation School advanced training in respect of general reconnaissance crews.

Indian manpower has been recruited at the same rate as in the previous six months. Recruitment is carried out for the Air Forces by the recruiting organisation under the Adjutant General, the Air Force being now represented on this organisation by a Group Captain and fifty-five other Air Force Officers.

The publicity campaign launched early this year at the instance of Air Headquarters succeeded eventually in doubling the normal intake of educated personnel into all three services. In June the Air Force target of 2750 was met for the first time, and this rate of intake continued for a further two months. Unfortunately the recruiting went ahead

more rapidly than the Training Schools could be expanded, with the result that recruits were often ill accommodated and uncomfortable, and their training unsatisfactory. When this became known in India - and deserters and disgruntled airmen on leave took good care that it should be known - a decline in the popularity of the Indian Air Force set in, and was quickly reflected by a lower recruiting intake. Every effort was made to improve the training organisation, and a second publicity campaign was started with the result that the intake has now stabilised at about 1500 a month. This rate of intake, although it only amounts to 60% of the target, is still six times greater than the 1942 average. Recruiting in fact has been successful beyond what was expected and the full 1943 Indianisation target involving a total intake of 31,000 Indian airmen should be implemented by not later than June 1944. Whether the same rate of intakes will continue after March 1944 depends on the course of the war in Europe, the continued availability of suitable personnel in India, and the requirements of the other services. No final decision on this point has yet been reached. Figures for the recruitment of Indian airmen for 1942 - 1943 are given at Appendix IX.

In one respect recruiting was for a time unsuccessful, since although ground officers could be had for the asking, few young Indians seemed willing to volunteer for aircrew duties. The urgent need of the Command was for airmen, not aircrews; hence the whole effort of the publicity campaign was directed towards popularising entry into the ranks. Since publicity for airmen and officers cannot be carried on at the same time, this meant that aircrew publicity had to be suspended. Moreover, the Indian Air Training Corps was originally designed to persuade University students to enter the ranks. Those few I.A..T.C. cadets who were keen to become pilots were not

willing to enter the ranks and take their chance of being subsequently selected for pilot training, when they could probably obtain direct commissions in the Army or the Royal Indian Navy. The policy of commissioning from the ranks was vigorously pursued, but few of the men selected were good officer material, and even fewer succeeded in completing their training as pilots. After the success of the campaign for technicians, however, an aircrew publicity campaign was launched, stressing the adventurous aspects of flying, and experienced I..A.F.. officers were detailed to tour India with the result that there is now a list of over 400 candidates awaiting final interviews by the Officers' Selection Boards. The outlook for the future is more secure since the Air Training Corps, which is already functioning in six universities and is due to begin shortly in two others, has now been converted into an organisation for the production of General Duties Officers. The number of recruits required to maintain the ten I.A.F. squadrons has, however, increased, as a result of the change in role of two fighter Reconnaissance Squadrons to fighter bomber squadrons and of an increase in the training wastage, and it is not yet certain that an adequate flow can be maintained. Figures for officer recruitment into the I.A.F. are given at Appendix X.

The training of officers and airmen of the I.A. F. has presented a very great problem owing to the almost complete absence of R.A.F. Officers with a knowledge of India, the general shortage of instructional staff, and the slowness with which sanctions for building projects have been implemented by the departments concerned. Elementary and service training for I.A.F. pilots have been carried out, but the wastage rate is alarmingly high, often amounting to over 60 per cent. During the period under review thirty-seven pilots left for Canada under the Empire Training Scheme after completion of their elementary training, and thirty.two successfully passed out of the Service Flying Training School.

The main problem, however, has been the expansion of the ground training establishments. A second Recruits Training Centre has been opened in South India, and has succeeded in reducing the considerable congestion at No. 1 R.T.C. Six new Schools of Technical Training have begin to function during the past five months. In addition a third Signals School and a second Radar School have been opened, and the non-technical Training Centre at Secunderabad has been expanded. As these schools expand, the large blockage of men who have completed their disciplinary training, but for whom their are as yet no vacancies in the technical schools, should disappear. Since June over 10,000 recruits have reported at the Recruits Training Centres, and the population of the Technical Training Schools is now over 5,500 and is expected to rise rapidly in the near future to 10,000. The trained output from the schools during this period has amounted to nearly 6,000.

Supply, Repair and Maintenance.

AIRCRAFT REPAIR AND MAINTENANCE

India is not highly industrialised but has immense natural resources which, are only on the fringe of development. Unskilled civilian labour is almost unlimited; there are a few semi-skilled, but practically no skilled, industrial technicians. The utilisation of the available civilian manpower is thus limited, and a heavy load is thrown on Service personnel. Even these latter, who form the backbone of the repair organisation, are not skilled technicians as the term is understood at home. The small nucleus of highly trained R.A.F. personnel from which the service has expanded during this war were never accustomed to mass production methods on the scale which is, even now, being implemented in this country. The custom in the U.K. whereby major repairs are undertaken by the makers' working party or returned to the factory cannot apply to this Command. This fact is frequently lost sight of by the planning staff at Air Ministry.

Geographical factors have also complicated the building up of an efficient repair and supply system. The location of the limited industrial facilities has largely dictated the location of base repair units, both civilian and service, and inevitably great distances separate such units from the squadrons they serve. Road, rail, and water transport throughout the country is already burdened to a maximum, and, whereas in a country with good lines of communication a major repair may average a month to six weeks, quite frequently this period elapses in India before the damaged aircraft arrives at its base repair unit. Climatic conditions affect both material and men; the former by deterioration and corrosion, the latter by exhaustion - which is shown by the fact that the man hour depreciates some 25% during the hot weather and the period of the monsoon.

The actual work of the repair units has frequently been held up for lack of spares and tools. The sinking of one or two ships can and has seriously upset the even flow of repair. In November there did not exist in the whole Command a single complete base repair kit. Shortage of spares also leads to cannibalisation which, though wasteful, is inevitable. It is with this background that I discuss the work of maintenance and repair.

These difficulties have necessitated an organisation of repair and maintenance units in depth, of which the base units comprise the service M.Us at Karachi, Ambala, Lahore, and Cawnpore, and the civilian M.Us at Kanchrapara, Trichinopoly, Cawnpore, Barrackpore, Calcutta, Dum Dum, and Poona.

The civilian units were organised under the Aeronautical Division of the Department of Supply, which came into being early in 1943 and developed in October into the Directorate General of Aircraft. In this Directorate General the country is divided into five circles geographically, and all available civilian manufacture and repair capacity is co-ordinated under Regional Directors. These Civilian Maintenance Units have service personnel established on them for supervision and guidance.

These base repair units carry out third line repairs of a major nature. Field repair and maintenance is carried out on a Command basis by Maintenance Wings, which control Forward Repair Depots and Repair & Salvage Units. The first of such Maintenance Wings came into being in January in Bengal, followed in September 1943 by two other Wings in North West and Southern India respectively; the field maintenance facilities in Ceylon were centralised under the Group in that island.

During the year the field maintenance capacity was approximately doubled. The base repair load has increased from 42 squadrons and 400 non-operational aircraft to over 60 squadrons and 500 non-operational aircraft. In June 1943 the

remarkable totals of 314 airframes and 210 engines were repaired. This June peak was the joint result of a swift expansion of repair capacity and the culmination of a strenuous campaign for spares carried on with U.K. and U.S.A. It proved impossible to sustain this level of repair output when the spares position once more deteriorated. The figure fell in October to some 130 airframes and 210 engines. Nevertheless the outlook is hopeful, for the three Tata Civilian Maintenance Units at Barrackpore, Dum Dum, and Poona, and the enormous R.A.F. depot at Cawnpore have barely commenced production. When they are in full swing, a considerable strain on the remaining base repair units will be relieved, since throughout the year 1943 the process of irregular expansion has of necessity enforced on the Command a repair programme which has not only been above capacity but has also fluctuated considerably, necessitating a hand-to-mouth procedure as against planned production. A record of the achievement of the repair units appears at Appendix XVII.

AIRCRAFT ERECTION AND STORAGE

The work of erecting aircraft brought to the Command by sea has been steadily expanded. Of the 1,750 aircraft erected during the year, 1,120 were assembled between June and November. Many aircraft were received in a badly corroded state, and many engines had been lying on wharves and at packing stations for months with inadequate precautions. The input has been irregular owing to shipping difficulties, and when the change-over from the Cape route to the Mediterranean route was started there was initial dislocation, since two consignments sent at different times arrived simultaneously.

At first the main load consisted of Hurricanes and Vengeances, and later of Spitfires. The output of Anson, Defiant, Harvard, Argus, and Mohawk aircraft was maintained. On an average about 160 aircraft were erected each month during this period. For the future it is planned to increase the erection

facilities by providing one or more further Service-manned depots on the East coast to ease the burden of the overloaded West coast ports. Plans for this project are in an advanced stage.

The aircraft storage programme has fluctuated considerably. At the beginning of the year reserves were scarce and the flow through the erection units was rapid. During the monsoon the Aircraft Storage Units began to build up a larger holding. The total output to units for the seven months from December to June amounted to 650 aircraft. For the five months from July to November the total output was 810 aircraft, the monthly figure jumping from 116 aircraft during August to 265 aircraft in October.

This total did not merely entail normal routine servicing of aircraft held. A large number of modifications are continually being carried out and many aircraft have unavoidably been parked in the opmn, exposed to such extremes of heat and humidity that the work involved has in some cases been practically doubled. The work of the personnel engaged on these duties under trying conditions has been admirable. A cockpit temperature of 147° has been recorded while an aircraft was being serviced.

Details of aircraft erected and issued from Aircraft Storage Units are shown at Appendix XVIII.

SPARES AND EQUIPMENT The supply of spares and equipment has, since Japan entered the war, involved an expansion from 120,000 square feet of storage space to 3,831,000 square feet. By the middle of 1943, after a period of piecemeal development by improvised methods, the All-India programme providing for six Universal Equipment Depots located in accordance with regional requirements began to be achieved. A further difficulty then arose. The 1944/45 Squadron Target was made known, which meant that additional space amounting to 3,750,000 square feet would have to be found. As it was considered unlikely that this could

be obtained either by new building or by requisition in the time at our disposal, it was decided that the possibility of reducing reserve holdings to a figure which could be accommodated within the floor space available under the original plan should be examined. Executive action was authorised in November and the means of implementing this decision are now being investigated.

Almost throughout this war, the Command's priority for equipment has been low. Inadequate stocks over most of the ranges of equipment have had a direct bearing on the output from repair units. Tools, certain types of engine spares, dopes, American spares and ground equipment, marine craft spares, and practically all items of Ordnance Supply were in short supply. M.T. spares and domestic and barrack equipment were practically unobtainable. Thus in November there were over 160,000 demands which had not been met. Although records of receipts and issues have since August shown a slight upward trend, the effect of this on the number of inabilities held has been but slight, and furthermore the demand load has continued to increase.

In front of the Universal Equipment Depots are the Field Supply services under the Maintenance Wings. Early in 1943 it became apparent that in many areas a semi-static type of holding unit with somewhat larger stocks than the mobile Air Stores Parks was required. As an experiment the personnel and equipment of some Air Stores Parks in the Bengal area were redistributed to form semi-static Equipment Parks to serve both mobile and static units on an area basis. The normal A.S.P. was retained in forward areas where mobility was required. After successful trials carried out over a period of six months, it was decided to give the Equipment Parks permanent status and they became established as units of the Maintenance Wings, together with Forward Repair Depots and Repair and Salvage Sections. The Equipment Parks, of which there are now nine, hold a minimum of two months' stock. The mobile Air Stores Park holds 30 days' stock.

M. T. MAINTENANCE AND REPAIR

The administrative difficulties peculiar to the maintenance and repair of aircraft in this Command apply equally in the case of M.T. and Marine craft, but in general the problems have not proved so formidable. West of Calcutta (by using the available civilian capacity) it has been possible to decentralise the repair of M.T. to the main towns. East of Calcutta Mobile Repair Units, known as M.T. Light Repair Depots, have been formed and operate as a part of the field maintenance organisation.

The formation of this completely new organisation has been necessary now that the second and third line maintenance of Air Force vehicles has become too large a responsibility for the Army, who formerly undertook this task for us. During the transition period considerable difficulty has been experienced in obtaining stores from the Army at a rate proportional to that at which responsibility has been assumed by the Air Forces. This difficulty has only been overcome to any extent since October. Even now the maintenance pack-ups being supplied cover first-year maintenance only. It is understood that second-year packs are unobtainable and, if this is so, there will inevitably be a high wastage of vehicles after twelve months.

MARINE CRAFT MAINTENANCE AND REPAIR

Previously to this period no arrangements had been made to deal with maintenance and repair of Marine Craft and their engines. Since then contact has been established with the Directorate-General of Shipbuilding & Repair and with the Naval Authorities, and the following arrangements have been made. Air Sea Rescue craft will be overhauled and major repairs carried out in the Naval workshops at Trombay, and hulls will be dealt with by Air Force personnel making use of Naval slipways. Other Marine Craft maintenance will be carried out under arrangements made through the D.G.S.R. at Civil Dockyards and will require Air Force supervision. In areas such as Chittagong, Calcutta, and Colombo where no naval facilities are available for the repair of Air-Sea Rescue craft small Air Force Maintenance Parties are being established and will move

forward with the craft as operations demand.

The responsibility for the Diesel Engines at mobile Air Ministry Experimental Stations has been taken over by the M.T. organisation in the Bengal area. In August a mobile unit was formed for this task, which tours these units and now carries out inspections and repairs at the site.

Details of M.T. repair output are shown at Appendix XIX.

The Mechanical Transport School formed in April has been expanded and produces adequate numbers of trained drivers.

AERONAUTICAL INSPECTION SERVICE

The Aeronautical Inspection Service has been planned according to the "Circle Organisation" of the Department of Supply, since the functions of both organisations are closely interrelated. The A. I.S. now supervises much of the explosives work in the Command and has taken over the control of inspection of all completed parachutes and ancillary equipment made in India.

Research & Development work for the R.A.F. is now carried out in this Headquarters, at the Scientific and Industrial Research Laboratories, Delhi; at the Ordnance Laboratories, Cawnpore to deal with the problems of indigenous manufacture; at Bangalore for electrical and Radar research; at Chaklala for Airborne Forces; and at Cawnpore for Armament modifications.

RESEARCH AND DEVELOPMENT

Among the achievements of the R. & D. Section are:-

The development of new parachute material, which has eased the production problem and improved the performance of the supply-dropping parachute.

The production of a new type of supply-dropping container.

A Roller Conveyor for use in supply-dropping operations.

An enlarger for micrograph negatives.

Substitute proofing lacquer for carburettor floats.

A substitute for duplicator stencils.

Satisfactory aircraft dopes which can be manufactured indigenously.

Development of the manufacture of petrol-resisting tubing in this country to a point where the product is little inferior to that produced in the U.K.

The development of various types of jettison tanks, including one design which utilises locally produced jute and shellac.

The more important India Command Modifications which have been prototyped are :-

Self-sealing long-range tanks inside the wings of Hurricanes Mark IID and IV.

The re-designing of the fuel system on the Vengeance aircraft and provision for jettisonable tanks.

A bomb-cum-jettison tank modification for Hurricane aircraft.

Compregnated wooden blades for fitting on to a Rotal propellor boss.

Modifications to Dakota aircraft.

Modifications to the Spitfire VII pressurised fuel system.

III. Signals and Communications.

SIGNALS DEVELOPMENT

The rapid deterioration of delicate equipment in tropical latitudes presented many difficulties to my signals personnel. These difficulties were increased by the constant shortage of supplies, the inadequacy of the existing communications network, and the exacting conditions under which the greater part of the Command has had to work. Despite these handicaps communications have been maintained and even improved throughout the monsoon period. In the development which has taken place, two main facts are noticeable. Firstly, in spite of the burden of routine work, a large measure of rationalisation was carried out in what had been, because of its over-rapid growth, a very loosely-knit organisation. Secondly, the responsibility for manning the warning system against hostile aircraft, both on Observer Corps and to a lesser extent on Radar units, has been largely assumed by Indians, who have proved themselves adequate for the task.

Because of the great distances involved and the extreme shortage of suitable equipment, landline communications have proved totally inadequate. One squadron, for example, had to be operated by its Wing entirely by W/T. communication, because no other method was available. Teleprinter circuits have been developed, but during the monsoon period many of them had to be closed down in order to save spares and to prevent wear and tear. Thus the W/T point-to-point organisation has had to bear the brunt of the signals work in the Command. As Typex machines are still in short supply, book cypher with its attendant delays is still in general use. Since June only seventy-eight Typex machines have been received, but more are expected, and their arrival will cause great improvement both in quick and accurate transmission of secret messages.

The four Indian Air Formation signals units, which were responsible for R.A. F. landlines and communications, were heavily committed. Two of them were located in the Bengal

area and one in Ceylon, leaving but one unit to meet commitments for the whole of India less Bengal. By November two more Air Formation Signals units had been raised and trained, and with the allocation of one to Bengal and one to Southern India there has been marked improvement. The shortage of trained Indian operators still prevents complete operational efficiency.

In order to co-ordinate the scattered Signals Units in Bengal and to effect a more rigid supervision of maintenance and administration, three Signals Wings, Nos. 180, 181, and 182 have been formed. These operate in the Calcutta, Imphal, and Chittagong areas respectively. They are responsible for the administrative and technical control of all early warning equipment and of permanent W/T and D/F stations. Their value immediately became apparent. The warning and communications system in the Imphal area has doubled in efficiency; and as another example of improvement in the Chittagong area on the 20th October enemy aircraft were picked up at 115 miles range. In addition to improving the serviceability of the equipment and the performance of the stations, the Wings fulfilled a long felt want by providing efficient administration of units and men.

WARNING SYSTEM

Early warning is obtained from the Assam-Burma border as far South as Akyab, in the Calcutta area, and at centres liable to attack around the coasts of India by a network of some seventy Air Ministry Experimental stations equipped with Radar. Deployed in front of these stations in Eastern Bengal are the Wireless Observer Units, whose posts extend over the Manipur Road southwards through the Chin Hills and Arakan Hill tracts.

Gradually these units are being replaced by Indian Mobile Wireless Observer Companies, which already number eleven and are proving completely competent. These Mobile Companies have been manned by selection from the 10,000 personnel employed on Observer Corps duties in the

static warning areas at Calcutta, Vizagapatam, and Madras.

To deal with the information transmitted by these units, there are now nine filter rooms operating in the areas considered most liable to attack. These formed the focal points of the warning framework. Bengal was protected by the Filter rooms located at Imphal, Chittagong, and Calcutta; the Eastern seaboard by those at Vizagapatam, Madras, Trincomalee, and Colombo; and the Western seaboard by those at Cochin and Bombay.

OTHER DEVELOPMENT

The provision of wireless equipment for the control and aid of aircraft has grown as fast as the flow of supplies allowed. Thirteen Directional Finding Stations have been established on the reinforcement route across India, and most of the fighter stations in North West India are now equipped with Very High Frequency R/T. Symptomatic, however, of the difficulties caused by scarcity of equipment are the measures forced on us to control fighters in the air. The installations necessary to direct aircraft on to hostile formations by Ground Control Interception have been sufficient to equip only half the fighter force. Great care has, therefore, been necessary to ensure that of each section of two aircraft one should be provided with this apparatus.

The advent of modern bomber and General Reconnaissance in the Command, with their specialised wireless equipment, raised special problems of maintenance under difficult climatic conditions. To aid research into these difficulties a special Flight (No.1577) has been formed with Halifaxes and Lancasters. The further use and development of advanced radio aids to navigation, submarine detection, and precision bombing now await the provision of supplies. When supplies become available the experience gained by this flight of the behaviour of such equipment in this theatre of war will be of great value.

IV. Air Transport.

The great size of India and its poor communications - in many cases totally inadequate to meet the burden imposed by war expansion - demands an adequate Air Transport organisation.

The problems can be summarised under three headings. Firstly, operations on the Indo-Burmese Frontier demand a system of supply by air to supplement the existing means of communication, which are totally inadequate. Secondly, the swift movement of mails, important persons, and urgent freight throughout India call for a highly developed internal communications system. Thirdly, the rapid reinforcement of squadrons requires airfields and a proper flying-control organisation. Owing to operational demands of higher priority these requirements could not be met fast enough to match the urgency with which they were needed.

Lack of transport aircraft has delayed progress. In August 1942 the only transport aircraft in India were one squadron of worn out D.C.2s and D.C.3s, and such of these as could be kept serviceable were required for supply-dropping in the forward areas. In September 1942 the Command began to receive transport Hudsons; by December 1942 it was possible to start services once a week from Delhi to Colombo and from Calcutta to Bangalore. In March 1943 the Delhi-Colombo service was increased to two a week. Since July one Dakota squadron, No.31, ran a weekly service from Calcutta to Kunming. But this squadron was also employed on supply dropping to troops in inaccessible areas and on mail runs in forward zones. In August 1943 the Delhi - Bombay and the Bombay - Calcutta routes were opened, and the Delhi - Calcutta line (which up to this time had been operated solely by small civil aircraft) was strengthened by a bi-weekly service with R.A.F. Hudsons.

Thus the burden of internal services fell almost entirely upon 194 Squadron equipped with Hudsons, helped out by the Group Communication Flights and the small civilian organisations, Indian National Airways and Tata Air Lines, and such aircraft

as could occasionally be spared from operational duties. In addition, trunk lines were operated by B..O.A.C. (Karachi-Gwalior and Calcutta) and Quantas (Ceylon-Australia) once weekly.

By September 1943 194 Squadron had been re-equipped with Dakotas, and, together with 62 Squadron, which had been withdrawn from G.R. duties, was carrying out intensive training in an Airborne Forces role. Its place was taken by another Hudson Squadron also withdrawn from G..R. duties. By the middle of November this squadron, No. 353, had nearly completed the process of training and equipping as a transport Squadron. About this time a welcome addition to the Command in the form of a complete Transport Squadron arrived from the Middle East. This too is training to fit itself for Airborne Forces duties. Thus, although in theory the Command disposed of five Transport Squadrons, since I had to allot three for Airborne Forces work and another was fully occupied with operational commitments in the Bengal area, in practice one only was available for internal transport duties.

Owing to the great effort made by 353 Squadron to improve its serviceability in spite of being handicapped by shortage of spares, it became possible by November to provide new services between Delhi and Karachi; and Karachi, Bombay, and Colombo. The frequency of the Delhi-Colombo, Delhi-Calcutta and Calcutta-Colombo services was also increased.

The following table shows the increase in route mileage operated by the one Squadron (at first No. 194 and later No. 353) that was available for maintaining internal communications :

December, 1942	5,000 miles per week.
March,1943	8,000 miles per week.
August, 1943	20,000 miles per week.
November, 1943	37,000 miles per week.

Although however the period has seen a considerable

increase

increase in the number and frequency of air transport services within India, only a very small fraction of the requirement is being met. In a sub-continent whose railway system is overloaded and liable to annual break-downs due to floods, and whose roads are incapable of standing up to heavy traffic, air transport is often the only means of carrying passengers and freight. The civil airline companies however possess only small and obsolescent aircraft, and can continue to operate only if they are re-equipped with large modern transport aircraft. One of my main anxieties therefore throughout the period has been the inadequacy of my air transport resources, and this must remain an anxiety until the aircraft requirements for both R.A.F. and civil services can be fully met.

Meanwhile the need for that close control of training and operations, which a Wing would afford when squadrons were fully deployed, was realized. So in September 177 Wing was formed at Rawalpindi to control the squadrons allocated for an airborne forces role. The Wing is intended to move forward with the squadrons, when on completion of their training they are redisposed for operations in the forward areas.

Aircraft reinforcement operations were concentrated under 179 (Ferry) Wing. Based at Karachi, the Wing performed the vital duty of ferrying aircraft as they arrived either by sea or air to the units for which they were destined. The complementary duty of controlling the flow of aircraft to and from the different Repair and Maintenance organisations, Aircraft Storage Units, and Reserve Aircraft Pools also fell within the Wing's province. Finally it was responsible for the Main Ferry Crew Pool, the Reinforcement Staging Posts, and the Ferry Controls which were necessary to implement its work. The Three Ferry Controls, based at Karachi, Allahabad, and Santa Cruz respectively, ensured the rapid movement of reinforcement aircraft through their sector and administered the aircrew employed on ferrying aircraft in the same area. Opportunity was increasingly taken of utilising reinforcement aircraft for the carriage of passengers and freight whenever possible.

This policy was pursued to such an extent that in November reinforcement aircraft carried 221 passengers and 180,000 lbs of freight.

The question of forward planning in transport assumed great importance during the period, and much preparatory work was done by my staff. Plans have been made for the formation of a transport Group, which will absorb 179 (Ferry) Wing and all transport units and be in a position to deal with the greatly increased traffic anticipated as aircraft become available in proportion to the needs of the Command. In anticipation of this, ten Air transit Sections for the receipt and despatch of air freight have been formed at nodal points in the communications network. Thirteen more are in process of formation. The Group will be located ultimately at Delhi, and will probably come eventually under the operational control of the newly formed Transport Command in the United Kingdom. Its relationship to the projected Troop Carrier Command, which will be located in Eastern India, has not yet been decided.

V. Expansion and Development of the Indian Air Force

The Indian Air Force has now almost reached the peace time strength of the Royal Air Force of ten or eleven years ago. In this respect, as in many others, India has benefited from the impact of the war. Numerous facilities for technical and flying training have been thrown open to the youth of the country, who have realised the value, in the case at least of the technical training, of what was being offered to them and responded accordingly.

The process of expansion, however, has been so rapid that many difficulties have arisen. The Indian Air Force is at the moment completely Indian with the exception of a limited number of R. A.F. N.C.Os. No European can hold a commission in the Indian Air Force, which differs in this respect from the Royal Indian Navy and the Indian Army. Up till the beginning of 1942 R.A.F. Officers did in fact Command I.A.F. Units without, however, being specifically commissioned in the I.A.F. After the success of No. 1 Squadron in the Burma Campaign policy was changed, and since that date only one Royal Air Force officer (for a brief period of two or three months) has commanded an I..A.F. Squadron. It will be seen then that, as far as is humanly possible, the Indian Air Force as a service has been kept Indian.

As a result of the rapid expansion of the service since the outbreak of war there is a definite lack of officers suitable to assume important commands. At the moment the I.A.F. depends almost entirely for its leadership on the limited number of officers who in pre-war days were Cranwell-trained. The intake of officers since war broke out has been large, but their training necessarily far less thorough than that given at Cranwell, and few leaders of any merit have emerged. This fact, combined with the unwillingness (referred to previously) of Indians to volunteer for air crew duties and the readiness with which trained G. D. officers often

accept ground jobs, has caused some doubt about the I.A. F's future. One Squadron was sent into the line last Spring but had to be withdrawn quickly, since its training, discipline, and morale proved inadequate for modern warfare. The death of the Commanding Officer in a flying accident gave the opportunity to put in a British Squadron Commander, who proved unable without any other British staff to knock the Squadron into shape and was relieved by another Indian Officer shortly afterwards. The shortage of pilots generally has also made it necessary to decide that Nos. 9, 10, and 12 Fighter Squadrons should be manned with fifty per cent R.A.F. aircrews, and to post six R.A.F. aircrews to No. 8 Vengeance Squadron.

It is early yet to form a final decision on the extent to which the I.A.F. should be stiffened by a cadre of R.A.F. personnel. Of the several squadrons that are going into action this winter some are completely Indian. If these acquit themselves well, their success will obviously bring down the number of R.A.F. personnel considered necessary to produce this stiffening. It may, however, be necessary later to increase the R.A.F. content in all I.A.F. squadrons, and even ultimately to institute a system whereby R.A.F. officers are seconded to the Indian Air Force in the same way as British Service officers are seconded to the Indian Army.

Politically it is regrettable that the ten squadron target has not been completed by the end of 1943. Delay has been caused by the drop in recruiting figures since February, the higher wastage rate in training, and by congestion due to low serviceability at Operational Training units. Eight squadrons are ready for operations, and two fighter squadron are now forming. The delay therefore is not very great, and by the end of 1944, it is hoped, all ten squadrons will have become operational.

Future policy is not clear cut, though it has been laid down in principle. Since pilots are scarce and R. A.F.

crews are already employed in I.A.F. Squadrons, it is not intended to form further I..A.F. squadrons for some time. The peace time I.A.F. of the future too will possibly best be served by keeping present squadrons as efficient as possible. For this purpose the pilots trained under the Empire Training Scheme (many of whom will gain operational experience in Fighter Command at home) together with a number of I. A.F. officers that will have gained similar experience by being posted on an "exchange" basis to Royal Air Force fighter Squadrons in India, will prove extremely useful. The next stage in the I.A.F. expansion desired by the Indian Government is the building of I.A.F. maintenance, training, and administrative units adequate to the first line strength. It would be possible to work in this direction by increasing the Indianisation of certain units agreed upon as appropriate to the purpose, but I have not yet finally committed myself to the full project. The limiting factor, however, is the acute shortage of competent N.C.Os. It will, therefore, be necessary to go slowly at first, increasing the Indianisation of certain picked units when the units show themselves capable of releasing R.A.F. personnel without losing efficiency.

The forward policy of posting Indians to fill R.A.F. establishment vacancies in India has raised many problems of administration, welfare, and discipline; and in the solution of these the Inspectorate General of the Indian Air Force, which was formed last March, has played an important part. With the formation of Air Command, South East Asia, a separate India Command has been sanctioned with its Headquarters at Delhi. The staff of the Inspectorate General has been merged into Air Headquarters, India, which will be responsible for the control and development of the I. A.F. generally and for all operations on the North West Frontier, which since 1941 have been purely Indian Air Force commitments. The formation of this new Command will undoubtedly contribute much to the development and efficiency of an integrated Indian Air Force.

VI. Medical, Welfare and Education.

MEDICAL Medical problems in this Command are complicated by two factors, firstly, that aircrews, in addition to the strain of modern operational flying, have to withstand the rigours of an extremely difficult climate, and secondly that the majority of R.A.F. Stations and units are located in remote areas in Eastern India and round the coasts of India and Ceylon.

Every effort is made to encourage aircrews to take regular leave, and concessions similar to those granted in the U.K. have been approved in order that quarterly leave may be financially possible for N.C.Os. and junior officers. The number of hostels for officers and aircrews that are convalescent or on leave has increased considerably. Toc H. have equipped a seaside leave centre in Arakan, and have extended their clubs at Madras, Dehra Dun, and Lahore. Two R.A.F. aircrew hostels have been formed in Calcutta, and an Officers Leave Hostel opened at Ootacmmund. At Wellington in S. India and Redalla in Ceylon new Hill Depots have begun operating.

The sickness rate during the past months averaged 91 per thousand and proved slightly higher than it was last year, the main reason being the move forward of 221 and 224 Groups and Air Headquarters, Bengal, to non-cantonment areas, and the gradual reinforcement of units in Eastern India by personnel whose previous service in India was in healthier and more comfortable localities, or who having not yet spent a hot weather in the country did not enjoy that partial immunity to tropical diseases which time invariably confers. In particular, despite intensive anti-malarial activity, the incidence of malaria has increased this year. Heat exhaustion, dysentery, and diarrheoa have been common. The sickness rate in July 1943 for all causes exceeded 102 per thousand. The practice of allowing personnel to occupy sites before completion has been forced on us by war requirements and the lethargy of building agencies, and has undoubtedly contributed to this higher rate.

Responsibility for expanding the medical services in the Command is largely delegated to the Director of Medical Services in India, who provides all hospital facilities for Air Force personnel. Most areas in which our units are located are well provided for, but because of the great distances involved it has been found necessary to make certain special medical arrangements. The first of four mobile surgical units that have been sanctioned has been formed at Calcutta. The team, one surgeon and seven airmen, is obtainable on call from the Bengal Command War Room, and flown with its special equipment to its destination. It has already successfully carried out one emergency operation. Four R.A.F.. mobile field hospitals have recently arrived in the country, and after some delay (due to the fact that their equipment was put on another ship, which arrived later) two are already operating in the Chittagong area, one at Imphal and one at Badapur.

There is now no longer any shortage of Medical Officers in the Command, and numbers of Indians have been Commissioned into the newly formed Indian Air Force Medical Branch. Indian Air Force Medical Orderlies are recruited and trained at the medical training centre at Chakrata, which has been expanded to give refresher courses to R.A.F. Nursing Orderlies, and will later, it is hoped, function on the lines of the Medical Training Establishment and Depot in England.

WELFARE Welfare Officers are now posted to each Group, and have succeeded to a fair extent in making the formations and units realise their responsibilities regarding welfare. The authority to purchase welfare goods in their own areas has been delegated to Groups, since they can assess their individual needs more accurately and obtain individual supplies more quickly. In Wings and Units there has been a great advance in self-help. The higher standard of administration and the more static nature of the Wings has made them the core of local welfare force especially in the operational areas, and in their work they have been much helped by R.A.F. Chaplains

of various denominations, who have toured their enormous parishes most energetically.

In one respect only has welfare failed. The Indian Air Force expanded so rapidly that the welfare of Indian airmen tended to be neglected. There are very few British Welfare Officers with a knowledge of this country, and the Indian Welfare Officers are often not sufficiently forceful in safeguarding the interests of their own kind. The formation of Air Headquarters, India Command, with a considerable staff, should to some extent remedy this.

The main welfare problem has been the provision of amenities for personnel. After working in the open all day, often wet through, airmen need some form of relaxation in the evenings. In remote areas the best amenity is the cinema. The problem of providing it has been tackled by the Command Welfare staff in an admirable manner, in spite of difficulties due to shortage of electrical generators.

In addition to the cinemas, two Air Force concert touring parties have been formed. The formation too of unit concert parties and voluntary bands has been encouraged, and with such success that we have now formed over 87 of the former and fifty of the latter.

Musical instruments have been obtained from England and over ninety pianos have been issued.

Indoor games of all sorts have also been obtained, locally and from home.

My welfare staff has also dealt energetically with the various problems imposed on airmen in this Command by the profiteering and violently fluctuating prices that are such exasperating features of India in war-time. Stricter supervision and the education of units eliminated many of the abuses of the peace-time contractor system, and constant efforts were made to prevent recourse to the black market by

the distribution and sale of goods through service channels --- action which also helped to prevent inflation. Large stocks of canteen supplies were received from America, and sold in canteens at rigidly controlled prices.

The responsibility of the Government for the welfare of British and Indian troops in the Command is now more or less accepted, and nearly four lakhs of rupees have been expended during this period from the Amenities, Comforts and Entertainment for the Services Fund on the financing of welfare measures. The foundation of this fund is a per capita payment for each airman in the Command, and the sum fixed was determined over a year ago. Owing to the general rise in prices this sum is now inadequate, but airmen have not suffered correspondingly owing to the donations of certain non-Government organisations. The Viscount Nuffield Trust has provided more than twenty thousand rupees, and the Air Ministry Comforts Fund £5,000 sterling. The development of clubs and hostels has largely been made possible by a gift of one and a half lakhs from H.E. the Viceroy's War Purposes Fund. Unless, however, there is a considerable fall in prices, it will be necessary shortly to raise the official grants.

In connection with welfare I should like to record the interest shown by Their Highnesses the Maharajah of Jodpur and the Nawab of Bhopal, who not only have made magnificent gifts of money but also take a personal interest in the welfare of those Royal Air Force and Indian Air Force units within their states.

MAILS Another factor that has had a beneficial effect on morale has been the reorganisation of mails in the Command. The Royal Air Force now has its own postal service, and is responsibile for dealing with all R.A.F. mails, inland and foreign, official and private. By the end of this period, R.A.F. base post offices at Karachi, Bombay, Bangalore, Delhi, and Calcutta were operating fully.. Over twelve officers and 300 personnel have been trained and are now employed in base postal units, and upwards of one million items are now being

handled weekly. R.A. F. post offices are operating at most stations, and sanction has been received for the provision of public monies so that these Post Offices may have full postal sales facilities. This large scale reorganisation has removed one of the major causes of discontent among airmen, who have suffered considerably from the inefficiency, and in some cases, dishonesty, of the overworked civilian organisation.

EDUCATION The main educational problem has been the improving of the English, Mathematics, and General Knowledge of the large numbers of Indian airmen now under my command, since their background and outlook make further education necessary if they are to become efficient. To this end a separate Education Branch of the Indian Air Force has been established, and over 100 Officers and airmen have now been trained or are under training. These, for the most part, will be employed in specifically I.A. F. Schools and Units.

The R.A.F. problem is somewhat different. Although opportunities for vocational training such as correspondence courses or in certain areas, Calcutta for example, classes at the University have been provided, these for the most part appeal only to the few. The great mass of airmen are somewhat passive in their attitude towards education, but are quite willing to be interested or diverted when opportunity permits. Welfare Education has, therefore, been developed and has played a large part in maintaining the morale of men suddenly transplanted from their normal English surroundings into the malarial swamps and desolate coasts of the "gorgeous" East. Discussion groups and information rooms have been started in most large units, and welfare education pamphlets and books distributed widely. Apart from the educational reference libraries that have been formed even in the smallest units, libraries of lighter and more readable literature have also been provided. The main aim of welfare education is that it should be carried out, not by specialist officers, but by the officers of the unit or formation concerned; the interest developed among all ranks indicates that this aim has been achieved.

VII. Other Services.

AERODROME DEFENCE The main ground defence problem in this Command has been the shortage of manpower and the wide area over which the ultimate target of 300 aerodromes in this Command will be scattered. The solution has been found to consist in forming a few highly trained field squadrons and anti-aircraft flights on establishments separate from Squadron, Wing, or Station establishments, and in concentrating these in the areas where enemy attack is most likely. In all other areas R.A.F. personnel from the Air Force Stations and formations concerned are given general training in local defence under R.A.F. Regiment Instructors.

On 1st July, 1943, Air Force domestic policy for the ground defence of airfields and establishments of the Air Forces in India was published. Briefly, it was decided that all personnel of the Air Forces in India were to be trained in ground defence, and a relatively large number (300) of Defence Training Instructors (N.C.Os.) were to be provided by the R.A.F. Regiment for the purpose. R.A.F. Regiment units, as far as manpower limitations would permit, were to enhance efficiency of the Station personnel in defence by providing a "hard core" of full-time defenders qualified to furnish the mobile element in station defence. It is not the intention that Air Force personnel should replace troops. The measures now introduced are to augment the provision made by the Army for the local ground defence of airfields and Air Forcesestablishments. Responsibility for general and local ground defence still rests with the Army.

To fulfil these commitments intensive training has been carried out at the R.A.F. Regiment Depot (India), which has replaced the R.A.F. Regiment School at Secunderabad. The greater part of the training has been given to British personnel. A limited number of Indian Officers and airmen also have been trained; these in later years will form a nucleus

for the peace-time organisation of ground defence in India. Towards the end of the period the formation and training of R.A.F. Regiment units had to be suspended in order to leave the Regiment Depots clear for the accommodation of the Assault Wing R.A.F., all personnel of which have been trained together in the ground defence role. It is expected shortly, however, that this Wing will be disbanded and that assault commitments will be carried out by normal R.A. F.. units, who will be given certain additional training. Despite the commitment of training the Assault Wing, however, five field squadrons and 50 anti-aircraft flights have been formed and trained. In addition, 300 Defence Training Instructors have been trained and posted throughout the Command to impart training to other R.A.F. personnel. The work of these instructors will be checked by Defence Staff Officers who have been posted to Bengal Command and Groups.

CAMOUFLAGE No account of aerodrome defence would be complete without mentioning the camouflage measures that have been undertaken. Owing to the large number of projects involved these have been confined to the threatened area comprising the provinces of Assam, Bengal, Bihar, the southern districts of Orissa, and a coastal belt of 25 miles from Orissa to Cape Comorin. In these parts however the camouflage is on a wide scale. Schemes have been prepared for most of the 43 priority airfields and 44 A..M. E. Stations in this area.

To obliterate the traces of recent construction a campaign of grass and creeper growing has been undertaken. The camouflage of the strips themselves is still the main difficulty owing to lack of materials, transport, and labour. Progress has, however, continued and the personnel trained at the Camouflage School at Calcutta will ensure that units and formations themselves do their utmost to organise their own camouflage.

BALLOON BRANCH To carry out its additional commitments, already enumerated in Part II of this Despatch, additional organisation has been necessary in the Balloon Branch. Since nearly two thirds of the proposed Five-Squadron establishment will be manned by Indian airmen, personnel have been obtained largely from Indian sources. They have been trained as balloon operators at the Technical Training School, which, established in May, has absorbed the Training Centre at Baroda, For hydrogen workers facilities have been arranged for a final course at Calcutta on hydrogen compression. The main personnel difficulty has been not so much in procuring airmen as in training them in their respective duties.

Balloon protection for sixty Merchant vessels and twelve Fleet Auxiliaries involves the provision of 144 balloons with appropriate inflation gear, hydrogen cylinders, and personnel. Owing to the particular requirements of this task Shore Servicing Sections have had to be established at the four main ports - Bombay, Madras, Calcutta, and Vizagapatam, with a Shore Servicing Unit at Bombay to act as Headquarters of the Convoy Protection Scheme. Pack-ups of equipment have already been despatched to their various destinations, personnel sent to man the Shore Servicing Sections, and selected N.C.Os. trained to handle equipment aboard, so that they will be able to instruct airmen taking part in the operations. These "Sea Rover" Pack-ups, quite apart from Convoy protection, can be used by beach assault balloon parties during amphibious operations.

All hydrogen manufacture and compression is undertaken in the Command, and four Hydrogen Compressor Units have been formed. Compressor plants have already been established at Rishra and Bangalore, but the plant for the Trincomalee Unit has been held up temporarily for lack of transport from Calcutta.

FLYING CONTROL At the beginning of 1943 Flying Control, apart from a small peace-time civilian organisation, was practically non-existent in the non-operational areas of a Command in which, owing to the primitiveness of many of the new airfields and the general lack of communications, some system of control was vitally necessary. In operational areas Flying Control posts had been established, but there were no personnel available to man them. The R.A.F. had agreed to take over the Flying Control of civil aircraft; and to this end all possible civil radio facilities were made available to the Royal Air Force, and twenty-five civil aerodrome officers, with no experience of R.A.F. control systems, were due to be commissioned in the Indian Air Force for Flying Control duties. But lack of trained personnel and adequate equipment was so great that the 10th U.. S.A.-A.F., being unwilling to pool their own resources, had instituted their own system of control.

The manpower shortage made it difficult to procure personnel. By employing permanently unfit and (on a temporary basis) surplus aircrew, and by detailing those A. and S. D. officers, both British and Indian that could be spared for Flying Control duties, it eventually became possible to fill the courses at the newly-formed School of Flying Control (Karachi), which began operating in the middle of June. On an average outputs from the school have been about twenty per month, and by detailing surplus navigators in the Command it is hoped ultimately to raise the output to fifty per month. By September about 100 officers and N.C.Os. had been trained, but over 150 officer vacancies and 200 N.C.O. Air Field Controller vacancies still remain to be filled. Trained personnel have been posted so far mainly for reinforcement route duties.

Flying Control has been organised on a Section basis in the Command. Sections are of various types, depending on the facilities required and whether day or night flying is comtemplated. They comprise Control Officers, Airfield

Controllers, crash crews, airmen of the watch, flare parties, and look outs, and are provided with M.T. Thirty-five such Sections have been formed to cover the reinforcement and transport routes, and forty sections, all of which will be fully mobile, for Flying Control in operational areas. In addition, arrangements have been made for the provision of Flying Control at captured airfields, and complete sections have been formed specifically for assault duties and equipped with mobile radio equipment for local control and point-to-point communication, complete sets of ground signals, and a complete portable flare path and generator, manufactured locally and fitted on a Jeep.

Development has been hindered by the total absence of teleprinter circuits, all Flying Control messages having to be passed by W/T which, despite the extensive point-to-point network that has been built up, is considerably slower. Another limiting factor has been the lack of cable for instituting standard airfield lighting throughout the Command. The position is, however, improving, and already it seems likely that the 10th U.S.A.A.F. will agree to pool resources, initially in the Karachi area. When the integration of the British and American Forces in the South East Asia Command takes place, Flying Control facilities in this Command should improve still more.

METEOROLOGICAL SERVICES

The increasing scale of the offensive over the difficult hill country on the Eastern frontier, where mist and low cloud are common, and over the Bay of Bengal, which is liable to cyclonic depressions and disturbances, has made it essential that accurate meteorological information should be available to aircrews if their attacks are to succeed and their lives not be unnecessarily risked. The expansion of Meteorological services has, however, been hindered by the fact that no less than three separate organisations, namely the Indian Meteorological Department and the Meteorological branches of the R.A.F. and U.S.A.A.F., are responsible for weather forecasts in India.

This main difficulty has to some extent been solved by the formation of the Meteorological Committee (India) to co-ordinate the parallel development and technical procedure of Service and Civil Met. Organisations.

This committee has succeeded in eliminating a large amount of duplicated weather reports over the Trans-India route. It meets regularly and ensures that the same coding procedure is used for all weather reports throughout India. Another difficulty has been the dearth of trained personnel. At the beginning of the period the Royal Air Force Met. Branch comprised fifteen officers and nine other ranks, and the I.A.F. Met. Branch fifteen officers and twenty-three other ranks. By the end of November the former had increased to eighteen officers and nineteen other ranks, the latter to twenty officers and fifty-four airmen, a certain number of these being provided by transfer from the India Meteorological Department. Training of all these personnel has taken place at the Meteorological School at Ambala, and limited elementary training for I.A.F. personnel at the School of Eastern Warfare at Poona. The ~~I.A.F.~~ India Met. Department still maintains a fairly extensive organisation in non-operational areas, and has formed seven new forecast centres during the period.

The network of Air Force Forecast Centres has been expanded and four new centres formed since June. There are thus seventeen centres; eleven located in Bengal, five in Ceylon, and one at Jiwani on the reinforcement route from the Middle East. There is a Reporting Centre in the island base of Diego Garcia, and a Mobile Pilot Balloon unit formed to provide Met. data. for A. A. units in the Manipur Road area. The most important development, however, has been the formation of four Met. Flights (upper air temperature) located at Alipore, Delhi, Bangalore, and Ceylon. There has been delay in the formation of these Flights, and Bengal Command during the monsoon period felt their absence considerably. Blenheim aircraft, however, are being suitably modified, and it is hoped that all Flights will soon be operational.

This development has been co-ordinated with that in other theatres, and liaison visits have been made to Australia, Washington, and the U.K.

AIR-SEA RESCUE DEVELOPMENT

Owing to a shortage of Air-Sea rescue marine craft and the complete absence of squadrons whose sole function is Air-sea rescue work, operational squadrons (primarily long-range General Reconnaissance Squadrons) have been obliged to carry out all Air-Sea Rescue commitments in the Command, both for the R.A.F. and the 10th U.S.A.A.F. A division of responsibility allots specific areas to each squadron, and the whole of the Indian Ocean trade routes South of Ceylon and the Arabian Sea are now covered. Air/Sea Rescue arrangements for the rapidly expanding Fleet Air Arm component of the Eastern Fleet have become the responsibility of my Headquarters, and it is expected that coverage of the African coast outside the Mediterranean will be allotted to us as an additional task.

The development of specifically A.S.R. units has, however, gone ahead under the expanded A.S.R. Section of Air Staff and the new organisation section that deals entirely with marine requirements. Bengal Command, No. 225, and No. 222 Groups all have trained officers posted to them. Four Air Sea Rescue Units out of the twenty approved by the Air Ministry are forming, two to operate from Chittagong (one of which is for forward duty on detachment at Cox's Bazaar), one from the Dhamra River to cover the Sunderbans area at the mouth of the Ganges, and one from Turk's Head. Six marine craft have arrived, and the two Chittagong units are now up to strength. A squadron of Warwick aircraft has been approved and is expected to be operational within the next few months. This squadron will operate in detachments based on Amarda Road, the Feni Area, Ceylon, and Bombay, and ~~with~~ five Walrus aircraft will also be available to supplement the Warwicks. All these units, when they become fully operational, will relieve the burden at the moment borne almost entirely by G..R. Squadrons.

The development outlined in the previous paragraphs has been hampered somewhat by lack of personnel and ancillary equipment. Training facilities have, however, been arranged for both R.A.F. and I.A.F. motor boat crews and Safety Equipment workers. Equipment maintained by Squadrons has been checked. The nomination of officers responsible for Air/Sea Rescue work in each Squadron will ensure both that air crews are well briefed on procedure and that equipment is maintained efficiently. Signals procedure has been reorganised and ten High Frequency Directional Finding Stations have been allotted exclusively to Air/Sea Rescue work.

PART FOUR

CONCLUSION

The events recorded in this Despatch are still so close in time that it is difficult to view them with the dispassionate gaze of a historian. The formation of South East Asia Command is, however, so decisive a landmark in the development of air power in India since the war began, that it is reasonable to recapitulate some aspects of our progress.

Since the Japanese declaration of war, the Air expansion has perhaps been greater here than in any other theatre. When our forces came out of Burma eighteen months ago the Air Force was in a parlous state. We had about fourteen battle-weary squadrons, most of them sadly depleted and many with obsolete types of aircraft and with few reserves behind them. Batches of Air Force personnel, disorganised and unequipped, had contrived to escape to India after our defeat in Malaya and the Dutch East Indies. Apart from the Burma Squadrons there was only the handful of obsolete service aircraft and converted air liners that had composed the former Air Forces in India. A small and out-of-date maintenance organisation, designed to keep the handful of watch and ward squadrons together on the North West Frontier, existed in the North West, many hundreds of miles from the scene of operations east of Bengal. India was threatened in the North West, the North East, and in the South, and our limited resources had to be stretched to meet any contingency.

Since that black period much has been achieved. On Easter Day 1942 our Hurricanes beat off the naval bombers despatched from the Japanese Battle Fleet to attack Ceylon. Then came the monsoon, which gave us four or five vital months in which to consolidate our position. The record on the previous pages shows that this respite was not wasted, for in these months were laid the foundations upon which our

present strength is based.

There are now 285 airfields complete and ready for operations, of which no fewer than 204 possess one or more all-weather runway. A maintenance and training organisation has been built up with a view to still greater expansion. Squadrons have been re-equipped with more modern aircraft, and our Order of Battle now musters some sixty squadrons, plus many ancillary, training, repair, and administrative units behind them.

This unprecedented expansion has played a vital part in the defence of India. Apart from a few isolated raids on the Calcutta area and the East Coast ports, the cities of this country have not yet known what air bombardment means - in the sense that the peoples of the West know. No seaborne raids have ever been directed against the coastline, and on the Eastern frontier the enemy has been held back and forced to fight on Burmese territory. The future course of the war in the East will depend to a large extent on India's capacity and stability as a base; much has been done in the past two years to increase this capacity and secure this stability.

The formation of South East Asia Command has also brought about the much-needed integration of the American and British Air Forces in India. With the Middle East and North African amalgamation as a model our respective staffs are endeavouring to make the integration so effective that the British and American Forces will become a single striking force under iniform operational control. Plans are already being put into effect for the division of most of the units in Bengal and Assam into a Strategic and a Tactical Air Force. Supply dropping and airborne forces commitments will be regulated by a Troop Carrier Command, photographic reconnaissance by the new Photographic Reconnaissance Force.

All these components will come under the control of the newly-formed Eastern Air Command, commanded by Major-General George E. Stratemeyer, U.S.A.A.F., with Air Vice Marshal T. M. Williams as his Deputy Air Commander. At all levels from Air Command Headquarters downwards there will be an exchange of British and American Staff Officers and, as far as possible, uniform methods of signalling and reporting and a pooling of available services.

Mention has already been made of the new Air Headquarters, India Command, into which the Inspectorate General of the Indian Air Force has been absorbed. Other planning includes the formation of three new Groups; a maintenance Group to co-ordinate maintenance activity in Eastern India, and to relieve No. 226 Maintenance Group of responsibilities which geography has made it difficult to fulfil, a new Transport Group to develop internal trunk lines in India, and to control all aircraft ferrying activities, and the new No. 231 Heavy Bomber Group which will control the Royal Air Force component of the Strategic Air Force.

I have already mentioned our urgent need of an increasing flow of the most modern aircraft. Spitfires have established incontestable superiority over Japanese fighters since they were first used in India at the end of October. Mosquitoes are now indispensable as photographic reconnaissance aircraft and for long range offensive action against the enemy lines of communication. There is moreover our requirement of reconnaissance aircraft capable of covering Malaya from Ceylon, and of Transport aircraft in large numbers to maintain our own lines of communications. When the flow of aircraft increases, and the favourable course of the war in Europe makes it probable that this will happen soon, our capacity to wage air war effectively will be more than doubled.

In conclusion I should like to express my very real gratitude for the constant help and advice that I have received from H.E. General Sir Claude Auchinleck and his Senior Staff Officers. It is with great regret that we leave his Command. In particular I should like to record my appreciation of the work of Major General H. E. Roome, C.B.E., M.C., Engineer-in-Chief, G.H.Q., India, and Brigadier W.E. Hasted, C.I.E., C.B.E., D.S.O., M.C., Deputy Engineer-in-Chief. My thanks are also due to Major General F.J. Alfieri, D.Q.M.G.(Air), for his help and co-operation.

I must also express my especial gratitude to Mr. C.M. Trivedi, C.S.I., C.I.E., O.B.E., I.C.S., Secretary of the War Department, and Mr. S.N. Russell, O.B.E., I.C.S., Additional Deputy Secretary, War Department; and to Sir James Pitkeathley, K.C.I.E., C.M.G., C.B.E., D.S.O., Director-General of Aircraft Production, Supply Department, and Mr. A.A. Waugh, C.S.I., C.I.E., I.C.S., Secretary of the Supply Department.

Numerous civilians and officials of provincial governments have performed invaluable service to the Air Forces in India, notably the late Sir John Herbert, Governor of Bengal.

The names of officers and airmen of this Command upon whom I recommend that various honours and awards be conferred are attached. These names have already been submitted to His Excellency the Commander-in-Chief for inclusion in his despatch.

R. E. Peirse

22nd March, 1944.
Air Command, South East Asia.

Air Chief Marshal,
Allied Air Commander-in-Chief.

RECOMMENDATIONS FOR HONOURS AND AWARDS

DESPATCH ON OPERATIONS AGAINST JAPANESE

for the period 22.6.43 to 15.11.43.

C.B.	A/Cdr.	A. GRAY, M.C.	
C.B.E.	Brig. Gen.	C.V. HAYNES,	(U.S.A.A.F.)
O.B.E.	Col.	H.R. BUCKLEY, D.F.C.	(U.S.A.A.F.)
	Col.	C.E. COMBS,	(U.S.A.A.F.)
	A/W/C.	N.G.L. RICHARDS,	(76155).
	A/W/C.	D. GOODFRHAM,	(C.3170).
D.F.C.	F/Lt.	R.H. REEVES,	(106544).
	A/S/L.	F.D. PROCTER,	(62334).
	S/Ldr.	D.R. GIBBS,	(63471).
	F/O.	C.V. BARGH.	(NZ.40960).
	F/Lt.	R.R. WILLIAMS,	(64322).
	F/Lt.	J.V. MARSHALL,	(83286).
	F/O.	A.B. DUNFORD,	(119837).
	F/Lt.	J.B. WALES,	(44516).
D.F.M.	F/Sgt.	B. CHRISTISON,	(1311836).
MENTION	A/G/C.	C. TURL, OBE., DSM.,	(35020).
	F/Sgt.	W. PATTERSON,	(591463).
IN	F/O.	H.E. ROTHWELL,	(Aus.403379).
	P/O.	C.R. HALL,	(Aus.402502).
DESPATCHES.	F/Lt.	M. LAWSON/SMITH,	(88042).
	W/Cdr.	A. GRIMES,	(MVAF.728).
	Cpl.	J. SEDDON,	(1406305).
	F/Lt.	A.D.M. DOUGLAS,	(110328).
	F/Lt.	R.G.M. WEDDERBURN,	(87993).
	P/O.	L.E. HILL,	(144182).
	Cpl.	G.G. McCULLOCH,	(549288).
	Cpl.	H.J. DENNING,	(629133).
	Sgt.	R.H. GOLDSWORTHY,	(568673).
	Cpl.	G.W. KEEP,	(1243234).
	A/F/Lt.	A.R. HOGBEN,	(12993).
	W/Cdr.	H.D. CLEVELY,	(72627).
	Sgt.	W.R. MEW,	(1184351).
	Sgt.	C. WALTON,	(1258364).
	Cpl.	H. HANKIN,	(1195805).
	A/W/C.	J.P. HOPKINS, DFC.,	(37668).
	Cpl.	J. CLAYTON,	(529958).
	W/O.	W.F. JOHNSON,	(Ca.740).
	Cpl.	N. MATHEWS,	(1013674).
	Cpl.	R.S. RAMSAY,	(536171).
	F/Lt.	H.A. CLINTON,	(84880).
	Cpl.	E.E.G. MILLER,	(1212256).
	A/W/C.	A.T. RICHARDSON,	(61114).
	LAC.	J.H. RAINS,	(1501163).
	A/W/C.	E.N. LOHMEYER, DFC.,	(78328).
	Cpl.	R. SHIELD,	(1009510).
	W/Cdr.	T.M. BUCHANAN,	(33159).
	F/Lt.	D.J.E. MANN,	(44293).
	LAC (ACU)	L.T. JUDD,	(1280130).

MENTION IN DESPATCHES

F/O.	J.D. HASSELL,	(119742).
Cpl.	H.L. WINDER,	(1326383).
Cpl.	R.B. HAWTHORNE,	(1496439).
LAC.	W.C. KEMP,	(1472281).
A/F/L.	W.R.S. EDGELOW,	(100758).
LAC.	G.G. PANTRY,	(958662).
Sgt.	J.G. CHEW,	(614944).
LAC.	T.V. IRWIN,	(967277).
LAC.	C.E. COOK,	(1202210).
ACl.	S. DAWSON,	(1479929).
Cpl.	E.L. HARVEY,	(1123707).
A/S/L.	E.W. COMINS,	(84359).
A/G/C.	R.L.C. FISHER,	(14241).
F/Lt.	J.C. LAWRENCE,	(73972).
A/W/C.	A.D. McLAREN, D.F.C.	(41440).
A/S/L.	R.W. HOLBERTON,	(Aus.404482).
A/S/L.	W.L. CROSSING, DSO., DSC.,	(117050).
Sgt.	G.B. DOWNIE,	(649934).

APPENDIX I.

AIR FORCES IN INDIA.

Commands as at 21 June, 1943.

AIR HEADQUARTERS, NEW DELHI, INDIA.

Air Chief Marshal Sir Richard E.C. Peirse, K.C.B., D.S.O., A.F.C.

Deputy A.O.C-in-C. - Air Marshal Sir Guy Garrod, K.C.B., O.B.E., M.C., D.F.C.

Air Officer on Special Duty - Air Marshal Sir J.E.A. Baldwin, K.B.E., C.B., D.S.O.

Senior Air Staff Officer - Air Vice Marshal J.W. Baker, C.B., M.C., D.F.C.

Air Officer Administration - Air Vice Marshal A.C. Collier, C.B., C.B.E.

Chief Maintenance Officer - Air Commodore O.E. Carter, A.F.C.

Principal Medical Officer - Air Commodore D'Arcy Power, M.C.

Other Formations.

Formation	Function	Air Officer Commanding.
Air H.Q. Bengal, Barrackpore.	Control of Nos. 221 & 224 Groups.	Air Vice Marshal T.M.Williams, O.B.E., M.C., D.F.C.
No. 221 Group, Calcutta.	Heavy and Medium Bombers and the defence of Calcutta.	Air Commodore H.V.Rowley.
No. 224 Group, Chittagong.	Fighters and Night bombers.	Air Commodore A.Gray, M. C.
No. 222 Group, Ceylon.	G.R. Operations and defence of Ceylon.	Air Vice Marshal A. Lees, C.B.E., D.S.O., A.F.C.
No. 225 Group, Bangalore.	G.R. Operations and defence of South India.	Air Commodore P. H.Mackworth, D.F.C.
No. 223 Group, Peshawar.	Operations on the N.W. Frontier.	Air Commodore H.J.F.Hunter, C.B.E., M.C.
No. 226 Group, Palam, Delhi.	Control of Repair and maintenance Organisations.	Air Commodore L.M. Iles, C.B.E., A.F.C.
No. 227 Group, Bombay.	Technical, non-technical and flying training	Air Commodore F.J. Vincent, C.B.E., D.F.C.
H.Q. Indian Expeditionary Force.	Seaborne attack on Burma.	Senior Air Staff Officer of Air Force Component. Air Commodore F. J.W.Mellersh, A.F.C.

APPENDIX II.

AIRCRAFT AVERAGE MONTHLY STRENGTH

ACCORDING TO ROLE AND PERCENTAGE SERVICEABILITY

JUNE TO NOVEMBER 1943

BENGAL	June	July	Aug.	Sept.	Oct.	Nov.
Fighters & Fighter Bombers.						
Average strength	183.3	173.6	135.3	158.4	173.3	206.5
% Serviceability	73.0%	71.8%	69.8%	67.6%	67.0%	75.5%
Bombers.						
Average strength	80.1	92.1	92.3	95.7	87.3	82.2
% Serviceability	58.6%	66.1%	68.3%	52.7%	65.3%	70.3%
G.R. Transport & P.R. Squadrons.						
Average strength	66.8*	62.3*	33.8	35.6	41.6	37.8
% Serviceability	58.5%	63.7%	69.5%	59.0%	55.5%	56.6%

* Nos.99 and 215 Squadrons should be regarded as G.R. for June and July, though they are really bomber squadrons.

GENERAL COMMENTS:

Fighters and Fighter-Bombers

(S. E.) At the commencement only Hurricanes and one Squadron of Mohawks were operating. By the end of the period, two squadrons of Spitfires were operating (i.e. 607 and 615 Squadrons from middle of October).

(T. E.) Beaufighters (Coastal) increased from one to two squadrons (9th September).

Bombers

99 and 215 (Wellington) carried out a greater proportion of sea recces during the first two or three months. Gradual increase in the number of bombing sorties particularly during October and November.

Vengeances. One squadron was operating at the commencement, but this was increased to three squadrons which were moved into forward areas as necessary. All three were forward at the end of the period.

Three squadrons of Blenheims were operating at the commencement, but the Blenheim effort gradually died out as the squadrons were moved away for re-equipment. The last squadron left at the end of August.

Liberators. Only one squadron was operating, and its serviceability remained consistently low. It is believed that this is due to changes in armament being carried out at the unit, and to the fact that the squadron was obliged to "carry" a number of unserviceable aircraft, which were subsequently transferred to the Conversion Unit.

APPENDIX III.

THE TOTAL AIRCRAFT IN INDIA COMMAND On:-

Aircraft	23rd June, 1943. At Flying Units.	Under repair or in Storage.	Total.	17th Nov. 1943. At Flying Units.	Under repair or in Storage.	Total.
Hurricane	344	323	667	445	643	1088
Spitfire	8	5	13	60	93	153
Mohawk	15	53	68	14	51	65
Beaufighter	27	63	90	71	92	163
Beaufort	33	30	63	37	59	96
Blenheim	91	119	210	64	165	229
Mosquito	--	2	2	9	3	12
Mitchell	2	--	2	4	--	4
Lysander	10	34	44	6	35	41
Auster	--	--	--	--	4	4
Vengeance	121	316	437	185	387	572
Liberator	15	5	20	51	18	69
Halifax	--	--	--	2	--	2
Lancaster	--	--	--	2	--	2
Wellington	31	73	104	58	102	160
Dakota	26	3	29	91	9	100
Hudson	70	53	123	44	73	117
D.C. 2 & 3	3	13	16	--	8	8
Catalina	60	--	60	55	6	61
Harvard	73	82	155	158	140	298
Anson	14	11	25	45	37	82
Misc.	172	153	325	184	189	373
	1,115	1,338	2,453	1,585	2,114	3,699

APPENDIX IV.

COPY OF PERSONAL SIGNAL FOR C.A.S.

FROM AIR CHIEF MARSHAL SIR RICHARD PEIRSE.

You will be aware of somewhat discouraging result of our first encounters with Japanese on bomb raids Chittagong and Imphal at opening of batting season. Japanese followed usual plan of bringing in formations of 20 plus bombers escorted by ten or dozen fighters at 20,000 to 25,000 feet. Warning although best possible under conditions failed in both cases to give Hurricane and Mohawk squadrons sufficient time to reach altitude and obtain favourable tactical position with result that we failed to break up attack or inflict appreciable casualties.

On day following second of these raids against Imphal, Spitfires in re-equipped 615 Squadron first came into action against Japanese recce aircraft "Dinah" which has performance approaching that of Mosquito. Spitfires made model interception and shot enemy aircraft down in flames over Chittagong. A second similar aircraft was intercepted and shot down into sea off same place by same Squadron yesterday. Both interceptions made at 30,000 feet, and clearly achieved full tactical surprise as well as confirming our hopes of superiority of Spitfires over best aircraft Japanese can at present bring against us.

Effect on Command has been electric. The two further Spitfire Squadrons now re-equipping should be in operation before end of month, and am confident they will cause decisive destruction if they have fair chance against Japanese bombers when they first meet them.

There will inevitably be reaction amongst Hurricane squadrons which must still form greater part of our fighter force when they have practical proof of inferiority of their aircraft and confirmation their long held conviction that if only they could be given, Spitfires like their colleagues they could make equally brilliant show.

There is no doubt in my mind that Hurricane inferior in performance to current Japanese types. Unless, therefore, I can assure a sufficient force of Spitfires to provide top cover there is little hope of Hurricanes being able to deal even with Japanese bombers. We may thus prejudice success of land/air operations this cold weather which rests on our ability to maintain favourable air situation.

New Japanese Army O.2. Fighter "Tojo" already operating in China has been initially rated by U.S.A.A.F. equivalent Spitfire VIII see our INT.360 2/Nov. If this estimate performance confirmed and production possible any numbers we shall need best type available future flow if we are to hold our own even with Spitfires.

Naturally will do utmost to maintain morale. Efficiency Hurricane squadrons remains high at present, but would earnestly enlist your support to assure me Spitfire allocations and flow as requested my A.332 9/Nov. Moreover if I can operate adequate force of Spitfires this campaigning season am convinced we can make such impression on Japanese air effort as seriously to effect whole future strategy this theatre.

(Ref: AOC.678. 12/NOV)

APPENDIX V.

DISPOSITIONS OF SQUADRONS OF THE 10th U.S.A.A.F.

JUNE

PANDAVESWAR.

9th Bomb Sq (H).B.24s(Liberators)
493rd Bomb Sq. (H). B.24s. (Liberators)
9th Photo Sq. (L)

DINJAN

25th Fighter Sq.P.40s.(Kittyhawks)
26th Fighter Sq.P.40s.(Kittyhawks)

CHAKULIA

21st Bomb Sq.(M)B25s.(Mitchells).
491st Bomb Sq.(M)B25s(Mitchells).

BISLNAPUR

436th Bomb Sq. (H). B.24s (Liberators).

ONDAL

490th Bomb Sq. (H). B.25s (Mitchells).

PANAGARH

492nd Bomb Sq. (H) B.24s (Liberators).

KURMITOLA

Det. of 11th Bomb Sq. (M) B.25s (Mitchells).

KWEILIN, CHINA

16th Fighter Sq. P.40s (Kittyhawks).

KUNMING, CHINA

11th Bomb Sq. (M) B.25s (Mitchells).

YANGKAI, CHINA

2nd Troop Carrier Sq. C.47s (Dakotas)

NOVEMBER

PANDAVESWAR.

9th Bomb Sq.(H).B24s.(Liberators)
436th Bomb Sq(H)B24s.(Liberators)
492nd Bomb Sq(H)B24s.(Liberators)
493rd Bomb Sq(H)B24s.(Liberators)
7th Photo Sq.

DINJAN

2nd Troop Carrier Sq.C.47s (Dakotas).

CHAKULIA

22nd Bomb Sq(M)B.25s (Mitchells).
491st Bomb Sq(M)B25s (Mitchells).

KURMITOLA

490th Bomb Sq(M)B25s (Mitchells).
Det. of 11th Bomb Sq. (M) B.25s (Mitchells).

NAWADIH

528th Fighter Bomber Sq.A.36s (Mustangs).
529th Fighter Bomber Sq. P.51s. (Mustangs).
530th Fighter Bomber Sq. P.51s (Mustangs).

SOOKERATING

89th Fighter Sq.P40s(Kittyhawks).
1st Troop Carrier Sq.C47s(Dakotas).

CHABUA

88th Fighter Sq.P.40s (Kittyhawks)
90th Fighter Sq.P.40s (Kittyhawks)
459th Fighter Sq.P.38s (Lightnings)

APPENDIX VI.

ESTIMATED ENEMY SCALE OF EFFORT

DURING 1943

INDIA - BURMA THEATRE

Includes attacks on YUNNAN by aircraft normally based in

BURMA, SIAM, MALAYA.

S O R T I E S

Month	Fighters	Bombers	Recces	Misc.	TOTAL
JANUARY	63	72	18	-	153
FEBRUARY	143	103	19	-	265
MARCH	308	175	38	-	521
APRIL	308	278	36	-	622
MAY	258	163	27	-	448
JUNE	16	-	3	-	19
JULY	26	-	4	-	30
AUGUST	18	-	2	9	29
SEPTEMBER	41	-	16	9	66
OCTOBER	154	62	40	11	267
NOVEMBER	240	79	31	21	371
DECEMBER	412	162	29	5	608
TOTAL	1987	1094	263	55	3399

NOTE: The period under review only extends from the middle of June to the middle of November. For purposes of comparison, details for the rest of the year have been included.

APPENDIX VII

FRONT LINE STRENGTH - INDIA COMMAND.

i.e. aircraft in units fully operational and deployed for operations.

	JUNE		NOVEMBER	
	Total Strength.	Serviceable.	Total Strength.	Serviceable.
Hurricane	229	165	195	156
Mohawk	15	14	13	10
Spitfire	--	--	48	40
Beaufighter	17	10	54	26
Blenheim	46	32	--	--
Vengeance	48	27	43	33
Beaufort	31	16	37	23
Hudson	17	12	--	--
Wellington	29	15	33	25
Liberator	15	10	28	12
Catalina	52	32	49	33
Spitfire(Photo.Recce)	8	6	10	7
Mosquito(" ")	--	--	5	3
B.25 Mitchell " "	2	1	4	2
Total	509	340	519	370

APPENDIX VIII.

SPECIAL ORDER OF THE DAY
by
AIR VICE MARSHAL T. M. WILLIAMS, O.B.E., M.C., D.F.C.
AIR OFFICER COMMANDING
BENGAL COMMAND, R.A.F.

At midnight tonight (15th November) I hand over my duties as Air Officer Commanding, BENGAL COMMAND, to Air Marshal Sir John BALDWIN, K.B.E., C.B., D.S.O.

It has been my privilege to command you for almost a year, and during this time we have been mainly engaged in building up the Command to the fine fighting force it is today. Last December and January we had to reorganise our Groups and subordinate commands to meet new operational commitments. We moved many units forward and had our first experience of operating from kutcha strips, our supply and maintenance organisation was building up, and the very extensive and complete radio location and warning system was introduced. The many burdens placed on units as a whole, and on individuals, were cheerfully borne, and all difficulties overcome. The result was that by March we had gained complete mastery in the air in our war theatre, and have retained ever since.

There followed the Monsoon period, when we confounded all the prophets, and indeed the knowledgeable people in this country, by maintaining a high scale of operational effort through the whole period. Moreover, such was the skill and determination of aircrews, and the reliability of aircraft and engines, that we only lost one aircraft in the whole period, other than from enemy action. There is no need for me to detail any of the results of our air action, since the daily bulletin gave account of it all. Suffice it to say that I consider the air action by BENGAL COMMAND during the past 12 months in denying lines of communication to the enemy will eventually prove to have been one of the deciding factors in the war out here.

Aircrews had the thrills of the chase to urge them on, we on the staff had the ordering and subsequent reporting of their sorties, but all of us realise that the successes we have had were only made possible by the magnificent work of maintenance personnel, and the whole ground organisation. In particular, I want to praise our radio location and observer corps units, who have carried on in outlying and inaccessible posts throughout the Monsoon, in many cases having to be fed by air. For these maintenance personnel, and all ground staffs, no praise is too high, and I can only say, inadequately, "Well done".

Finally, I wish to express my thanks to all ranks in the Command for the magnificent manner in which they have backed me up. I have paid many visits to my units during my period in Command, and I have always been most struck by the optimistic outlook of everyone, and the universal cheerfulness of all ranks, most particularly during the Monsoon. Many of you lived in conditions of great discomfort during the rains, but never a grouse did I get anywhere.

I know I am handing over to your new Air Officer Commanding a very formidable and determined fighting force, and I know you will serve him with all the loyalty you have shown me, which only emphasises my logical conclusion that it is all up with the Japs in this theatre.

Thank you all, and good luck.

15th November 1943.

APPENDIX IX.

I.A.F. RECRUITMENT

(AIRMEN)

Year & Month.	Demand	Supply	Percentage Fulfilled.	Strength of Air Force Officers engaged on Recruiting	
1942.					
January	218	57	26%		
February	369	113	31%		
March	678	253	37%		
April	707	240	34%		
May	964	299	31%		
June	342	348	100%		
July	482	292	60%		
August	320	242	75%		
September	228	223	9[illegible]%		
October	448	278	6[illegible]%		
November	848	279	33%		
December	1568	380	24%	5	
1943.					
January	2056	672	33%	8	
February	1953	1245	64%	16	-(Priorities authorised
March	2060	1648	80%	23	(3182/AG2(b-1) 27.1.43.
April	2750	1880	68%	34	
May	2750	2339	85%	36	
June	2750	2726	99%		
July	2750	2223	81%	37	
August	2750	2058	75%	43	
September	2775	1609	58%		
October	3100	1367	44%	46	
November	3200	1488	46%		
December	3200	1391	44%		

(A) Average monthly demand January 1942 to December 1943:

1635

(B) Average monthly recruitment January 1942 to December 1943.

980

Total Demand - 39243

Total Supply - 23650

Note: Figures outside the period June - November 1943 have been included for purposes of comparison.

APPENDIX X.

I.A.F. OFFICER RECRUITMENT

Demand and Supply - January 1942 to November 1943.

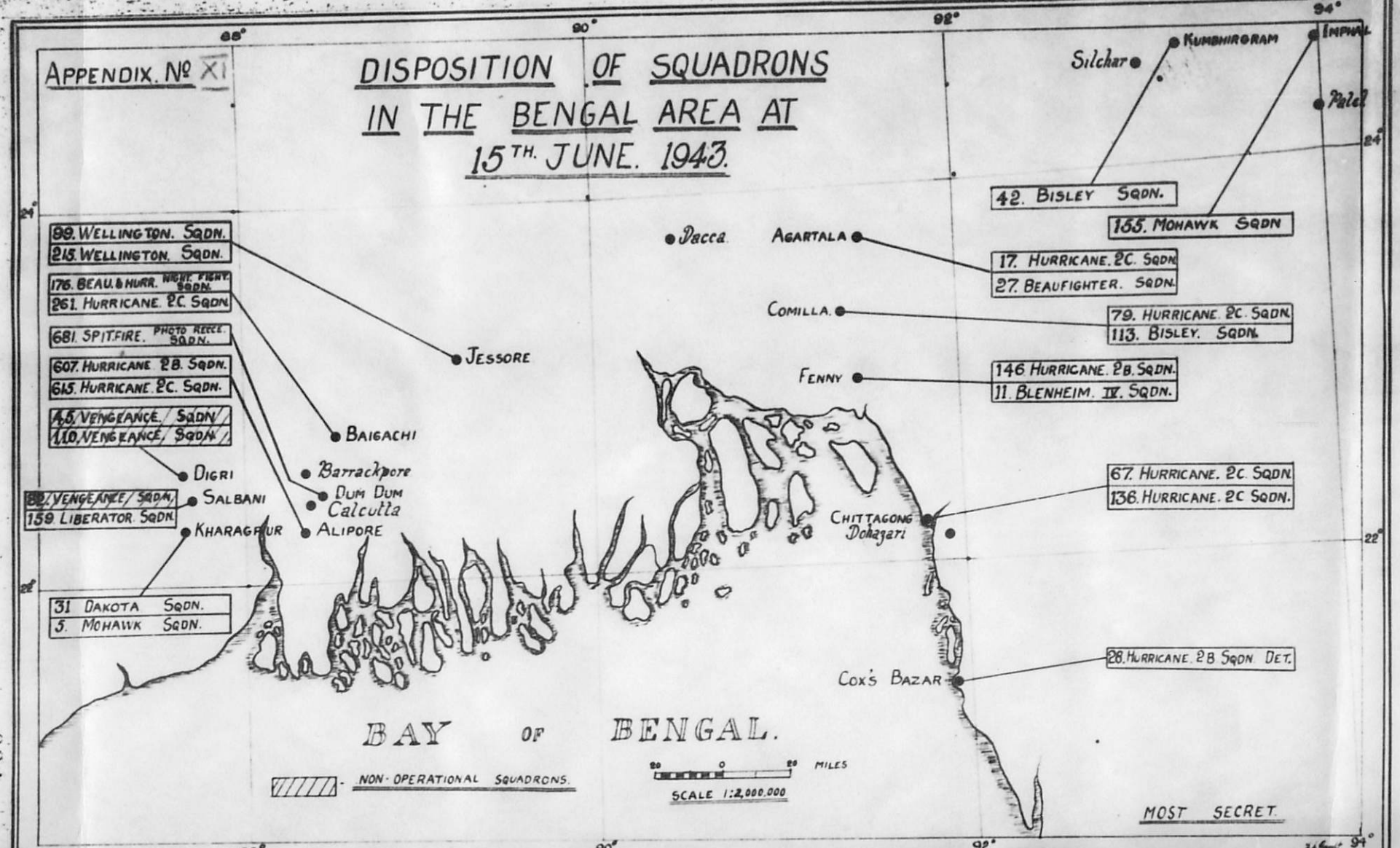
MONTH	1942					
	Branch				Total	
	G.D. Branch		A & S.D. Branch			
	Demand	Supply	Demand	Supply	Demand	Supply
January		1				1
February				1		1
March	62	64			62	64
April		18	50		50	18
May		13				13
June	62	65		11	62	76
July		20		9		29
August		34		28		62
September	100	12	30		130	12
October	50	21	30	35	80	56
November		28	30	46	30	74
December	70	7	50	53	120	60
TOTAL	294	283	190	183	484	466
AVERAGE	25	24	15	15	40	39
			1943			
January	50	20	50	88	100	108
February	50	14	50	149	100	163
March	45	32	50	89	95	121
April	45	12	70	60	115	72
May	45	19	70	34	115	53
June	45	15	67	15	112	30
July	45	9	67	14	112	23
August	45	22	67	38	112	60
September	70	9	67	7	137	16
October	70	30	67	5	137	35
November	70	56	37	10	107	66
December	70	28	80	9	150	37
TOTAL	650	266	742	518	1400	784
AVERAGE	54	22	62	43	117	65

NOTE : (i) A. & S.D. Branch includes A. & S.D. and Technical Branches.

(ii) Figures outside the June - November period have been provided for purposes of comparison.

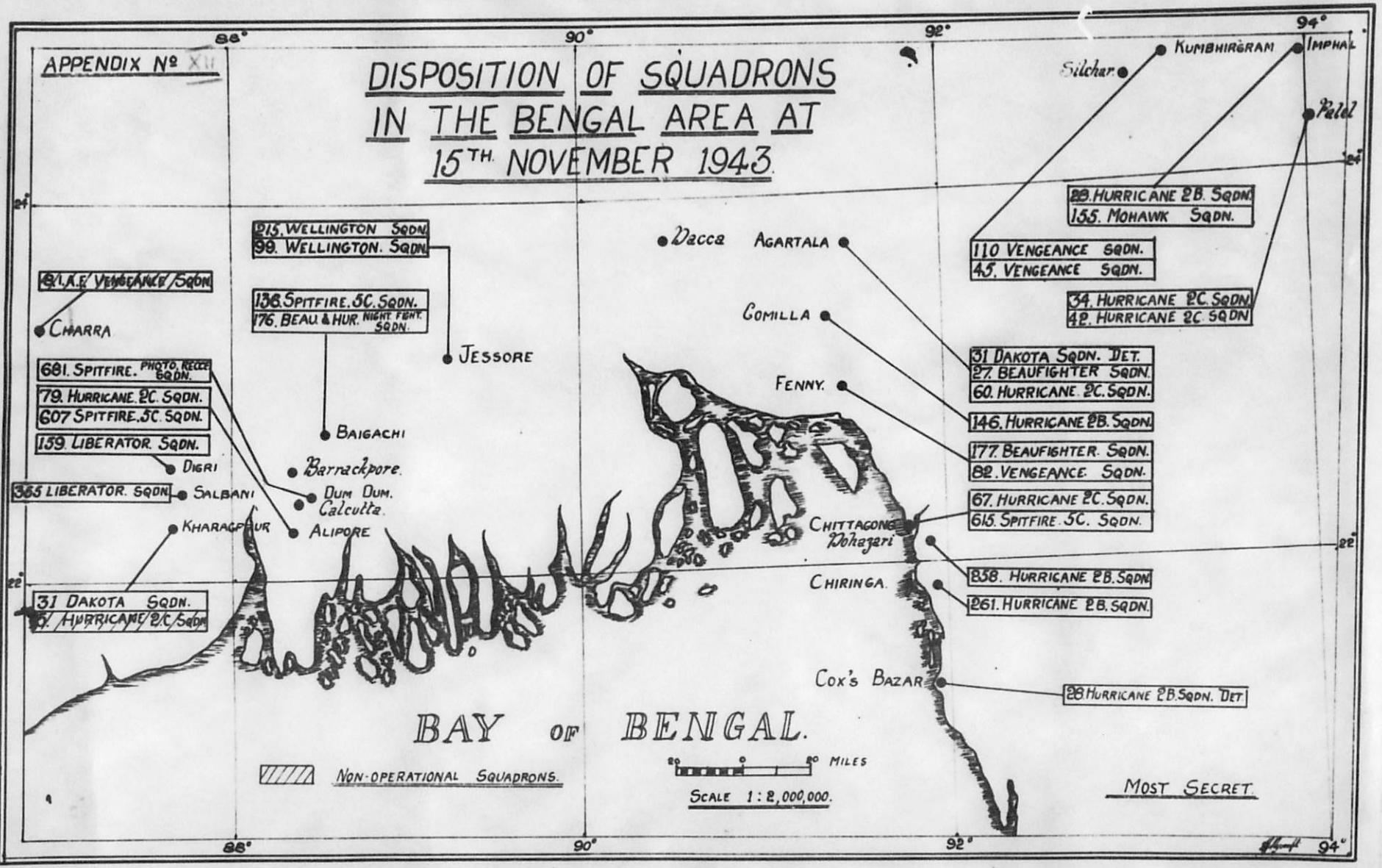
APPENDIX. Nº XI

DISPOSITION OF SQUADRONS IN THE BENGAL AREA AT 15TH. JUNE. 1943.



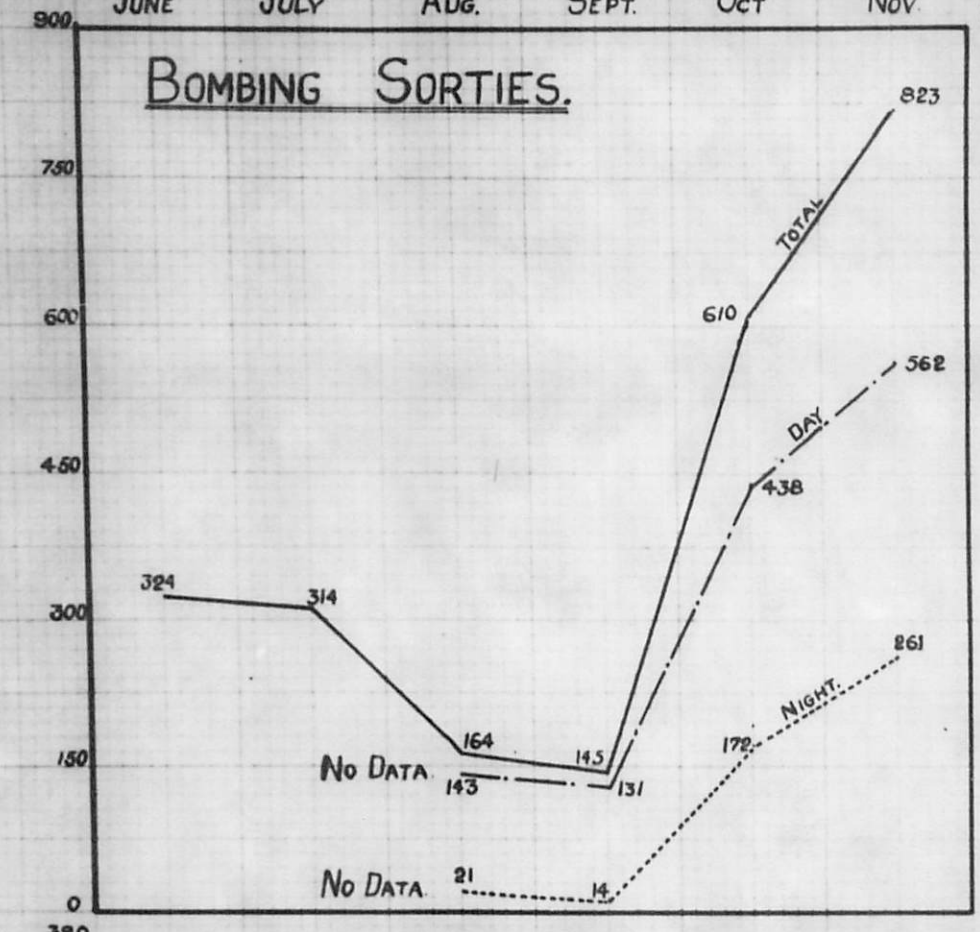
APPENDIX Nº XII

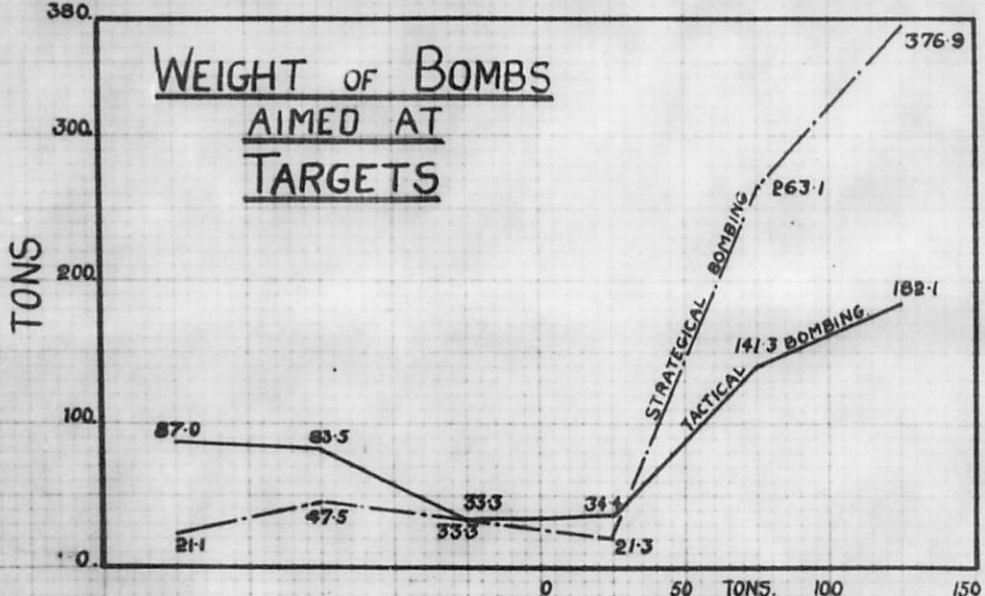
DISPOSITION OF SQUADRONS IN THE BENGAL AREA AT 15TH NOVEMBER 1943.

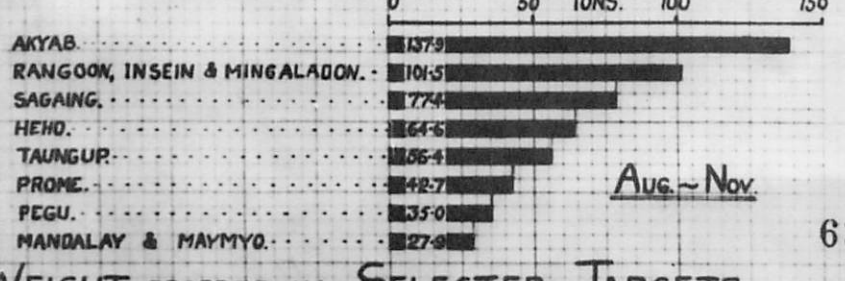


633

APPENDIX No. XIII

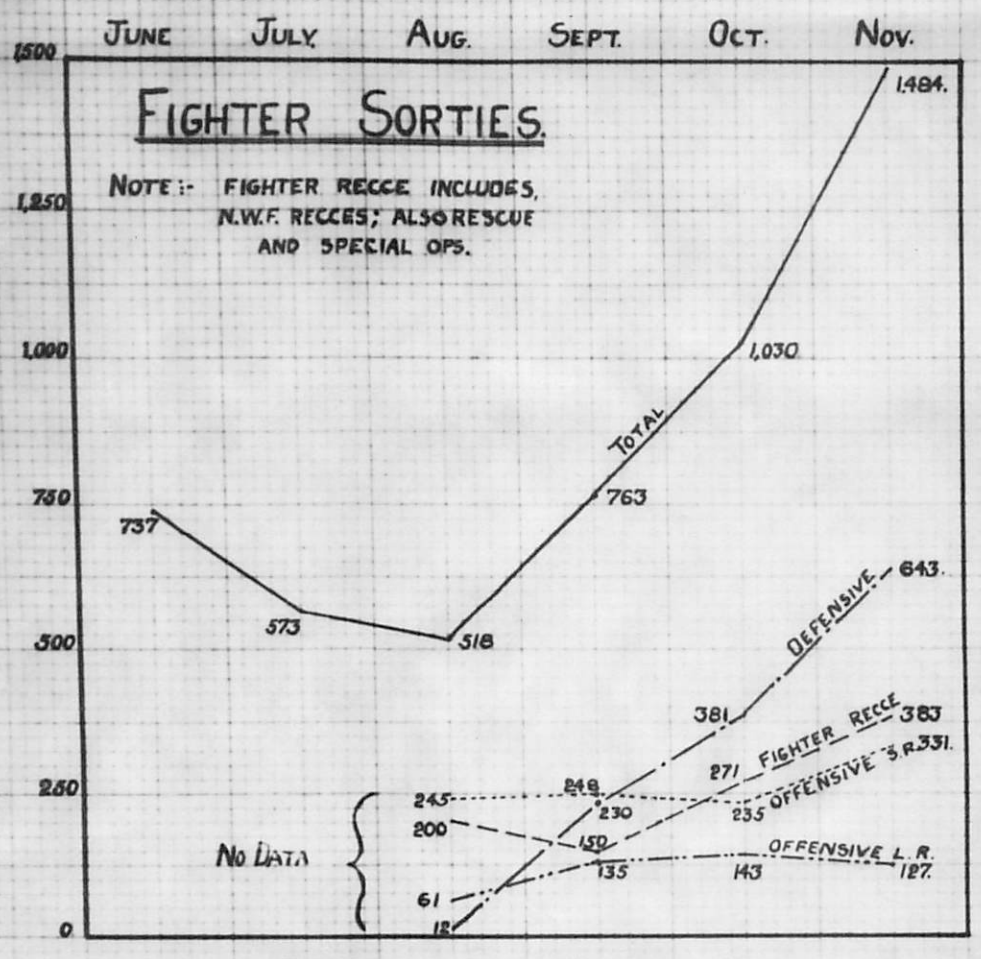


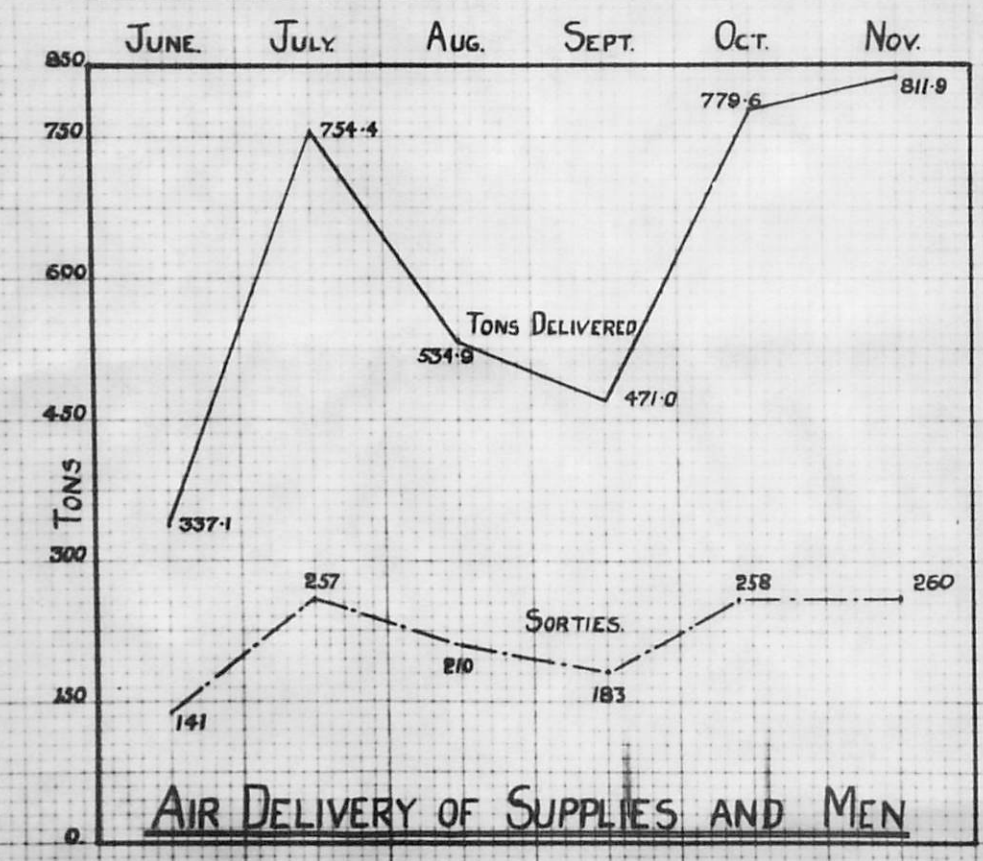




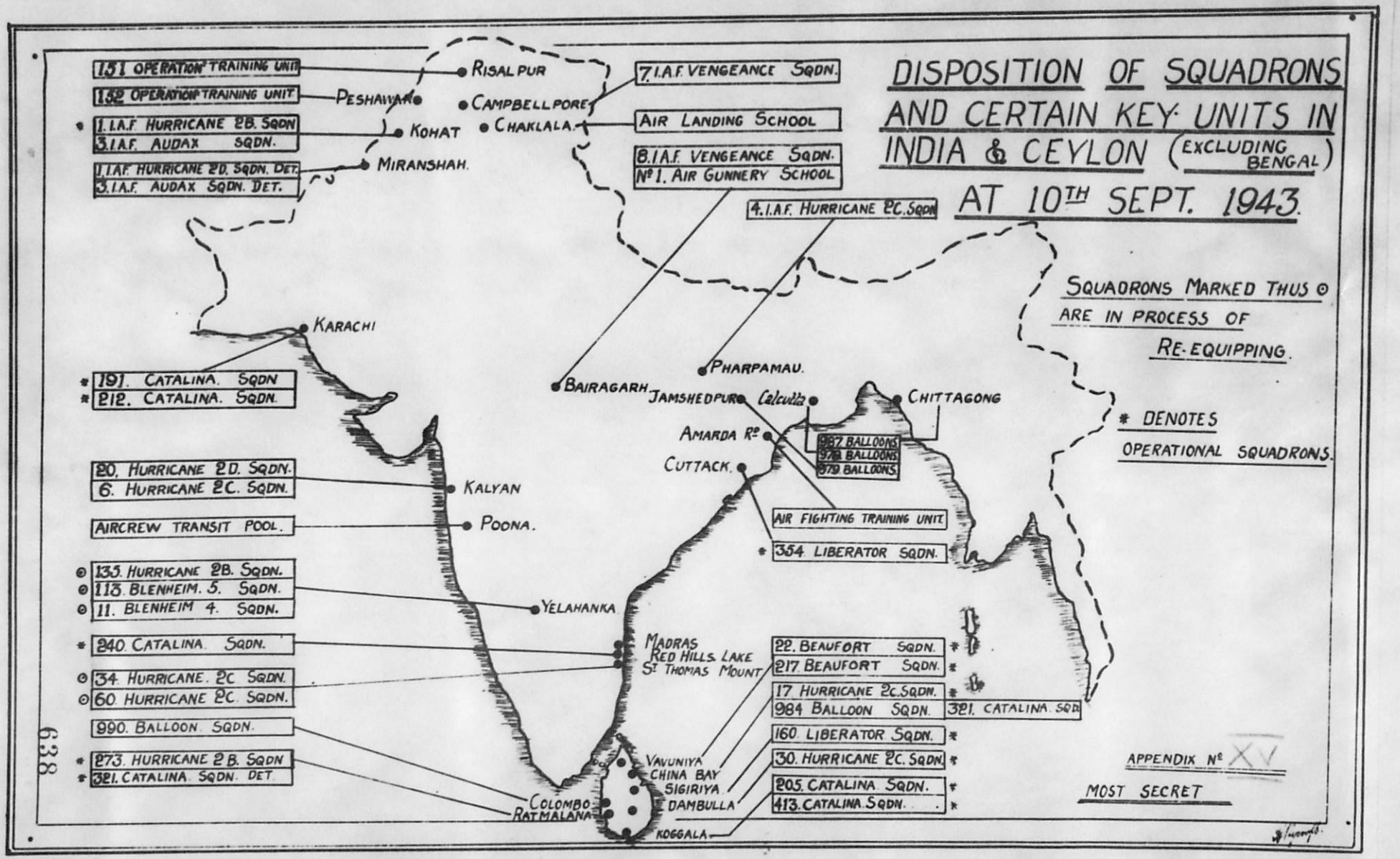
WEIGHT DROPPED ON SELECTED TARGETS.

APPENDIX XIV





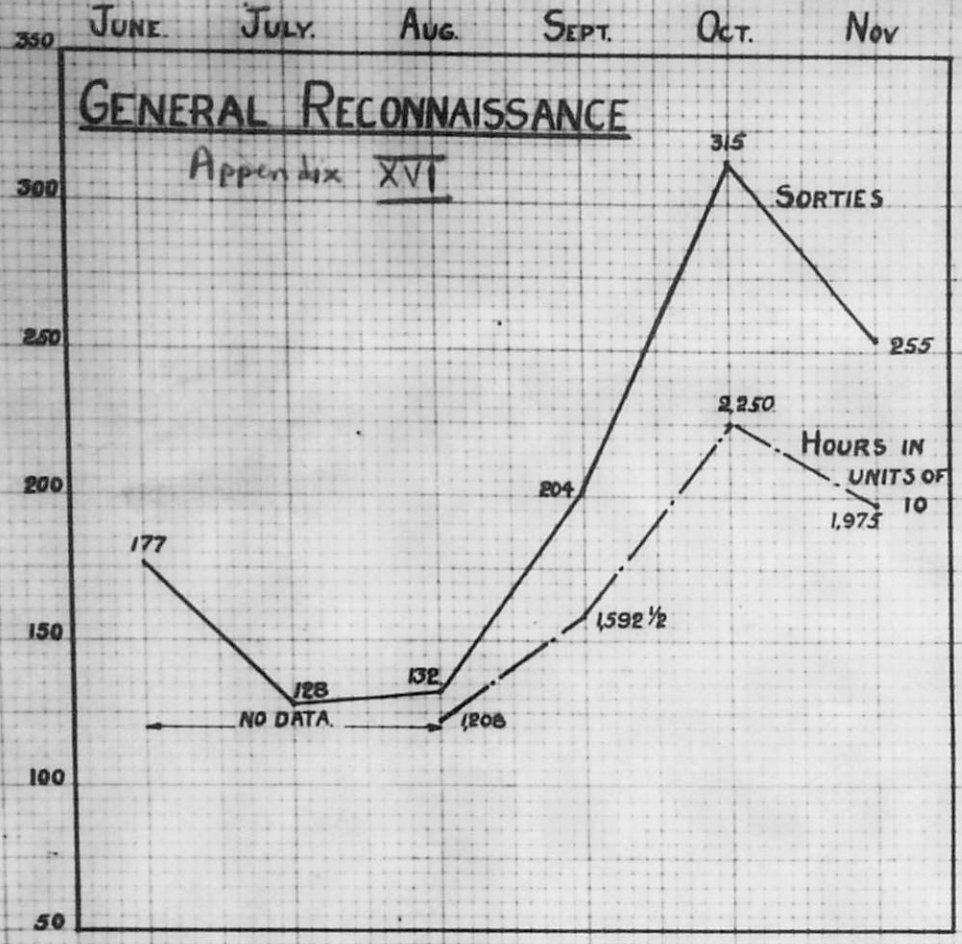
DISPOSITION OF SQUADRONS AND CERTAIN KEY UNITS IN INDIA & CEYLON (EXCLUDING BENGAL) AT 10TH SEPT. 1943.

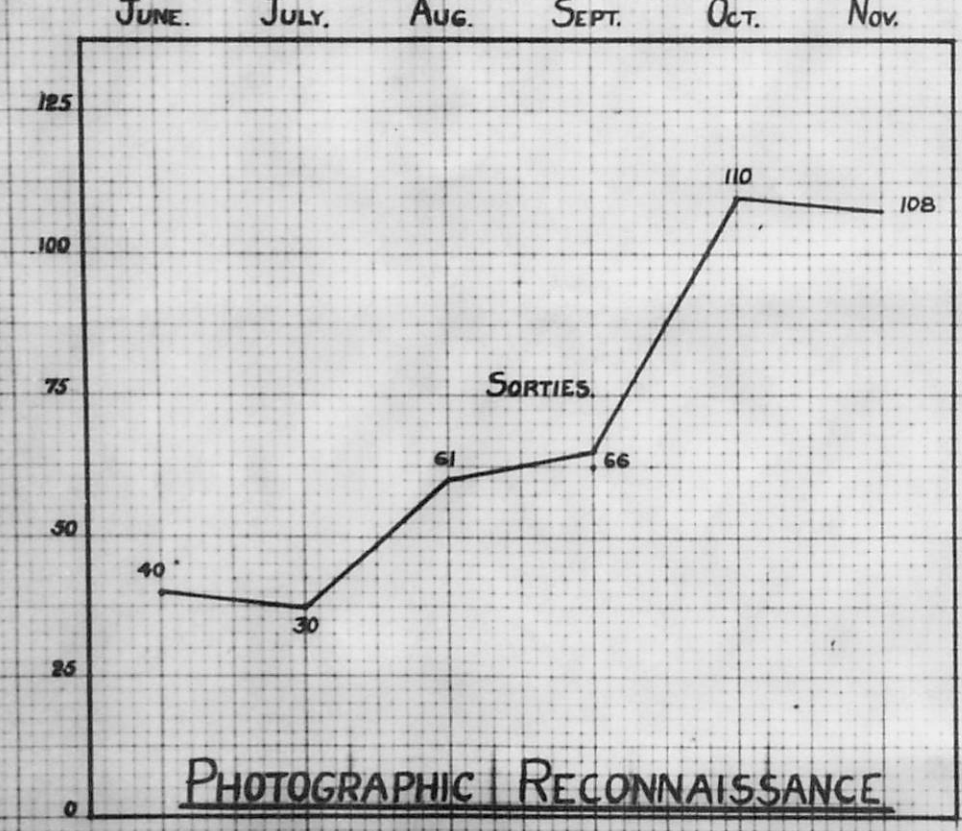


638

APPENDIX No XV

MOST SECRET


JUNE.
JULY.
AUG.
SEPT.
OCT.
NOV
350
300
250
200
150
100
50
GENERAL RECONNAISSANCE
Appendix XVI
315
SORTIES
255
2,250
HOURS IN
UNITS OF
10
1,975
204
177
1,592½
128
132
NO DATA.
1,208

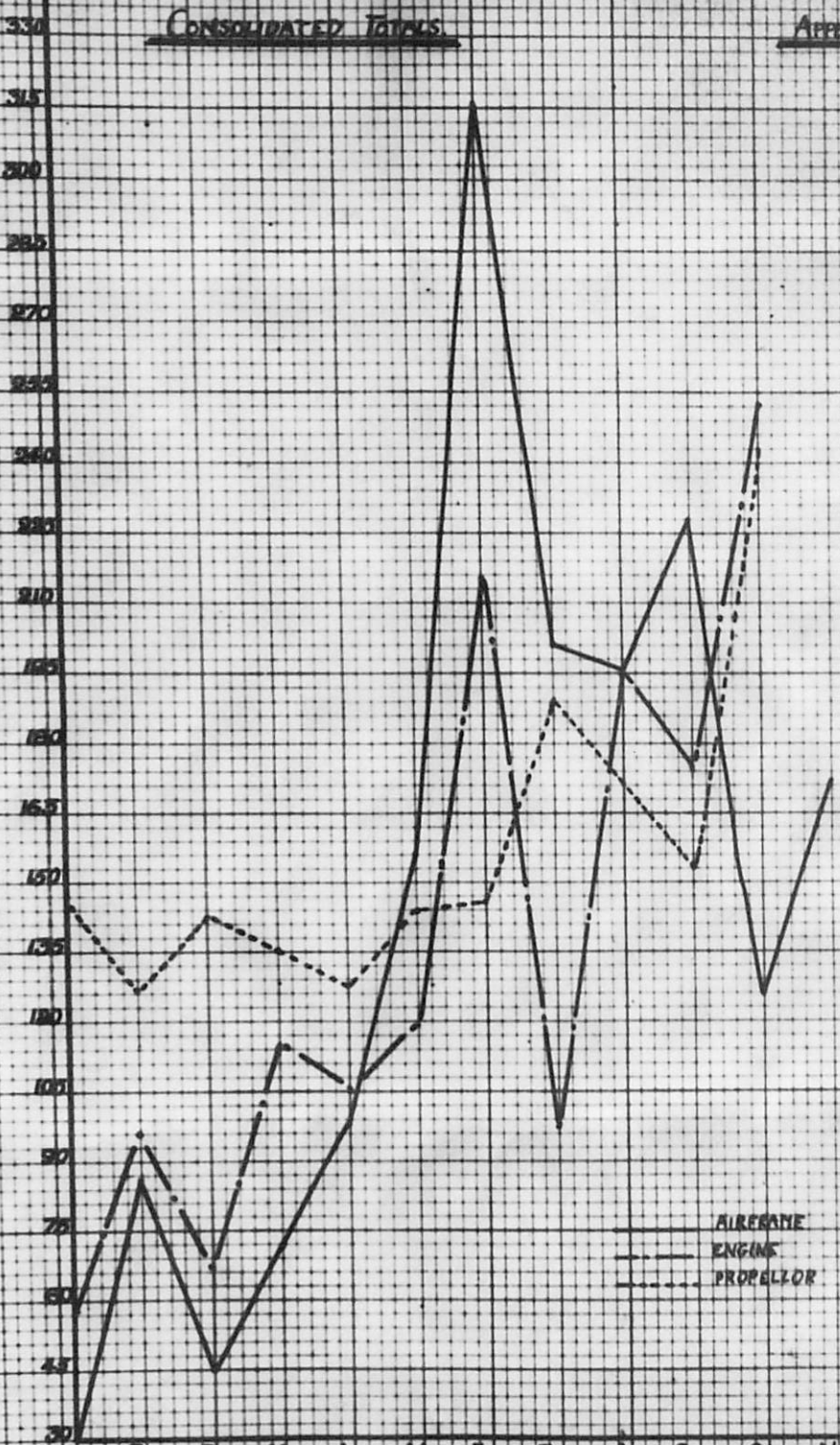

JUNE.
JULY.
AUG.
SEPT.
OCT.
NOV.
125
100
75
50
25
0
110
108
SORTIES.
61
66
40
30
PHOTOGRAPHIC | RECONNAISSANCE

MIN. SUPPLY

AIRFRAME, ENGINE & PROPELLOR REPAIR OUTPUT. DEC. 1942 - NOV 1943.

CONSOLIDATED TOTALS.

APPENDIX No. XVII



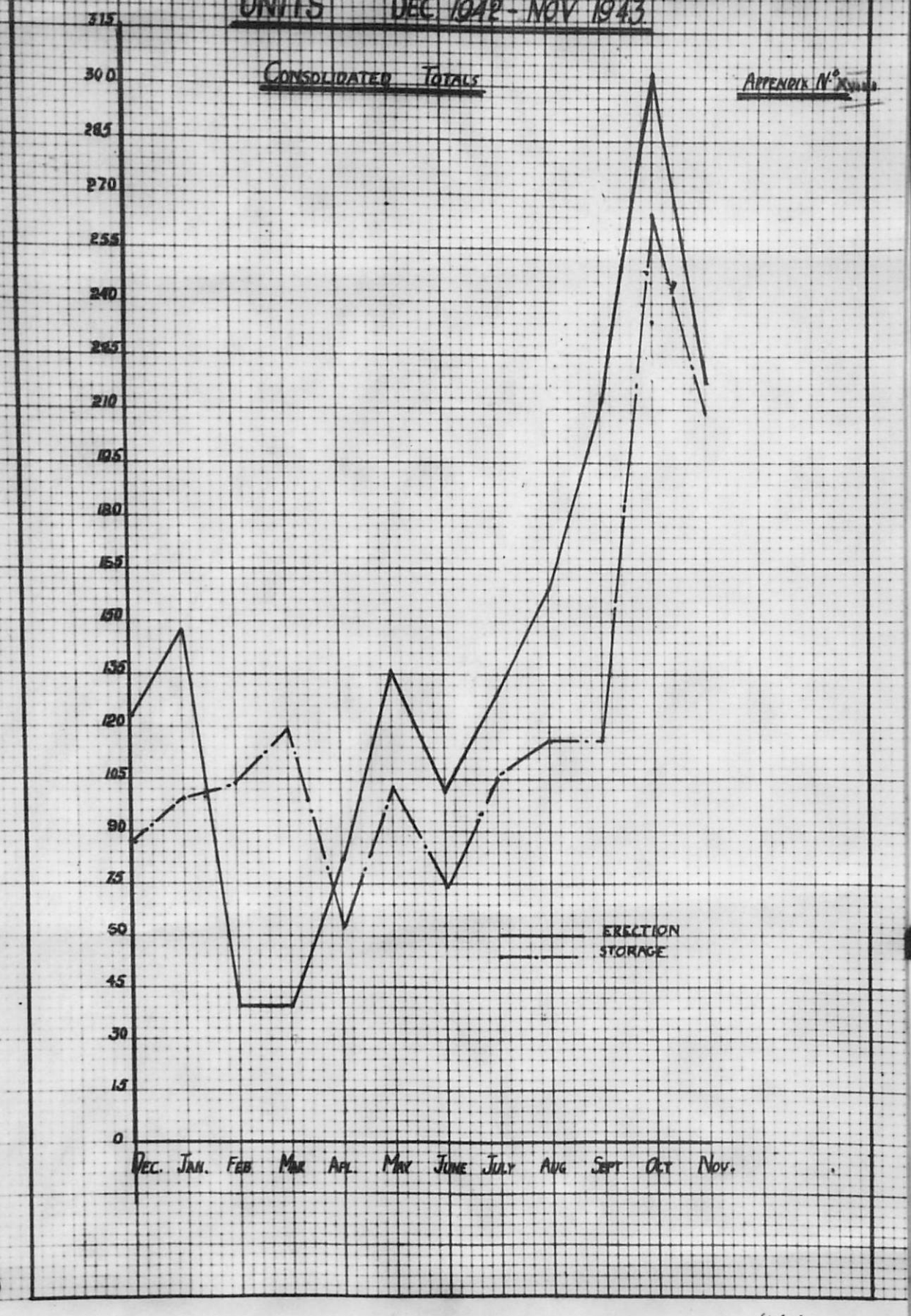
NOTE. THE NOVEMBER RETURNS FROM SEVERAL UNITS ARE NOT COMPLETE FOR AIRFRAMES IT IS THEREFORE PROBABLE THAT THE OUTPUT FIGURE GRAPHED FOR THE MONTH UNDERSTATES THE TRUE POSITION.

MOST SECRET.

OUTPUT FROM AIRCRAFT STORAGE & ERECTION UNITS DEC 1942 - NOV 1943.

CONSOLIDATED TOTALS

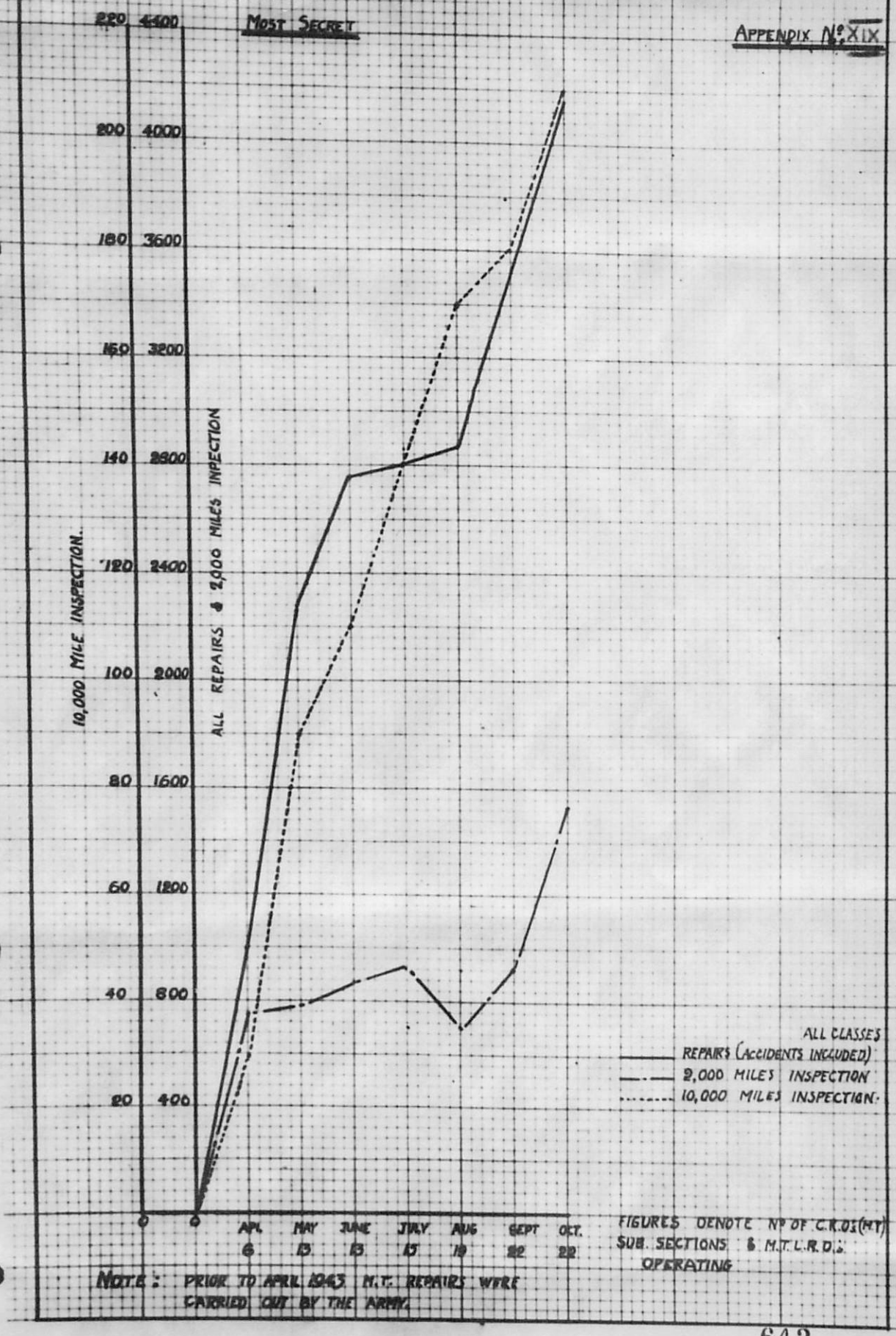
APPENDIX N° XXIII



M.T. REPAIR OUTPUT APRIL ~ OCT. 1943

MOST SECRET

APPENDIX No. XIX



NOTE: PRIOR TO APRIL 1943 M.T. REPAIRS WERE CARRIED OUT BY THE ARMY.