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ROYAL AIR FORCE
TRANSPORT COMMAND

HEADQUARTERS
232 GROUP

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A REVIEW

OF

R.A.F. TRANSPORT SUPPORT OPERATIONS

IN

THE BURMA CAMPAIGN

DECEMBER 1944 - AUGUST 1945.

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FOREWORD

The Review is an attempt to present a comprehensive and critical analysis of the conduct of British Transport Support operations in Burma in relation to all aspects. During these operations many difficulties were encountered, mistakes were made and rectified. It is not sufficient merely to state in conclusion that the operations were an undoubted success - that much is self-evident - for lessons can be learned equally from successful as well as unsuccessful campaigns. From these lessons two predominantly important points have emerged.

The first of these points is that throughout the whole campaign we suffered, perhaps most of all, from a shortage of equipment of all kinds. The extent of this shortage varied in relation to the different types of equipment used, but it was always prevelent and sometimes acute. Many of these shortages were unavoidable; the demands of a global war necessarily placed a severe strain on the nations available sources, and this is particularly so when it is borne in mind that the war in Europe was reaching its climax at the same time as the re-occupation of Burma was being effected. Nevertheless, the experience of the Burma campaign had shown that in some instances there was among those responsible for supplying us with equipment an insufficient awareness of the urgency of our requirements. The system of control in India - not enhanced by the considerable distances involved - was, and is, complicated and, at times, heartbreakingly unresponsive. These shortages were not confined to supplies alone, but in a number of ground trades also embraced personnel. It will be appreciated from the pictures painted in this Review of the effects of these shortages at Squadron level that the greatest credit is due to all air and ground personnel on our Squadrons who worked long hours in the face of countless difficulties, under unusual conditions, and in appalling weather.

The second main point to emerge is that difficulties in administration were caused by the extremely complicated system of control by higher formations in this theatre. This was particularly marked during the early stages of the campaign before the RAF. Element of Combat Cargo Task Force was given Group status. At this time reference had to be made on sundry operational and administrative matters to ACSEA, through Eastern Air Command, and to 221 Group, 224 Group, and 229 Group. This chain of command led to inevitable confusion, which was not entirely eradicated even after the formation of 232 Group when 229 Group still continued to exercise administrative control. It is considered that in the planning of any future campaigns involving Transport Support operations, simplicity of control be maintained as the keyboard of efficiency.

It is not desired to exaggerate any difficulties encountered and magnify them out of proportion. Equally so it would be undesirable to brush them aside as bagatelles. The Transport Support effort is, indeed, enhanced and its achievements appear the more remarkable when all these factors are taken into consideration. Great things

were achieved, and that numerous difficulties and obstacles were ever present and had to be overcome reflects the greatest credit on all personnel in the field. It is considered that the success of British Transport Support operations in Burma can be most aptly summed up in the following words which appeared in Eastern Air Command's weekly Intelligence Summary, No. 37 :-

"The whole campaign has been a striking illustration of a fact new in warfare - namely that air power can be used to transport, supply, and support ground troops entirely independently of ground channels. This has been South East Asia's contribution to the art of war".

Air Vice Marshal,
Air Officer Commanding,
H.Q. 232 Group, R.A.F.

REVIEW OF R.A.F. TRANSPORT SUPPORT OPERATIONS IN BURMA, DECEMBER 1944 - AUGUST 1945.

Introduction.

The experience of the military and air force commanders in the Burma theatre in 1944, as gained from the outcome of the operations then in progress, made it abundantly clear that their future aim of annihilating the enemy and recapturing Burma depended on the ability of the Air Force to supply and maintain the ground forces by air.

Up till the autumn of 1944 many difficulties, principally caused by the shortage of transport aircraft in South East Asia, necessarily limited the scale of air supply, the effectiveness of which had already been proved by the successful supplying of the Imphal garrison during the spring and early summer - a success which halted once and for all the Japanese dreams of an invasion of India.

At this time the organisation for the operational control of the R.A.F. Transport Squadrons had already been incorporated under the Third Tactical Air Force, but it was rapidly becoming evident that a separate organisation was required for the control of all Transport aircraft working with the 14th Army. Consequently it was decided that British and American Transport operations in Burma should be controlled by an integrated Anglo-American Headquarters, commanded by an American General, (Brig-General F.W. Evans), and to be known as the Combat Cargo Task Force, each Air Force providing 50% of the Squadrons. At the beginning of October a skeleton of the American Element formed in Calcutta, later in the month moving to Comilla. The R.A.F. Element of this Force was formed with effect from 2nd November, 1944 but it was not until the middle of December that the main body of Staff Officers arrived on posting from the United Kingdom, with Air Commodore J.D.[illegible] Hardman, O.B.E, D.F.C. as Commander of the R.A.F. Element and also Deputy-Commander of Combat Cargo Task Force.

A summary of the military operations from December 1944 to the end of the Japanese war and how these operations were closely supported by Transport Squadrons is given in the following Chapter, with special emphasis on the vital role played by air supply in the final defeat of the enemy in Burma. While the aim of this Review is to describe the effort of the R.A.F. Transport Support Operations, the organisational set-up, with difficulties met and overcome, it will be appreciated that in the Chapter which follows any description of the R.A.F. operations up to the fall of Rangoon must necessarily be closely allied to the attendant American Transport effort.

CHAPTER I

Summary of CCTF/232 Group Transport Support Operations in Burma in relation to the progress of ground forces.

In the autumn of 1944 two R.A.F. Transport Squadrons (31 and 62) were operating in South East Asia in addition to the American Squadrons, both having recently returned to the line after a period of training. 117 and 194 Squadrons had also been withdrawn for training after operating with excellent results during the monsoon period. By the middle of December, however, consequent upon the 1st, 2nd and 4th USAAF Squadrons being ordered to China to meet a new Japanese threat, it was found necessary to recall 117 and 194 Squadrons for resumed operations from Hathazari and Imphal respectively.

31 and 62 Squadrons were at this time based at Agartala, but towards the end of December they were brought to Comilla to operate under 900 Wing, and the American 4th Combat Cargo Group (C-46 aircraft) replaced them at Agartala. This move was necessary as no other all-weather airfield was available for C-46 aircraft. On 20th December a further Squadron, 435 (RCAF), commenced operations from Tulihal and shortly afterwards was joined at the nearby strip at Kangla by 436 (RCAF) Squadron. These Squadrons were later reinforced by the addition of 267 Squadron which had been brought from the Middle East and had valuable experience of Transport Support work.

By the end of December two Mobile Wings, Nos. 341 and 342, had arrived in India and commenced to form at Gujrat and Jharsuguda. The function of these Wings was to control and administer R.A.F. Transport Support Squadrons working with the Army in Burma. At the beginning of January, 341 Wing was ordered forward to Tulihal to control the Squadrons there and at Kangla, while towards the end of the same month 342 Wing moved to Hathazari to control 117 Squadron.

At the time of the formation of Combat Cargo Task Force the advancing troops of the 14th Army were south of Teinkaya in the Kabaw Valley and below the Manipur-Burma boundary on the Tiddim Road. By December, Tiddim, Fort White and Kalemyo had been captured and these formed a junction with elements marching down the Kabaw Valley. Jointly they cleared the Kalemyo-Kalewa Gorge and re-established a bridge-head over the Chindwin on the Ye-U Road. Meanwhile 4 Corps' divisions concentrated along the Chindwin and with rapid strides advanced in two columns - one on the Northern slopes and the other across the South Central part of the Zibyutaung Range. The Northern column joined up with elements of 36 Division, advancing down the rail corridor in the Banmauk area west of Indaw, while the Southern column captured Pinlebu and advanced in the Wuntho-Kawlin area.

So rapid were these advances that Combat Cargo Task Force Transport aircraft supplying the leading elements of these columns seldom dropped their loads twice on the same D.Z. The columns advanced and signalled back their D.Zs. for the next day, though sometimes enemy opposition or rough terrain prevented them reaching their objectives within the anticipated time. More often than not these D.Zs. were located in a jungle clearing with a cross and a 'T' made of white stones covered by brush which was removed by the troops at E.T.A. The accuracy of dropping was very high considering the difficulties encountered and it was not infrequent for congratulatory signals to be received at Combat Cargo Task Force from Commanders in the Field.

This excellent record was, however, not achieved without casualties and at the end of December four aircraft had been lost through enemy action. Again, in mid-January 1945, further losses were sustained when aircraft of 436 (RCAF) Squadron, engaged in supply-dropping in the Shwebo area, were attacked by three Oscars. Two of our aircraft were destroyed and one was damaged. Of the crew personnel, four were killed and seven injured.

With their bridge-head well established, 33 Corps began their advance on the axis of the Ye-U Road, and as 4 Corps' elements moved down from the North, they entered the Shwebo Plain to capture Ye-U. 4 Corps' troops took Shwebo by an encircling movement, attacking from the south-east. The rapid withdrawal of the Japanese continued throughout January so that nearly all the area between the Chindwin and the Irrawaddy had been cleared and troops were engaged on mopping-up operations in the triangle formed with the railway by the confluence of the Chindwin and Irrawaddy rivers.

Demands made by the 14th Army increased in proportion to the supply delivery capacity of Combat Cargo Task Force. Crews flew longer hours each day and tonnages rapidly mounted. At the same time casualty evacuation grew in scale and our Dakotas were reinforced for this purpose by Sentinel (L-5) aircraft which proved of much value in evacuating the wounded from small strips and jungle clearings.

During all these operations in North and Central Burma Combat Cargo Task Force was also busy carrying supplies to 15 Corps on the Arakan front. Protected by 224 Group Spitfires which patrolled the D.Z. areas daily, our Squadrons began drops to units moving rapidly down the Kaladan Valley, Akyab being captured without opposition, by sea-borne forces in January, followed swiftly by the re-occupation of Ramree Island. Our pilots had numerous opportunities of observing hostilities on this front and from time to time were attacked by enemy ground fire. D.Zs. were extremely difficult to locate as 15 Corps pushed further south-east into the jungle country, and navigators frequently had to resort to the "square search" procedure.

After a re-distribution of forces in January, 4 Corps marched up the Myitha Valley and successfully cleared Kan, Gangaw and Tilin, then turning south-eastwards through Pauk to Myitche on the west bank of the Irrawaddy, south of Pakokku. In early February mopping-up proceeded in this area in preparation for the hazardous crossing of the Irrawaddy and the advance on Meiktila.

Meanwhile on the 33 Corps' front, a bridge-head had been established at Kyaukyaung by the end of January, and had been consolidated by mid-February. The troops in this area then proceeded to advance past Singu towards Mandalay and by the end of February had reached a point 20 miles north of the town. On the right flank other elements moved from Monywa to Myinmu and, also by the end of the month, had established a bridge-head across the Irrawaddy approximately 3 miles south-west.

At the same time as 33 Corps were making these advances, plans had been formulated which aimed at compelling the best portion of the Jap troops to give battle in the plains of Central Burma and thus expose themselves to inevitable destruction. Plans were accordingly drawn up in February for the re-deployment of Combat Cargo Task Force Squadrons based in the Imphal Valley to the Akyab-Ramree areas. The recent capture of these airfields was a vital asset to Combat Cargo Task Force as the distance from Imphal to the forward troops had swiftly become so great that it would shortly have been

necessary for reduced loads to be transported in order that aircraft could carry sufficient petrol for their return trips. It was finally agreed that 341 Wing, 194 and 436 Squadrons were to move to Akyab and be ready for operations by 31st March, while Nos. 62 and 267 Squadrons were also to move to Akyab in time to commence operations by 1st April. This planning entailed constant visits by Combat Cargo Task Force Staff Officers to Akyab and Headquarters RAF Burma, since completely new equipment, particularly M.T., Refuellers, Tentage (all buildings had been destroyed by bombing), Water Carriers, etc had to be despatched to Akyab and be available for Squadron use.

An integral part of the plan was the capture of Meiktila, the important Jap airfield in Central Burma. At the beginning of February, a number of officers and men from Headquarters, Combat Cargo Task Force, were attached to the Headquarters of 4 Corps to control the air phase of the Corps' Irrawaddy crossing and subsequent dash to Meiktila. This was known as Operation 'Multivite'.

In broad outline, fighter aircraft were to provide direct and close support for the 7th Division which was to effect the Irrawaddy crossing and win a bridge-head, and similarly cover the 17th Division in their advance on Meiktila. To make the support effective, Visual Control Posts were set up to direct the operations. As soon as the troops arrived in the Meiktila area a captured enemy strip, Thabukton, was to be prepared to receive the fly-in of reinforcements.

February 14th was crossing day, and within 12 days the superior mobility of our forces had overcome enemy resistance and secured the capture of Thabukton airfield. The air-lift directed by Combat Cargo Task Force began on February 27th and in 4½ days of use 655 trips were made to this airfield. Although American Squadrons were responsible for the greater part of this lift, 31, 62, 117, 194, 267 and 436 Squadrons all played important parts. Approximately 4,000 troops together with vast stores of petrol, ammunition and rations were landed. Many aircrew averaged more than 10 hours flying time per day. As the ground forces cleared the Thabukton area and advanced on Meiktila, the principal fighter effort centred around that city. On 3rd March organized resistance in Meiktila ceased entirely and Operation 'Multivite' was successfully concluded.

By no means, however, had all difficulties been overcome. Combat Cargo Task Force aircraft were landing on Meiktila airfield within range of enemy guns, and time and time again came away damaged but able to return with more supplies. Often the Japs occupied the strip by night to be driven away the following morning, while during daylight they kept up intermittent mortar and shell fire. Two of our aircraft were destroyed by a 75mm gun firing from a position at the end of the runway.

After 3 more weeks of bitter fighting, the enemy shell-fire continued so persistently that it was decided not to task any more Combat Cargo Task Force crews and the field was closed for a week, during which time supplies were dropped by parachute. By the beginning of April, however, this stubborn enemy resistance had been finally overcome and Meiktila was secured as a vital base.

During these 4 Corps operations throughout March, considerable fighting took place on the 33 and 15 Corps fronts. On 10th March 33 Corps troops in face of fierce opposition entered Mandalay, where heavy fighting for Fort Dufferin developed until this point finally fell. Meanwhile a brigade of the Corps, force-marching by night, made a surprise capture of Maymyo and the airfield approximately 27 miles east of Mandalay, thus cutting off the Japanese escape route to the east.

In the Arakan stiff opposition was encountered in the advance on An, and little progress was made during this month. Further south in the Ru-Ywa sector, the bridge-head there was enlarged and after fierce fighting throughout the month leading elements reached Letpan on 31st March. On 15th March a complete brigade had been landed on the coast, 33 miles south of Ru-Ywa and these troops advanced rapidly south along the coast road against slight opposition, at the end of the month reaching a point 3½ miles north of Taungup.

Combat Cargo Task Force dropped and landed supplies of all description on all fronts. By the end of the month CCTF Transport aircraft had flown forward nearly 75,000 tons of supplies, the highest total delivered in a single month. During the past 6 months Combat Cargo Task Force had flown into Burma 235,650 tons, which meant that for every hour in the air a ton of supplies was carried by C-47s and approximately 1¼ tons by the American C-46s.

At the beginning of the month, ten airstrips were in use for supply-landing; eight were opened during March and nine were closed. On the 33 Corps' front the principal airfields used were at Ondaw, Ngazun East, Singu and Ywabo, while 4 Corps received supplies landed at Meiktila, Myitche and Sinthe. The air-lift for 15 Corps was reduced in scale during the month as it was found that the troops could more easily be supplied by sea.

The plans already outlined for the re-deployment of Squadrons during March were effected to schedule. The smooth change-over was marred to some extent by the delivery at Akyab of only 80 tents instead of 380 required; prompt action, however, resulted in the requisite number of tents being air-lifted from Chittagong. Difficulty was also experienced in the unloading of the ship carrying RAF equipment from Calcutta. ALFSEA failed to inform the Port Commandant of the urgency of the unloading of the RAF equipment at Akyab and consequently no high unloading priority had been allocated. The matter was soon rectified, however, by close liaison between personnel of Combat Cargo Task Force Headquarters, 341 Wing and the Port Commandant, who afforded the fullest co-operation.

On 12th March, authority was received from ACSEA for the formation of 345 Mobile Transport Wing to be formed at Jharsuguda and later moved to Akyab. But since it had already been considered necessary to move 341 Wing from Tulihal to Akyab to administer the Transport Squadrons there, it was decided that 345 Wing should move to Tulihal instead.

Early in April a considerable amount of re-deployment of the 14th Army took place, with the result that 33 Corps now operated down the Irrawaddy and 4 Corps down the axis of the Mandalay-Rangoon railway. On the 33 Corps' front troops of the 7th Division entered Kyaukse on 1st April and pushed west of Meiktila, occupying Zayetkun by 14th April, while on the following day Kyaukpadaung was captured. From Zayetkun a very swift thrust was made south to Taungdwinggyi and these troops swung west to the Irrawaddy, Magwe being occupied by 22nd April. A thrust south from this town had by the end of the month reached Allanmyo, about 50 miles from Prome. Other elements converging on Chauk entered this important oil centre on 20th April and crossed the Irrawaddy where stiff opposition was encountered on the west bank.

The most spectacular and important event during April was 4 Corps' lightning dash down the railway corridor, an advance in which Combat Cargo Task Force played a particularly important part, not only in keeping the advancing troops constantly supplied, but also in preparing the strips necessary to receive these supplies in time to be of use.

The use of glider-borne engineers to build and repair transport strips for the reception of landed supplies and troops down the corridor was an integral part of the Army plan for the advance on Rangoon. The air-phase of this plan was effected by the 'Gumption' Operations. (It should be noted that all glider operations were carried out by American Squadrons of Combat Cargo Task Force).

Two Squadrons of Combat Cargo Task Force began building up reserve stocks of petrol at Meiktila, while gliders were ferried in with additional supplies. By the middle of April 55 gliders and 86,000 gallons of aircraft petrol were available at Meiktila for contemplated operations in support of the Army advance. It must be appreciated that at this time the enemy had been completely shattered at the battle of Pyawbwe and that our swift thrust down the corridor had taken them completely by surprise. They were forced to withdraw many of their troops into the hills to the east and west of the corridor while being hammered by the fighters of 221 and 224 Groups.

In this dash South 4 Corps reached Pyinmana on April 19th. The town was by-passed (and later mopped-up) as leading troops advanced south-east for Lewe airfield which was cleared on the following day. British and American engineers prepared the strip for the reception of the Combat Cargo Task Force gliders which were at readiness on Meiktila airfield, and on the 21st the fly-in commenced. The gliders carried a variety of loads which included runway equipment, bull-dozers, jeeps, tractors, food and water. Skirmishing went on all day long and many snipers were shot or captured.

At this time eight enemy aircraft - Oscars - attacked Lewe Airfield on the 22nd strafing the gliders, five of which were destroyed. They were in and away in a short time and ten minutes later after the attack the first Combat Cargo Task Force supply-dropping transports arrived in the area.

As the finishing touches were being put to Lewe Airfield, leading troops of the 5th Indian Division pushed into Toungoo against unexpectedly light opposition, due largely to enemy confusion. The Japanese elected to defend the Toungoo-Mawchi Road, east of the town, but it was apparent that they were not across the axis of advance in any strength. The division continued to push south as fast as possible and landing fields in the Toungoo area were now required. On 23rd April six Combat Cargo Task Force gliders from Meiktila were released over Tennant field, all landing safely with similar loads to those delivered to Lewe. The airborne engineers immediately began their work on the field; craters were filled in and a strip of 6,000 feet was made serviceable. On 24th April Tennant absorbed 56 trips by Combat Cargo Task Force aircraft and the second 'Gumption' was over.

The other part of the original plan had been a lift by Combat Cargo Task Force of a Brigade to the Pegu area, about 40 miles north of Rangoon. This was known as Operation 'Freeborn'. It was necessary in order to cut the Japanese escape route to the east and in anticipation of difficulty in crossing chaungs and enemy blown bridges. Furthermore, the commencement of the pre-monsoon rains was necessarily a hazard to our ground forces.

The enemy was far from being in a strong position. Available for movement east of the Sittang were the north to south tracks parallel to the river. Several of these tracks effect a junction at the town of Shwegyin, and our occupation of this point was vital. It was therefore decided that Combat Cargo Task Force should fly-in a battalion group of the 9th Brigade to be landed near Shwegyin.

This was effected on 29th April when the battalion group was flown to Pyuntaza Airfield, north of Pegu, by 28 Combat Cargo Task Force aircraft. Some indication of the variety of supplies also landed can be obtained from the following list: Ammunition, Small Arms, Equipment, Jeeps and Trailers, and the complete equipment of a mobile radio station with personnel.

Meanwhile further progress south continued, but when the Pegu area was reached the enemy offered stiff resistance from prepared bunkers and trenches. By the 29th about half the town of Pegu had been cleared, and on the same evening, some 400 British and American prisoners-of-war were rescued in this vicinity. They had been marched north from Rangoon Jail by the Japanese whose original intention had evidently been to take them across the Sittang and into Siam. But this plan was frustrated by 4 Corps' rapid advance, and on the following day Combat Cargo Task Force aircraft commenced flying the ex-prisoners back to Comilla.

On the morning of 1st May there remained 159 trips of the original 'Freeborn' lift, including the movement of a Foward Airfield Maintenance Unit to receive dropped and landed supplies. Originally planned to be completed in 4 days, this time was cut by half in an attempt to prevent delays due to weather and field conditions. Flying day and night the task was to be completed in 48 hours, but faced with appalling waether conditions it was found impossible to realize this objective. Nevertheless it was achieved in a remarkably short time and the Combat Cargo Task Force aircrews were worthy of high praise. Many trips were made during violent thunderstorms with drivin' rain, while on the ground the mud was up to the hubs of the wheels on the deeply rutted strips.

South of Pegu progress was slowed by rain, swollen chaungs, booby-traps, mines and blown bridges, but by May 4th Combat Cargo Task Force engineers had reached Zayatkwin and selected one of the three strips as suitable for glider landings. Two days later Combat Cargo Task Force Dakotas landed at Tennant to tow gliders to Zayatkwin and the last 'Gumption' began. Meanwhile Lewe Airfield remained unserviceable until May 8th when eight more gliders were towed from there to Zayatkwin with miscellaneous loads. The same day the airfield was opened to regular Dakota landings, and by the 9th it was ready to receive the heavy C-46s. Thus ended the last Combat Cargo Task Force special operation in support of 4 Corps' advance on Rangoon.

The operations had all been effected at a time when the approach of the pre-monsoon period was providing a severe handicap to air operations. Intensive electrical storms gradually became more frequent, resulting in very difficult flying conditions. One RAF Dakota carrying casualties was lost with all lives, near Fenny. Forward airfields were made unserviceable after several hours of heavy rain, and due to the lack of adequate signals facilities, pilots had to be briefed to land at diversionary airfields on receipt of R/T instructions.

Towards the end of the month a general weather broadcasting system was introduced covering all base airfields and the more important forward strips in Burma. This organisation included a detachment from the 2nd Reconnaissance Squadron, USAAF, based at Comilla, and operating B-25 and F-6 aircraft for the purpose of carrying out patrols over the routes flown by aircraft on supply missions and the broadcasting of weather encountered along these routes.

During April Combat Cargo Task Force was reinforced by the arrival of two RAF Squadrons, Nos. 96 and 215. The conversion of 215 Squadron to Dakotas at Dhubalia started on 16th April. Flying instructions were given by 4 crews (2 from 341 Wing and 2 from 3[illegible] Wing) and ground instruction by 229 Group Staff Officers who also provided facilities for supply-dropping, (i.e. containers, parachutes, D.Z. markings etc). This Squadron was due to move to Tulihal in early May. 96 Squadron arrived at Bilaspur from the United Kingdom on 30th April also for training and acclimatization prior to moving to the forward areas.

We now come to the final phase which brought about the capture of Rangoon. The plan formulated aimed at a combined land, sea and air operation involving paratroops and army and naval forces, the air-borne phase being known as Operation 'Dracula'. The defences and gun-sites protecting Rangoon were to be silenced by the heavies, medium and fighter-bombers of Strategic Air Force, 221 and 224 Groups, escorted by P-47s and P-51s of the 1st and 2nd Air Commando Groups.

In the early hours of May 1st, two pathfinder aircraft left Akyab for the paratroop dropping zone and the drops were made without opposition. These were followed by the main serial of 38 Combat Cargo Task Force aircraft which all effected their drops unhindered The following day ammunition and rations were dropped by aircraft of 267 and 194 Squadrons to the troops on Elephant Point and further drops were made on two subsequent days. On May 4th the Officer Commanding 341 Wing flew the last mission over Rangoon and dropped a package of Allied flags on the town. On the road south of the D.Z. were seen the letters "Japs Evacuated" and on the jail, "Japs Gone. British Here". The Officer Commanding 341 Wing then landed at Mingaladon Airfield, the first Combat Cargo Task Force pilot to do so.

Rangoon was entered on May 3rd, after three years and two months Japanese occupation.

Immediately after the re-capture of Rangoon 33 Corps' troops entered Prome and then pushed down the main road to Rangoon until on May 19th the 20th Division linked up near Taikkyi with the 26th Division of 4 Corps which had pushed north from Rangoon. Meanwhile considerable heavy fighting took place on the west bank of the Irrawaddy at Kama, the Japanese making repeated attempts to escape east. This resulted in many patrols being sent out to hunt down these small units and heavy casualties were inflicted on the enemy.

During the month the following fields used by Combat Cargo Task Force were closed: Ywataung, Bonzukan, Zayatkwin and Tennant and in their places the following were opened: Magwe, Myingyan, Toungoo [illegible], Payagyi and Mingaladon. Of these new airfields, Myingyan was developed as an all-weather strip and handled very heavy traffic.

The fair-weather strip at Mawnubyin had been constructed as a purely temporary measure pending the completion of the all-weather strip at Akyab Main for 341 Wing, 62, 194 and 267 Squadrons. It had been anticipated that the latter airfield would be completed by 15th May and in point of fact it was ready for full operations on the following day. During the early days of May, anxiety was felt that the monsoon would break before Akyab Main was completed but fortunately the monsoon held off in this part of Burma until the end of the month.

On 10th May, 342 Wing and Nos. 31, 117 and 436 Squadrons moved from Hathazari to Kyaukpyu Airfield, Ramree Island. By 15th May the move had been completed and the Squadrons were operational by that date. 215 Squadron operated from 7th May under 346 Wing and a detachment of 96 Squadron operated from Comilla between 18th and 29th May. At the end of the month 345 Wing moved to Chittagong contemporaneous with the withdrawal of 215 Squadron to India. 435 (RCAF) Squadron remained at Palihal under the direct control of Headquarters 232 Group.

As during April, the weather again interfered with CCTF operations but inspite of these difficulties the total tonnage lifted was only 173 short tons under request. The total tonnage lifted was 67,293 tons against 76,709 tons lifted during April. This tonnage was divided equally between 4 and 33 Corps with the exception of certain supplies of rations delivered regularly to the civilian population in North Burma by 435 (RCAF) Squadron.

Casualty evacuation by Combat Cargo Task Force aircraft continued on a large scale; a picture of the effort can be gleaned from the fact that, during the first half of May alone, 3,615 casualties were withdrawn from the battle-line in 206 trips.

After the culmination of these historic events, it was the less spectacular but no less important task of the Allies to re-develop Rangoon as a base and to drive the Japs east of the railway corridor still further east towards Siam. Also two great areas of territory west of the corridor had yet to be cleared of the enemy.

At this time, the end of May, the American Units were withdrawn from Eastern Air Command. With the release of large reinforcements from Europe, American air support no longer necessary in South East Asia was diverted to fight the Japanese in China. This withdrawal meant that the task of supplying our land forces in Burma would in future have to be fulfilled entirely by British Units.

The integrated Combat Cargo Task Force was disbanded on June 1st and the last American Squadrons were subsequently withdrawn. During the period since its inception Combat Cargo Task Force Transport aircraft had put in 386,000 flying hours and lifted a total load of more than 330,000 tons of supplies and personnel. This in itself was a tremendous achievement.

When Combat Cargo Task Force was in existence the Operations Room at Headquarters was run jointly by the British and American Elements, while the Army Air Transport Organisation had its own Operations Room. But with the withdrawal of the American Element and equipment it was decided to combine the RAF and AATO Operations Rooms. An Air Staff Duty Officer and an AATO Duty Officer maintained a 24-hour watch together, thus ensuring that the fullest liaison and continuity was maintained.

At the beginning of June the condition of the airfield at Kyaukpyu (Ramree) caused considerable anxiety. Owing to the heavy monsoon rain the foundations of No. 1 Runway, 2,000 yards long, had been washed away for an overall length of 1,000 yards. The repairs to this runway were held up from time to time as it was impossible to put down any firm foundation during the rain. No. 2 Runway had also been badly flooded together with most of the dispersal area. By the end of June, however, this situation had considerably improved. Culverts had been made at the north end to allow water to flow under the taxi-track. A main ditch had been dug between the two runways along the entire length with subsidiary leads to the runways.

Sundry drainage had been constructed to draw off the water from the taxi-tracks and dispersal areas. These measures resulted in full operational use of this airfield being possible during the remainder of the monsoon.

During June the land forces were occupied in eliminating the remaining Japanese in Burma when and wherever possible. The principal areas where fighting took place were Toungoo, Kalaw and Pegu. The enemy were still endeavouring to escape over the lower Chin Hills to Thailand and in engagements put up fierce resistance. In the Kalaw area troops reached as far as Heho. In the Pegu area more fierce fighting developed as the Japanese tried to cross the Sittang River and escape east. Our troops were considerably hampered by the monsoon conditions in their endeavours to keep in contact with the enemy forces.

Despite the bad weather the continued supply of these troops was essential and it now rested with the former R.A.F. Element of Combat Cargo Task Force, now 232 Group, to fulfill their needs. The daily tonnage carried averaged 905 short tons, being a daily decrease of 821 short tons compared with the tonnage for May. This was due to the withdrawal of the American Units. Most of the supplies landed were for the purpose of stocking rear airfields where the Army Organisations distributed the supplies to various Army and RAF Units. Civil commitments continued to be fulfilled in North Burma.

Some picture of the toll the monsoon took can be obtained by perusing the figures of losses for the month of June alone. During this month 232 Group lost 12 aircraft due to bad weather, casualties to crews and passengers, inclusive of those killed, injured and missing, totalling 72. This was a high price paid in men and material for the continued success of Air Supply in Burma, and caused grave concern. Instructions were issued to all Wings and Squadrons to ensure that all possible steps were in future taken to prevent unnecessary loss of life and equipment.

With the experience gained in June regarding the consumption of petrol required by C-47 aircraft for each trip during average monsoon flying conditions, Squadrons located at Ramree, Akyab and Chittagong were instructed to increase their loads from 5,500 lbs to 6,000-lbs. The loads carried by 435 Squadron at Tulihal were to remain at 5,500-lbs.

Special instructions for our supply-dropping in the Toungoo area were issued during July. As the weather frequently made dropping operations impossible in this area, special arrangements had to be made to land the loads in Central Burma so as to form a stock-pile near the source of operations and later take advantage of periods of fine weather in which to deliver the back-log. This system made it unnecessary for aircraft to carry undropped supplies back to base with a consequent increase in the number of hours required to deliver them. In the event of abortive trips producing a back-log at Toungoo, aircrews were briefed to proceed to that area on supply-dropping operations after which the aircraft were to land at Toungoo or Magwe and carry out second and possibly third trips, thereafter returning to base.

A special Group operation was carried out on the night of 8/9th July. At 2200 hours a signal was received at Group Headquarters requesting that an Iron Lung be flown to Mingaladon as it was urgently required for an Infantile Paralysis case in Rangoon. Energetic steps were at once taken to procure a Lung and one was eventually located and available at 92 I.G.H. Detachment, Comilla. Arrangements were made for an aircraft of 117 Squadron at Chittagong to take delivery of the Lung and transport it to Mingaladon. This was done on exceptionally short notice and by 0110 hours on 9th July the Dakota had arrived at Comilla. There, the crew received full briefing, including meteorological and signals facilities from 900 Wing,

Although the weather was extremely bad throughout the flight to Rangoon the crew succeeded in reaching their destination at 0630 hours, about an hour before their anticipated arrival.

A signal was received later at 232 Group from the AOC. 221 Group congratulating the crew of the Dakota on their magnificent effort. But the sequel was tragic: the soldier died in the Iron Lung and the crew who had delivered it crashed on operations three days later and were all killed.

Monsoon conditions continued to prevail at their height during the month of July over the whole of Burma. There was considerable turbulence, and heavy layer clouds and towering cumulus were encountered up to 20,000 feet. Rainfall was widespread over the whole area of operations, and difficulties under which Group aircraft had to operate were acute. Nevertheless it is worth noting that despite both these difficulties and the fact that this was the first and only complete month in which the Group operated without American Squadrons, the actual effort in hours flown and tonnages delivered was proportionately greater than had ever been achieved before.

The huge enemy concentrations, that had been biding their time in the Pegu Yomas awaiting an opportunity to effect a break out, considered the time was ripe in mid-July to attempt a mass movement eastwards across the railway corridor. It was then that the whole of the ground situation was dominated by the bitter and bloody fighting in the Battle of the Sittang Bend.

The anticipated enemy break-out materialized on 20th July. For many days heavy fighting took place along a 70 mile front extending from Toungoo in the north to Nyaunglebin in the South. Whilst the break-out was a concerted effort it was made in several groups of approximately 500 each, and it was made almost impossible at first to assess exact casualties. With the state of the ground situation ever fluid, the ensuring of accurate drops by 232 Group aircraft was no easy task. Many of the dropping zones used were less than 100 yards from local enemy forces - all depended on the skill of our aircrews whose accuracy of dropping often attained heights of brilliance. On one occasion, however, when a D.Z. was closely surrounded by enemy troops, some of the containers overshot the mark and fell into enemy hands. It is remarkable that this did not occur more frequently. During all these close support operations 232 Group aircraft were often subjected to enemy A.A. and S.A. directed at them from the vicinity of the D.Z.'s but no substantial damage was caused to any aircraft.

The general ferocity of this battle continued at its height until July 27th. Those depleted enemy remnants which did manage to weather the storm were constantly hammered by air strikes by 221 Group who had prepared the way by heavily attacking Japanese concentrations in the foothills of the Pegu Yomas. After the break-out commenced, Spitfires maintained a 'cab-rank' under VCP. Control and were able to strafe the fleeing enemy across the open country.

Throughout this crucial period, our ground forces, daily supported by 221 and 232 Groups were able to inflict huge casualties on the enemy, it being estimated that about 6,000 Japs were killed in the process. The whole battle was representative of close and effective co-operation between ground and air forces in which 232 Group's contribution was decisive.

By the beginning of August the Japanese in Burma were finished and two weeks later the war with Japan was over. The record of the trials and hardships that beset our forces in Burma through 3½ long years of campaigning, had ended in the overwhelming defeat of the enemy.

CHAPTER II

Engineering Problems Encountered, Maintenance Organisation, Difficulties in Field and Climatic Conditions on Serviceability of Transport Support Aircraft.

The need for mobility of 221/TF/232 Group Wings and Squadrons made it impossible to form any kind of centralised servicing, and the Squadrons had to be self-contained for front-line and a good deal of second-line maintenance.

Establishment and Strength (Aircraft). Squadrons were originally established at 25 Dakota aircraft, either Mark III or Mark IV, and were planned to fly 2,500 hours per month.

In accordance with the normal ACSEA procedure the strength of the Squadron aircraft was usually 20, with the remaining 5 at M.U. or R.S.U. The figure of 2,500 hours was usually exceeded, and in March 1945 a new establishment was issued which applied to close-support Squadrons only, and the flying hours were put up to 3,500 per month. This remained an average figure - but was often exceeded. Nos. 194 and 436 Squadrons each flew over 4,800 hours in one month which must be an all-time record for Transport Squadrons.

Establishment and Strength (Personnel). The establishment laid down in LWE/SEA/TC/1120, dated 1st February 1945, is considered quite sufficient for the purpose, but the point is that it was never filled on any Squadron and there have always been very serious deficiencies in Technical Senior NCOs. In the ancillary trades of Electricians and Instrument Repairers the position was, at times, acute and, always, serious. There was a permanent shortage of Fitters, M.T. and T.M. and Drivers (Petrol Bowsers), with the result that vehicles had to be driven by F.M.Es. and repaired or inspected by Fitter IIEs.

Serviceability. During the whole period under review the serviceability of our aircraft was seldom below 75% and usually averaged 82%. This was attained at times under adverse weather conditions and without proper equipment or facilities. In contrast to conditions in the U.K. the weather on the Arakan coast of Burma at the height of the monsoon made it sometimes impossible to service the aircraft. It is considered that the servicing crews displayed a fine performance, working both day and night, in heat, dust and torrential rain. This work, so often unheralded and unpublicized, deserves the highest praise.

The main circumstances affecting serviceability are enumerated below :-

Main Causes of Unserviceability.

1) It is felt that a comparison between the work of Air Line Squadrons and Close-Support Squadrons should be made.

Aircraft of Air Line Squadrons carry small crated loads which are carefully loaded. These aircraft usually climb to a certain height and fly from A to B on scheduled runs, landing on good air-strips with satisfactory facilities for maintenance.

On Close-Support operations in Burma, aircraft usually flew 3 trips a day entailing 6 climbs to 8-10,000 feet and six landings with heavy loads. These landings were often carried out on hastily constructed or repaired strips and tyre bursts were frequent. The bursts were chiefly caused by flints, 'K' Ration tins, metal and damaged steel plate runways.

2) West African and Indian drivers frequently backed lorries into the doors of aircraft or damaged wing-tips. Large numbers of wing-tips, tail-planes and elevators were damaged whilst taxying on crowded dispersals.

3) When the Dakota IV was coming to hand, a very considerable number of low blower clutch failures occurred, due in most cases to maloperation by the pilots. Frequent engine changes resulted in an acute shortage of Pratt and Whitney Twin-Wasp R.1830-90C engines. As a result of an investigation made by the Operational Research Section of 232 Group, the following points were revealed :-

a) Distribution of engine resources had been disproportionate to the rate of installation at Units. Flying Units had effectively no reserve. Units other than 101 R.& S. U. had more than required. It was suggested that a pool of reserve engines should be formed at each Wing for distribution to Squadrons.

b) The time spent off operations by an aircraft allotted from the flying units for a double engine change averaged 50-60 days. Less time was, of course, required for a single-engine change. Unless necessary facilities could be provided at rear repair Units to reduce these delays, it was considered that every effort should be made to facilitate engine changes at squadron level where a change could be made in 3-4 days.

c) It was further considered that delivery of complete power plants instead of engines would considerably ease the work of flying units and reduce the time required for engine changes to 4-6 hours. This use of power plants might well be the eventual solution for speed and suitable distribution of work between rear repair units and forward squadrons. Until sufficient power became available the provision of one set of port and starboard engine mountings would allow for pre-installation of engines.

4) At one period Squadrons sustained 82 engine failures due to seizure of main bearings. This occurred both on 1830-90C and 1830-92 engines, caused, it is considered, by the change-over from 34A/1120 ('T' Oil) to 34A/1100 ('X' Oil). One Squadron alone changed 19 engines in one month. The month following the authorisation of 'T' oil for the summer months showed only 5 main bearing failures.

5) Dust was a very disturbing factor; apart from the fact that a considerable wear through abrasion took place, the aircraft undergoing inspection were continually covered with clouds of dust as were the airmen working on them. Covers were utilised as far as possible but had little immediate effect, continuous cleaning being the rule.

6) Rain, the chief enemy during the monsoon period, caused the expected spate of bogged aircraft, ignition troubles and delays in maintenance work.

7) The remaining difficulties were experienced with C.S.U., Petrol Pumps, Generators, Gyro Instruments and Electrical equipment.

Shortage of Equipment.

Ground Equipment. The main items of ground equipment which were virtually unobtainable were Cranes, Changing Sets and Air Compressors. Cranes were made by using the girders from bombed hangars, placed on 3-ton lorries, and various ersatz changing sets manufactured locally. Air compressors were almost non-existent. American tools were at a premium and the tools of Indian manufacture - needless to say - completely useless. Engine stands, platforms and ladders were all manufactured locally.

Replacement Air-Frames and Engines.

The replacement of aircraft when they became due for double engine change and major inspection has been 'fair' throughout, except for the two bad periods experienced when the lower blower clutch failures and the main bearing failures occurred. Reference has already been made to the delays in engine changes at Rear Repair Units. Pratt and Whitney R 1830-90 C engines have continually been in short supply.

Spares.

Certain items were invariably difficult to obtain, principally tyres, petrol pumps, generators and gyro instruments. These were only obtainable on A.O.C. demand.

The main difficulty in this connection was the distance between M.Us. and S.Ps. at which Squadrons were working. Communications were often very bad. AOC spares often took a month to arrive, and therefore 'robbing' had to be resorted to in order to keep the aircraft in the air. This caused grave concern at the R. & S. Us. but the currently unsatisfactory state of affairs rendered it inevitable. In many cases spares arrived at the station months after the Squadron had departed elsewhere. I.O.R. demands obviously took longer than A.O.C. demands and in most cases took 3 months or never arrived at all.

Fuel and Lubricants.

Generally fuel and oil were in good supply except during March and April at Akyab where for a short period 4 Squadrons were nearly totally grounded for lack of 100 Octane fuel, and later, oil. Hydraulic fluid and high temperature grease were always difficult to obtain and Squadrons had to fly all the way back to Lahore if they were to have any hope of obtaining one or two barrels.

Mechanical Transport.

The shortage of M.T. [redacted] the campaign was acute. The transports coming into Imphal down the Dimapur Road were usually in poor condition on arrival. The state of the road can be imagined when it is known that the L. of C. had a motor transport repair unit every 20 miles of the entire length. Roads at Akyab and Ramree were also very bad and caused considerable wear and tear on the vehicles. M.T. tools were made at Chittagong, Akyab and Ramree but the full benefit of these was lost when the Squadrons moved.

There were, in addition to the absence of cranes already mentioned, insufficient refuellers, water trailers and 3-ton lorries. Refuellers had to be borrowed from the Americans and ersatz water trailers were manufactured locally.

It is perhaps, superfluous to add that in contrast, the Americans succeeded in providing themselves with a plethora of transport and in particular their more than adequate supplies of jeeps made movement of personnel on duty and recreational runs a matter of considerable ease.

Technical Accommodation.

The usual technical accommodation consisted of 180-lb. E.P.I.P. tents. These were far too small, particularly for such purposes as Equipment Sections. Instruments and spares suffered from excessive corrosion due to inadequate storage facilities. Nissen huts were finally constructed at a later stage in the operations and were quite satisfactory but were in insufficient numbers.

Suggestions.

The following points are put forward for consideration in any future planning of similar operations.

1) Although it is understood that the construction of the air-strip is the most important point, it would be a distinct advantage if the parachute tower, aircraft shelters and Nissen huts (or prefabricated huts) for technical accommodation could be built at the same time as the strip.

2) The American system of providing an aircraft per Squadron for the sole purpose of collecting spares, engines, canteen stores and conveying personnel on leave should be adopted in all Transport Support Squadrons.

3) Each Squadron should be supplied with 2 air-transportable light cranes of similar origin to the American 'A' Frame, and also 2 air-transportable 7 KVA Generators, 1 for charging accumulators and lighting the technical site and the 2 spares and the other for lighting the domestic site.

4) Each Squadron should hold 4 complete power plants and an adequate supply of main wheel tyres and tubes.

5) Large capacity refuellers should be provided for each Squadron in sufficient quantities to ensure quick between-trip refuelling.

6) Dispersal areas should contain permanent tie down facilities to prevent damage owing to gale and monsoon storms.

7) Above all, Squadrons must be kept up to established strength in personnel. Unless this is done an unfair strain is imposed on already hard-pressed technicians, making a mockery of authorised establishments which exist only on paper.

CHAPTER III

Use of Navigational Aids, Difficulties Encountered And Recommendations for the Future.

1. Loran.

Its introduction and use in the Burma Theatre.

Loran was allocated to 232 Group Squadrons as a primary navigational aid during the 1945 monsoon. Examination of Navigators' logs for June 1st - 7th and from June 24th - July 6th showed, however, that whereas the necessity for such aids existed and, in fact, was definitely necessary, Loran's application to navigation on operations was almost nil. The reasons for this are outlined below :-

a) Supply of Equipment, Fitting and Maintenance.

The general arrival of Loran on Squadrons preceeded the monsoon by only two weeks. Fitting was delayed owing to lack of spares, and maintenance personnel were below required strength. Trailing aerials. usually essential to receive satisfactory signals over Burma, were missing on 60% of the aircraft and could not be replaced.

b) Training of Operators.

Two navigators on each Squadron had gained training and were then expected to convert the other navigators into operators capable of applying Loran on operations. This did not fullfil requirements, the main difficulties being intensive operational flying and a lack of conviction among aircrew that Loran could be of any real use.

It is suggested that more Radar mechanics, a better training policy and a greater knowledge of the potentialities of Loran are needed if this aid is to be of practical use. Commanding Officers of Squadrons and Pilots should know what Loran can do and Navigators should be given every encouragement and opportunity to use it as fully as possible.

2. H.F. (Radio Compass) and Radar (Rebecca, Eureka) Beacons. Their use and performance in the S.W. Monsoon.

Considering the facilities available, much confusion existed on Squadrons as to what extent navigational aids were available. Installation at forward airfields was late and at times aircraft had to fly to these fields without Radio-Compass and Rebecca-Eureka facilities. An examination by the Operational Research Section of 232 Group on the use made of these aids revealed the following facts :-

a) On outward journeys little use was made of Navigational aids on forward fields - R.C. on 20% of trips R.E. on 6% - due in part to lack of facilities.

b) On homeward journeys use of base aids for homing showed a marked increase - R.C. 35%, R.E. 46%. This was to be expected due to the greater facilities available and the higher power of the M.F. (Radio Compass) Beacons.

c) Use of all aids on departure from Base Airfields was small - R.C. 20%, R.E. 10%.

d) Little use was made of Radio Aids for obtaining fixes at any time during trips; 9% outward, 7% inward.

Visits to Squadrons revealed that serviceability of Beacons at Base Airfields was satisfactory. Yet at the Forward Fields of Magwe, Meiktila and Toungoo, there were no M.F. Beacons during the height of the campaign, and no signals on Rebecca were being received in the aircraft due to unserviceability of Eureka ground installations.

The ranges and performance of Radio-Compass and Rebecca-Eureka Beacons show that a 100W M.F. (R.C.) Beacon with a range of 200 miles in good weather can be useless even for homing at 30 miles due to static in the vicinity of storms. Beacons of less than 100W. are useless in poor weather when aids are most needed. Rebecca-Eureka, on the other hand, is unaffected by static and is an excellent aid in monsoon conditions. A well-sited Beacon gives a range up to 100 miles for an approaching aircraft over 7,000 feet. Unserviceability of Rebecca-Eureka was due largely to lack of trained Radar mechanics.

Recommendations.

Many navigators were unfamiliar with radio aid facilities and were ignorant of the elementary principles of operation. They were not aware of the power of different M.F. (R.C.) Beacons and tended to expect impossible results from the lower powered ones. In the future a greater knowledge of the potentialities of navigational aids will be essential if full benefit is to be derived from them on Squadrons. As has already been mentioned, a full quota of Radar mechanics is a prerequisite for maintaining good serviceability of equipment.

For monsoon flying, especially over the Arakan and Central Burma the Air Position Indicator would be a most useful additional aid. Although navigators did endeavour to maintain air-plots, frequent changes of course and climbing and gliding in bad weather often made this impossible. For purely monsoon flying, the Air Position Indicator would be a considerable advantage.

CHAPTER IV

The Use of Meteorological Facilities in Burma with Comments Concerning Them. Effects of the S.W. Monsoon.

The greatest danger encountered in close-support operations in Burma was undoubtedly the force of the S.W. Monsoon, and the consequent bad weather especially over the mountain ranges. Useful meteorological facilities were not widely available throughout the campaign and the problem of providing adequate weather information to crews was a formidable one. It is, even with elaborate meteorological facilities, extremely difficult accurately to forecast what conditions crews are likely to encounter during long flights in the monsoon period. Consequently the most reliable information was that gained by Captains themselves, provided that they possessed a sound knowledge of monsoon types of weather and knew how to recognise them. Actual meteorological reports from airfields in use are considered definitely necessary to supplement any individual initiative on the part of the crews.

One very valuable meteorological facility was provided in the form of V.H.F., and this helped greatly to cut down the number of abortive trips in bad weather. The installation of V.H.F. came somewhat late in the day and on a very limited scale, but full advantage was taken of it. Captains all listened out on it and, from time to time, each reported weather conditions for the benefit of the others. In this way less experienced crews could follow experienced Captains through bad weather. These V.H.F. meteorological reports, together with those put out by W/T by certain detailed aircraft, were picked up at base and proved helpful on subsequent trips.

Broadcast aircraft were employed on a limited scale, a daily weather service being provided at the end of the winter season by aircraft of 436 (RCAF) Squadron and also by a detachment of the American 2nd Weather Reconnaissance Squadron. When the weather was fine it was quite easy to pick up these broadcasts but in bad weather interference made them of little value.

The accident rate of CCAF/232 Group aircraft was not as high as was at one time feared, and it is considered that in view of the difficulties encountered in providing suitable meteorological facilities, much credit is due to the crews themselves for fulfilling their commitments inspite of bad weather which they learned to master through experiment and experience.

The S.W. Monsoon begins to make itself felt in Burma in late April or early May, and is at its worst in June and July. Apart from the period of the monsoon, conditions for flying over Burma and the adjoining parts of India are excellent. Visibility is consistently good, skies are clear, land feature are easily distinguished and wind velocity is slight; good flying results are normal.

The coming of the monsoon changes all this and brings all the flying hazards contingent on massed cloud formations with great atmospheric turbulence (though this turbulence is less prevalent after the rains commence). During the full monsoon period almost the world's worst conditions prevail and cumulo-nimbus cloud, the greatest enemy of aircraft in this theatre, builds-up frequently from low level to above aircraft ceiling. On most days, clear levels do not exist at varying heights. Even on 'good' days during the monsoon period, frequent changes of course may be necessary, although D.R. navigation is usually still possible. Height must often be varied though the usual technique is to find clear level between low and medium clouds and to maintain this height if possible until letting down. The use of navigational aids is much more necessary than in the fine weather period.

Inevitably owing to the fact that few crews operating in the 1945 monsoon had flown in the 1944 monsoon, there was lack of experience of monsoon flying conditions among many of the air crew. With the onset of the bad weather, methods of navigation had to change; navigation mainly by means of pin-points gave way to greater use of D.R. and navigational aids, since pin-points were rarely obtainable.

Conclusions.

(i) The onset of monsoon conditions increased the need for D.R. Navigation and use of Navigational aids since pin-points could not so easily be found. Owing to bad weather at bases and en route, flying became more hazardous, and in avoiding storms extra time was required for trips flown.

(ii) Aircraft serviceability decreased and fewer hours were flown by those aircraft serviceable. More time was wasted in abortive flying.

(iii) Comparing aircraft effectiveness in the monsoon months of June-July with February-March, it appeared that effectiveness dropped to 73%. Since, however, the average length of trip was less in June-July, the tons carried per aircraft dropped only to 76.5% of fine-weather standard.

(iv) The relative importance of various factors combining to produce this reduction is given by :-

Reduced payload	91.5%	of fine-weather standard
Lower average speed	91.5%	" " "
Reduced serviceability	93.5%	" " "
Fewer hours flown per serviceable aircraft	95.0%	" " "
Increased abortive time	98.0%	" " "

(v) In monsoon conditions there were wide variations in the hours flown per day. Cycles of bad weather occurred at approximately fortnightly intervals. At these periods hours were low and the number of abortive trips increased. Between these periods flying hours were maintained at a high level.

(vi) Aircrew availability reached its lowest level in July at 80.3%.

(vii) All these factors should be considered when planning similar operations.

CHAPTER V

Aircrews' Training, Duration of Operational Tours, Composition, Flying Intensity.

1) Flying Training.

Prior to and at the time of the formation of Combat Cargo Task Force, the policy of Aircrew Training was for Transport Support Squadrons to be withdrawn from active operations in Burma to bases in the Gujrat Rawalpindi area, where uninterrupted airborne training was undertaken for periods varying from one to three months. This policy was found to be most satisfactory, for Squadrons returned to operations rested and with all flying personnel reasonably trained in the airborne-support role. New Transport-Support Squadrons arriving in South East Asia were given up to two months acclimatisation and training before proceeding to forward bases.

When Combat Cargo Task Force was formed, however, it became obvious that the intensity of the operations planned would mean that every Squadron would be operating at maximum pressure in a support role from forward bases. This eliminated the possibility of any flying training as such, for every serviceable aircraft was required exclusively for support operations, usually three trips a day. This situation was probably unique in the history of the Royal Air Force at war.

Accordingly a Training Conference was held at Headquarters Combat Cargo Task Force in January 1945, at which all Squadron Commanders were present, and it was decided that Squadrons should have a completely free hand in the training of their own airgrews, all of it to be done on operations and air tests. This continued throughout the campaign but owing to the intensive operational requirements, training on Squadrons was of a necessarily limited nature.

The various aspects of flying training which can be carried out on operations were effected by all Squadrons as under :-

a) Captains. Instrument flying, Radar approaches and, of necessity, downwind and cross-wind landings and take-offs.

b) 2nd Pilots. Landings and take-offs at the discretion of the Captain, instrument flying and map reading.

c) Navigators. Dead reckoning (at times only), log keeping, Rebecca and Loran, when the equipment and facilities were provided.

d) Wireless Operators. Log keeping and many hours in the air each month to gain experience and skill in working their equipment.

NOTE:

(i) In connection with (c) above, due to the fact that the same routes were flown day after day, and possibly for week after week, it difficult to get navigators to keep good logs. In addition, short D.R. trips in monsoon weather frequently made it impossible for a navigator to keep an air plot and a good log.

(ii) In connection with (d) above, strict W/T silence was imposed on all operations up till the end of the war.

2) Ground Training.

When an aircrew flew from 90 to 150 hours each month, it was not unreasonable for them to expect to spend the majority of their time on the ground in relaxation. Add this to the fact that the majority of our Squadrons lived under canvas throughout the past year - with a subsequent lack of suitable lecture rooms - it can be seen why little ground training was done.

The supply of Loran equipment to our Squadrons early in the monsoon made imperative the setting up of ground training equipment, the supervision and instruction being in each case the responsibility of Squadron Navigation Officers, each of whom had previously attended a Loran Course in Calcutta. The use of Loran is described in Chapter III of this Review.

3) Courses.

The following Courses have been made available to aircrews in this Group :-

a) Jungle School, Silchar, which moved to Kohima and closed down in August 1945, due to the inability of our Squadrons to spare crews.

b) Aircrew Mountain Centre, Kashmir.

c) Central Visual Aircraft Recognition Instructors School, Ranchi. (Since closed).

d) Junior Commanders Course, Poona.

e) Loran Course, Calcutta.

f) Aircrew Refresher School, Calcutta.

g) Signals Leaders' Course (No. 16 R.S., M.E.)

The majority of attendances have been at the two Courses (a) and (b) above.

4) Duration of Operational Tour.

Transport Support aircraft in CCTF/232 Group conformed to the principal that tours depend on the completion of hours flown or in terms of months, whichever is earlier. At the beginning of June, however, a new schedule was drawn up, with Air Council approval, whereby this principal remained unaltered but a new limit of 18 months was fixed for a tour. (This, incidentally, applied to all operational aircraft with the exception of night-fighters whose tour remained at 12 months).

It was agreed that at the end of the first 12 months aircrews were to be medically examined and, if necessary, granted a period of leave in a suitable climate within the theatre before commencing the last six months of their tour. This is considered to be a very sound arrangement. The question of a second operational tour depends on Service requirements and, if necessary, was to be restricted to six months irrespective of whether the first tour was completed in South East Asia or in another theatre of operations. The completion of the first tour and the commencement of the second was to be separated by a six-month interval.

5) Air Crew Composition.

It is recommended that Squadrons be trained as a Unit with Commanding Officers and Flight Commanders leading them on actual operations in full control of training, but in any future Transport Support operations this will necessarily depend on sufficient Squadrons being available in the line to be withdrawn individually from time to time for training of new crews. This policy, as has already been noted, did work very well before pressure of operations made it impracticable. The aircrew composition for Dakotas as such was satisfactory.

6) Flying Intensity on Transport Support Operations.

It is a striking fact that the average monthly totals of hours flown per aircrew in 232 Group were far above those of any other Group in South East Asia. Naturally the character of the operations carried out by each Group must be taken into consideration. It is only to be expected that the average number of hours flown per aircrew in Groups largely composed of Fighters and Fighter-Bombers (221 and 224 Groups) would be less than those flown by Heavy Bomber and Transport Support Squadrons (231 and 232 Groups).

In all these categories, however, much depends on the air and ground opposition encountered. In Burma the opposition on the whole could not be described as formidable and the number of hours flown per aircrew should therefore be higher than in a more heavily defended country. On the other hand, the advantages of weak enemy opposition were offset by some extent by the effects of the climate. It is thought, however, from experience, that the lethargy induced by excessive heat and particularly humidity can best be overcome by action. It is well-known that nothing is more demoralising for aircrews in the tropics than to be allowed to become idle.

It is clearly desirable that an optimum figure should be sought so that the number of posted aircrews should always be such that each individual may have sufficient flying time to enable him to maintain as high a standard of efficiency as possible. A formula for arriving at this optimum figure is suggested by taking the estimated total number of hours to be flown by each formation during the month. This figure would be divided by 'N', which is an arbitary figure representing the approximate number of hours which each aircrew should fly each month to enable a high state of efficiency to be maintained. For Transport Support aircraft, the figure suggested is from 70-90 hours. Seasonal changes of climate would obviously effect the number of hours selected.

CHAPTER VI

Briefing and De-Briefing. Reporting System.

Prior to the formation of Combat Cargo Task Force it was found that the reporting system for R.A.F. Transport Squadrons in the forward areas was totally inadequate and a revised reporting system was introduced whereby an accurate record of every operational flight could be kept and valuable Intelligence information obtained. How this was achieved can best be seen by studying the arrangements made for briefing and de-briefing on the Transport Squadrons.

Squadron Level.

It was found that the ideal arrangement for the rapid and satisfactory collation and dissemination of reports was to have a Central Combined Dispatching Operations and Intelligence Briefing building or large tent available adjacent to the point on the airfield where the aircraft were loaded and unloaded. It was also necessary that the Navigation and Signals briefing tents should be in close proximity.

The despatching tent on Squadrons was divided into two parts :-

i) The Office. Here the following matters were dealt with: Routine clerical work, maintenance of the filing system and records. Maintenance of lists of Flak and Danger Areas, D.Zs., Airfield Lists, Serviceability States, etc. The storage of maps, mosaics, crews' personal papers, escape aids and money etc.

ii) Briefing and De-Briefing Room. This room was divided as follows :-

a) A display of all operational maps, mosaics and target data.

b) A display of meteorological boards and charts.

c) A board of operational notices, instructions and flight plans.

d) A Navigational and Signals board.

e) Sufficient chairs and tables for de-briefing the maximum number of crews without undue delay.

It will be appreciated that the above set-up was considered to be the nearest possible to an ideal one, but it was not always practicable for Squadrons to comply with these instructions in full detail. Local conditions had to be taken into account and, inevitably, when Squadrons were operating from forward bases where facilities were scanty, ingenuity had to be used to ensure that the main essentials were provided for. It is considered in retrospect that Squadrons did well to maintain a high standard of briefing and de-briefing equipment by the use of imagination and improvisation.

The duties of the Dispatching Tent Staff are outlined as follows :-

O. & D. O. The Operations and Dispatching Officer supervised and co-ordinated the work of the dispatching tent staff and recorded all briefing and de-briefing information relating to flying matters and escort.

A.L.O. The Army Liaison Officer collated and recorded all briefing and de-briefing information relating to D.Zs. and A.L.Gs. He also received all information relating to ground procedure at the D.Zs. and A.L.Gs. together with information as to enemy and our ground dispositions forwarded by the Army authorities in the form of Sitreps.

A.S.D. The Air Supply Depot (RAMC) representative collated and recorded all information relating to despatch and delivery of loads, faulty loading and load equipment.

I.O. The Intelligence Officer organised briefing and debriefing, and disseminated the information obtained from the latter to the various branches concerned.

Specialist Officers. Arrangements were made by the I.O. for Specialist Officers such as Radar, Armament, Engineer, Navigation Officers etc, to be present for briefing crews prior to take-off and to be readily available for questioning crews on their return from an operational flight on any serious occurrence affecting these specialist sections.

De-Briefing Procedure.

The standard de-briefing form used was known as the "Airborne and Air Supply Operations Trip Report". This form aimed at obtaining all essential information brought back by crews as follows :-

Immediate Reports. Facts recorded were only those upon which immediate action was taken by the Squadron I.O., such as urgent messages from dropping or landing zones, immediate dangers to flying (i.e. trip wires, balloons, etc) and hostile aircraft sighting. In the event of an encounter with hostile aircraft an additional form was completed giving full details and known as a Combat Report. Its use, however, was only very rarely called for.

Escorts. This section was included to obtain information as to whether communications between transport aircraft and escorts were good or bad, and to record any complaints regarding lateness of escort at rendezvous, loss of contact and any other relevant remarks.

Statistics. This section gave recorded details about each trip which enabled an accurate record of each Squadron's effort to be kept.

Captain's Remarks. Any remarks by the Captain of the aircraft which he considered necessary for information or action were recorded here.

Weather. The recording of weather information was of value to the meteorological and navigation staffs in the planning of routes, flying times, etc. over long distances.

Defects. Any damage to aircraft, whether caused by enemy action or otherwise, was recorded in this section. It included mechanical or other defects, damage to cargo through faulty packing, leaking containers, parachutes not opening, etc.

Intelligence. All Intelligence data obtained. Details of A.A., searchlights, ballbons and other enemy devices, including trip wires, etc. Any sightings of enemy ground activity, lights, beacons, etc.

Distribution and Despatch of Trip Reports. Channels.

In order that reports could be rendered to higher authority without undue delay, it was considered essential that all Trip Reports be despatched to arrive at Headquarters, Combat Cargo Task Force/232 Group within 24 hours of the cessation of the day's operations reported. To achieve this, Squadron I.Os. were instructed to hand the Trip Reports immediately they were completed to the Wing I.O. who then perused them, making any comments or taking any action considered necessary. This was the main function of the Wing Intelligence Officer. Action on matters requiring attention reported by crews on de-briefing was taken at Wing and not Squadron level. After perusal of the Trip Reports the Wing I.O. despatched them by "Fast Air" on the mail aircraft proceeding on the day subsequent to the operations reported on. This system proved generally successful but from time to time receipt of Trip Reports at CCTF/232 Group Headquarters was delayed due to bad weather or other unavoidable causes.

The Wing Intelligence Officer also rendered a Wing Weekly report to CCTF/232 Group for onward transmission to Transport Command. This report dealt with all matters of general interest on the Wing and was not confined strictly to Intelligence material.

Form T.C. 34 (Bedsheet).

It is necessary to relate here the use of the Statistical Form T.C. 34 (Bedsheet) which was used by CCTF as an additional reporting form. On it was recorded complete statistical data regarding every trip by Squadron aircraft. It was filled in by Squadron I.Os. at the completion of the day's operations, and despatched via Wings to Headquarters CCTF/232 Group along with the day's Trip Reports. At this level the statistical data was collated and despatched to higher formations. Comments on the uses of Form T.C. 34 will be found under the heading "Comments and Conclusions" at the end of this Chapter.

Action of Reports at Headquarters CCTF/232 Group.

As soon as the Trip Reports were received at Headquarters CCTF/232 Group they were perused by the Intelligence Staff and any comments, suggestions and complaints were passed to the Sections concerned for necessary action. Close liaison was maintained with the Army Air Transport Organisation, whose Headquarters was adjacent, to ensure that any information of value to them, such as comments on loading of aircraft, etc. were passed to them without delay.

Forms T.C. 34 were received by the Statistical Section who used them as a basis for periodic reports of value to the Planning and Operations Staff as well as to higher formations.

The Intelligence Branch used the Trip Reports as a basis for issuing a Daily Narrative of Operations sent to lower and higher formations as a record of CCTF/232 Group activities, designed to include information of value to Squadrons and Wings and of general interest. A Narrative was issued daily from mid-December 1944 to the end of August 1945. In February CCTF commenced production of a Fortnightly Review designed to publicise its activities and make more widely known the role played by Transport Support in the conduct of operations.

Comments and Conclusions.

The standard of reporting at Squadron level was considered to be good but it was obvious throughout the whole period that R.A.F. Intelligence Officers were working under a considerable handicap. The establishment for Intelligence on Transport Support Squadrons was only one Intelligence Officer. He was, more often than not, on duty from early morning until late at night, averaging often 10 or 11 hours duty per day. In some cases he was assisted by an N.C.O. clerk, for whom no establishment existed but who was borrowed from some other Section and temporarily attached to Intelligence. Efforts were also made to post Intelligence Officers supernumary to Squadrons or attach them from CCTF/232 Group Headquarters, but owing to the acute shortage of Intelligence Officers and an alarmingly high sickness rate caused by overwork, this was frequently impossible in the early stages.

Squadron Intelligence Officers were further handicapped by having largely to assume the role of clerks. Whilst the completing of the Trip Reports themselves was not an undue strain, the additional burden of the Form T.C. 34 was a heavy one and took up time which could have been far better spent on strictly Intelligence work. It is noteworthy that the American Squadron Intelligence Officers were not thus handicapped, as a Statistical Section was established on all their Transport Squadrons.

The R.A.F. Element of Combat Cargo Task Force was deeply aware of the strain imposed on Squadron Intelligence Officers and made repeated attempts to obtain permission for Form T.C. 34 to be discontinued. These attempts were invariably opposed by the Americans who, it is worth recording, placed tremendous confidence in the value of statistics and were less concerned with the reporting system proper. Consequently the standard of reporting on CCTF American Squadrons was not as high as that on RAF Squadrons.

ACSEA, who had originally drawn up Form T.C. 34 for use by Transport Squadrons within this theatre, was also reluctant to discontinue its use and it was not until July 1945 that permission was obtained. The fact that Form TC 34 was of doubtful value was proved by the success of 232 Group's Statistical Section in meeting all requirements on information obtained from the Trip Reports. The statistical data on Form T.C. 34 had always been largely duplication of data also recorded in a different form on the Trip Reports.

With regard to increasing the Intelligence establishment on Squadrons, repeated pressure eventually resulted in the Asian Establishments Committee belatedly agreeing to raise the establishment from one Flying Officer to one Flight Lieutenant and one Flying Officer. The result of this was a distinct increase in efficiency of reporting and it is regretted that recognition of this basic fact was not made at an earlier date.

Finally, it is considered that Squadron Intelligence Officers worked extremely hard on briefing and de-briefing under considerable handicaps which prevented them from devoting more of their time to other important matters requiring attention.

CHAPTER VII

Methods Recommended For Increasing Operational Effort.

1. It is evident that a pre-requisite for operational efficiency is the provision of a well-equipped and organized briefing section on Transport Support Squadrons. This fundamental was recognized at the outset of the campaign and it is considered that the arrangements made to that end, as outlined in Chapter VI of this Review, did much to increase operational effort. It is essential that the importance of complete briefing and de-briefing facilities be born in mind in the planning of any future Transport Support operations.

2. Quite apart from the aircrew rations carried in the aircraft, it is essential that an appetizing light meal be provided between trips when crews are flying over 10 hours per day for prolonged periods. 'K' rations for this purpose are quite unsuitable. The aircrew canteen should be situated adjacent to the briefing section and should be made as comfortable as possible under prevailing conditions.

3. Refuelling and topping up with oil must be carried out as soon as an aircraft parks, and a special ground servicing crew should be instantly available to rectify any minor snags encountered.

4. Loading and unloading parties must be trained to a very high standard of efficiency, and should be strictly supervised by R.A.F. Loading Control Officers and N.C.Os. For quick turn-around experience has shown that it is very helpful if the crew unlash the load while the aircraft is taxying to the unloading bay. Rope lashings are most suitable for Dakotas but it is essential to replace them as soon as signs of deterioration become apparent.

5. Airstrips constructed for close support work should ideally have two parallel runways - one for landing and the other for take-offs. Owing to the speed with which it is frequently necessary for such strips to be constructed, this is not always possible. Should, however, only one strip be available then there should be loading bays at either end and landings made in one direction and take-offs in the other. Unnecessarily long taxying should be eliminated to save time on turn-around. When an airfield's capacity is limited it should not be allowed to become saturated with aircraft milling around in the circuit waiting for other aircraft on the ground to take-off before there is room for them to land and park. Planning of aircraft arrival times is important and must be carefully watched where small airfields are involved or where large-scale operations are contemplated.

CHAPTER VIII

An Outline of the Casualty Air Evacuation System In Use in CCTF/232 Group. Effects of Climatic and Living Conditions on the Health of Ground and Air Crews in the Field.

1. Casualty Air Evacuation in Co-Ordination with Supply Delivery Trips.

The general policy adopted in CCTF/232 Group was for aircraft to deliver supplies and take back from forward fields on their return trips loads of casualties to base hospitals and to special centres established in Comilla. This system functioned satisfactorily inasmuch as the increased flow of supplies into Burma as the campaign reached its climax resulted in sufficient aircraft being available for the evacuation of casualties.

For the purpose of handling these casualties from forward Army medical units and forward transport landing-grounds, R.A.F. Casualty Air Evacuation Units were set up. These units were situated on the transport strip covering a particular area, and they received from the forward hospitals casualties brought in by Army Motor Ambulance Companies. The necessary medical sorting and attention, accommodation, food, etc, and the emplaning of the casualties on the supply aircraft, were then effected. Liaison was maintained between the CAEUs and the forward medical units so that an approximate estimate of the number of casualties to be anticipated could be known in advance. As close a liaison as possible was also maintained with CCTF/232 Group Headquarters by means of wireless; this gave an estimate of the number of aircraft to be expected. After the aircraft had been unloaded, casualties were emplaned, according to their degree of emergency, for base hospital medical treatment. The average strength of a CAEU was 40 BORs with a variable number of Indian personnel.

On the intermediate and base airfields a similar organisation was in operation. All CAEUs were capable of staging approximately 100 wounded for as long as was necessary.

As will be appreciated, many seriously wounded or sick personnel required medical attention whilst travelling in the aircraft to base. For this purpose an Air Ambulance Orderly Pool was established at base, composed of specially trained nursing orderlies who flew in all aircraft. These orderlies carried complete first-aid equipment, including oxygen-giving apparatus. In this theatre, due to the mountainous nature of the terrain, portable oxygen equipment proved essential and undoubtedly saved many lives.

The CAEUs in forward areas were also responsible for the off-loading, treatment and conveyance of casualties received direct from the battle line in light aircraft. These aircraft proved invaluable in evacuating casualties from clearings and small strips in outlying regions.

The deployment of CAEUs was arranged in advance by Headquarters CCTF/232 Group in co-operation with the Army formations served, through Headquarters Army Air Transport Organisation. This procedure functioned satisfactorily throughout the campaign, and a total of 130,000 casualties were evacuated, with only one death in the air and the loss due to bad weather of one aircraft carrying 24 casualties.

2. Effects of C[illegible] and Living Conditions on the Health of Ground and Air [illegible]s in the Field.

No outstanding medical problems arose in this matter. Field sanitation was employed throughout and the main diseases were Amoebic Dysentery, Bacillary Dysentery and Malaria. These diseases affected ground crews and flying personnel in an equal manner. Food conditions were at times precarious, and personnel lived on half-rations in most of the forward area for short periods, but this did not produce any marked effect on either their physical or mental condition. Multi-Vitamin and Suppressive Mepacrine Tablets were taken daily by all personnel.

3. Recommendations.

a) Establishment of CAEUs.

The Officers Commanding all CAEUs were Flight Lieutenants. Whilst this worked satisfactorily with some of the Army formations concerned, it led to some friction with others as the Officers Commanding CAEUs ranked below the most junior officers in the D.D.M.S. Office - i.e. Major. Close direct liaison had to be maintained personnaly with D.D.M.S. and Officers Commanding Forward Medical Units.

Also the Officers Commanding the Indian Staging Sections working in conjunction with the CAEUs were Senior RAMC Captains despite the fact that they were under the control of the Officers Commanding the CAEUs who were in most instances junior within their rank to the Officers Commanding the Indian Staging Sections. It is therefore strongly recommended th the Officers Commanding CAEUs should hold the rank of Squadr... Leader.

b) Aircraft.

Throughout the campaign C-47s were the chief aircraft employed for casualty evacuation but in emergencies C-46s were also used. The earlier type Dakota had metal bracket fittings which, while serviceable when new, became broken and warped after repeated use. This at times caused considerable delay in loading and unloading of stretcher casualties. The Dakota (Mark IV) had webbing fitting in all cases. This type of fitting proved much more serviceable and was easier to load and unload. The Dakota aircraft with its capacity for carrying 18 stretcher or 30 walking cases, proved ideal for the purposes of casualty evacuation in this theatre.

c) Air Ambulance Orderlies Equipment.

As already stated, R.A.F. Air Ambulance orderlies flew with all aircraft, and in this connection two points are worthy of note :-

(i) The air ambulance orderlies should be regarded as part of the crew of the aircraft, and should be given flying pay and some badge of distinction. They should also have the acting-paid rank of Sergeant in this trade.

(ii) The equipment carried by the Orderlies consisted of 3 panniers - one containing essential first-aid equipment, including bed pans, urinal bottles, etc., one containing food and medical comforts and one containing a portable oxygen apparatus complete with pressure gauge, flow meter and mask. This apparatus should be on the personal charge of the Orderly as he is at all times responsible for its serviceability.

d) Blankets and Stretchers.

A pool of these should be held at all forward CAEUs. This pool should be maintained by the RASC and blankets should be flown from base as required at the Army's request.

e) RAF Medical Liaison Officer.

One RAF Medical Officer would have proved invaluable as he would have been able to maintain liaison with the Army and RAF Medical authorities concerned. It was found that the Army had little idea of flying conditions and types of casualties that could be evacuated with safety by air. This officer could also advise Officers Commanding Medical Units on all matters concerning flying conditions, and maintain liaison with Officers Commanding CAEUs and their controlling RAF Group.

f) Rations for Aircrews.

As was to be expected, rations or refreshments were not available on the forward landing strips. In future campaigns it will be necessary to issue crews with rations to cover each day's flying programme, and an attempt should be made to provide hot sweet tea on the ALGs.

g) Oxyken.

Shortage of RAF equipment, so marked throughout the campaign, made it not always possible to provide all aircrews with oxygen - despite the fact that bad weather and mountainous terrain frequently necessitated aircraft having to fly at oxygen heights for long periods.

It is absolutely essential that oxygen be available at all times for Transport crews in this theatre. It is not considered an essential supply for passengers. It would, however, be of great benefit if, in addition to a built-in supply, provision could be made for supplying four loads for casualties. The present portable oxygen outfits, although they saved many lives, are cumbersome and weighty and can normally supply only two people. It is considered that a built-in supply on the lines suggested could lead to an eventual decrease in the weight of the equipment carried.

CHAPTER IX

Methods of Control of Transport Aircraft Over Forward Airfields and Dropping Zones.

The advanced landing grounds used for supply bases by the 14th Army can be divided into two groups :-

(a) Two strips, approximately 2,000 yards long, each ending in an unloading bay built to accomodate 30-40 aircraft on the ground at one time.

(b) Single strip, often cut from paddy, with one unloading bay or apron, capable of accommodating 25-30 aircraft per hour.

1. Method of Control of the above Airfields

(a) Take offs and landings were respectively S-N and N-S, one strip being used for each purpose, hence a flow of clock-wise traffic.

Heavy overlow traffic was parked along the sides of the strips where they were either unloaded or sent later to an unloading bay. In this manner it was not too difficult to handle 350 aircraft daily on the double strip, the governing factor being the unloading facilities.

The Control Tower was positioned to give the maximum view of the field at any one time. Aircraft, with the exception of fighters, were controlled by R/T and, in the event of failure or lack of R/T in the aircraft, cartridged and Aldis Lamps were always available. Fighters were controlled by the Control Tower with an Adlis Lamp. Sorties by fighters were notified to the Control Tower beforehand and this enabled the Control Staff to work the fighters into the traffic stream with the minimum delay to fighters and transport aircraft.

Direct telephone communication was kept with all major points on the airfield, including the M.E.O. and Squadron dispersals. Signals facilities consisted of Local V.H.F., 6440 channel and point-to-point. The latter was particularly useful since, if an aircraft was out of range of its base and a diversion became necessary, the message could be flashed in code on point-to-point and relayed by R/T from another station on the aircraft's route.

American type electric flarepaths were installed on these fields, particular attention being paid to obstructions, etc. It was absolutely essential, in view of the large amount of traffic, that the existing circuit and ground procedures were strictly adhered to at these fields.

b) On the second type of field other difficulties arose - the single strips were often constructed in a matter of 48 hours, by the 14th Army engineers assisted by CCTF engineers. The sites chosen were, in many instances, sun-baked paddy fields which were quickly levelled, dimensions 2,000 by 200 yards approximately. After the first day's usage the whole field would be covered, an inch deep, with a fine dust; at a peak period a dust cloud some 300 feet high was a common occurrence. This dust cloud made the movements of aircraft a hazardous affair since it provided a good range marker for enemy shelling. The dust, apart from causing much general discomfort, also tended to get into aircraft engines, despite all precautions.

Little could be done to combat the dust on the very forward strips as no water was available. Old engine oil was used but was not satisfactory. At Akyab a pumping arrangement was set up and sea water was sprayed over the field more or less continuously during the day. At night old engine oil was put over the landing area and rolled in with a motor roller. This noteworthy successful effort to maintain airfield serviceability assisted in keeping up the movements of aircraft to 12,000 per month.

There was usually only one unloading bay and aircraft landed in the direction of the bay, turned off, unloaded, and when ready for take-off taxied down to the end of the runway where it could be run-up without delaying other aircraft coming in to land.

Control was once again by R/T, with emergency equipment should aircraft R/T fail. Again, where possible, an American type electric flarepath formed part of the Flying Control equipment.

The Engineers gave an estimate of the number of aircraft the airfield could take and a rear base controlled the flow of aircraft, at the same time getting the maximum usage from the field. A strict R/T watch had to be kept by all aircraft for any alterations, due to enemy intervention.

These fields had many obstructions and it was of primary importance that Flying Control kept them well marked, by day and night.

The Flying Control Teams were in no way combatants, and they were responsible only for themselves if directly attacked and for the destruction of all secret documents and equipment.

2. Control Over Dropping Zones.

The form of lay-out of a D.Z. and its dimensions as laid down in an Army pamphlet were used by CCTF for S. D. operations. Each D.Z. - sometimes there were five or six within half a mile of each other - was identified by a ground strip of two letters.

It was found best to stagger aircraft arrivals at D.Z.. at two to five minute intervals - a longer or shorter time being used according to the number of aircraft taking part in the operation.

Aircraft adopted aerodrome circuit procedure, conforming to the pattern of the leading aircraft - if this was satisfactory. Drops were best made from 600 feet where possible, five or six runs being necessary to drop a load of 2½ tons. Five to seven containers at a time were dropped on a D.Z. some 800 yards long.

Though R/T contact with ground parties was attempted, when communications had been established, it seldom provided effective control. This was mainly due to the proximity of the D.Zs. to each other since traffic on one D.Z. was drowned by the traffic on the others.

The only form of control that was anywhere near efficient was with use of Verey cartridges, used in accordance with pre-arranged code. Even this was not 100% effective since trees and vegetation often screened the burning cartridges on the ground.

Crews were seldom unable to locate the D.Zs. no matter how bad the siting had to be - ground forces were not always able to chose. During the monsoon it was found that a D.Z. safely sited became dangerous to find in low visibility - a small hill of even 2-300 feet made a low level search difficult and hazardous.

The split-load technique, often used in CCTS, was found to be extremely useful. The dropping load was placed in the aircraft last, dropped en-route to a forward airfield thus bringing the all up weight of the aircraft within the prescribed limits for landing at the airfield.

During the pre-monsoon period airfields often became unserviceable during the night to last probably 6-10 hours according to the amount of rain fallen. When this happened the early morning sorties used a D.Z. situated close to the airfield thereby maintaining the tonnage required for the airfield.

3. Equipment and Personnel.

It is pointed out that all British Signals equipment used for the purpose of flying control was not by any means up to the standard of that employed in the United Kingdom. The primary cause of this was the shortage of suitable equipment transportable by air. The only road available from Calcutta into Burma was via the Manipur Road - a journey taking at times up to 28 days. Furthermore this road was, as has already been mentioned elsewhere, in a very bad state of repair, and consequently all equipment and vehicles had to undergo a major overhaul before taking part in operations.

In comparison with the British, the American Signals equipment was all air-transportable and of excellent quality. It was manned by Army Airways Communication System teams, each usually consisting of one Technical Officer and 13 or 14 other ranks, four of whom were R/T operators for Tower Control. All these personnel were highly trained and capable of setting up airfield control facilities, with point-to-point W/T communications to CCTF Headquarters, within 6-10 hours. On all the major forward airfields during the advance every effort was made to add one or two RAF Flying Control Officers and three Airfield Controllers to supplement the AACS Team. This enabled upwards of 360 aircraft per day to be handled at Moiktila under the most appalling conditions of heat, gun-fire, and dust.

Throughout the whole of the campaign there was a lamentable shortage of RAF Flying Control personnel. The Americans used seven AACS Teams while the RAF Element of CCTF had only three Wing controlled Teams very much under-staffed in personnel, and eight Traffic Teams, each consisting of one officer and three Airfield Controllers. The Traffic Teams were attached to the Wings to provide extra personnel for the base airfields. As some of these forward airfields were only open for three days, the Traffic Teams were very useful for looking after them, going in each day with the first aircraft, complete with a Command Set (if available), and Aldis Lamp and batteries.

In the peak period, eleven CCTF forward airfields were in use, and at any one time never more than seven ever had adequate control. To surmount this difficulty, control was done from the first aircraft down in the early morning, and, when this aircraft was ready to leave, another one took over control.

The marshalling of aircraft was done mainly by Army BORs, some of whom had had training in this work and did very well under supervision but generally speaking their hand signs were not always easily interpreted by pilots. In spite of this the aircrews became used to the signals and, if a taxy-ing accident did take place, the primary cause could probably be attributed to tiredness as a result of excessive heat. Dakotas became veritable bakery ovens in temperatures varying from 100 to 116 degrees on the ground.

From experience gained, it is strongly recommended that plans should be made to produce similar units to the American AACS Teams, with additional personnel comprising 3 Flying Control Officers and 3 Airfield Controllers. It is further recommended that a portable flare-path similar to the American type should be made available to the RAF, since its total weight for 1,600 yards of runway lighting is only 2,000 lbs. It was found to be extremely efficient in working and, after experience, could be laid out in three hours.

CHAPTER X7

Details of Signals and Radar Communications Available in CCTF/[illegible] Group Operations.

On the formation of CCTF Headquarters the existing Signals set-up, as left behind by the 3rd Tactical Air Force, was as follows :-

At Comilla there was a smoothly running and well organised Signals Centre. This Signals Centre was strategically placed on the trunk land-line route from Calcutta, near where it split and turned North to Imphal and Tulihal, and South to Chittagong and Cox's Bazaar.

Fixed communications by land-line to Calcutta (Eastern Air Command), to Imphal (Headquarters, 221 Group), and to Cox's Bazaar (Headquarters, 2[illegible] Group), and to various intermediate stations, were all backed up by continuous or standby W/T links.

Telephone circuits existed on a common user basis to all Centres, and although speech was usually possible to all these Centres, a high priority was required if connection was to be ensured during working hours. Before 0800 hours and after 2000 hours there was normally no difficulty in getting through immediately, a fact which was a great advantage to Combat Cargo Task Force Headquarters.

The air-ground organisation was based on the use of the 221 Group and 224 Group Bomber Strike Frequencies. HF/DF Stations were erected, working on the appropriate frequency, (4615 KC/S for a Station within the 221 Group area, and 4760 KC/S for a Station in the 224 Group area). As Squadrons in the early stages normally lifted from a base to a forward area entirely within the main area of one of the two Groups, the arrangement was a very satisfactory one for all concerned. All main Stations gave and passed on enemy aircraft warnings on R/T on 5270 KC/S, and all aircraft kept watch on the R/T Set SCR 274 on this frequency. With the limited Stations used and the limited power available this achievement is considered creditable.

The chain of Command was particularly vague with regard to 900 Wing which was originally based at Agartala and later moved to Comilla. This Wing administered, and as far as possible controlled, all CCTF Squadrons which at that time were located at Agartala and Imphal.

With the arrival of two new CCTF Squadrons, however, the position became more than 900 Wing could cope with satisfactorily. Some Squadrons were operating from Stations which had no base HF/DF Stations, and when 221 and 224 Groups began to move forward taking their communication terminations with them, the RAF Element of CCTF had neither the personnel nor the equipment with which to replace them.

At this juncture the American 3rd Combat Cargo Squadron at Tulihal, who were always better provided with equipment and personnel than the RAF Squadrons, agreed to control the new RAF Squadrons there and did so effectively. It is noteworthy that the high power R/T provided by the American Army Airways Communication System at Tulihal gave them the utmost confidence, and aircrew were almost unanimous in expressing their preference of this form of R/T control.

The relatively high powered R/T used by the AACS at all Stations made the RAF TR 9 Set hopelessly inadequate by comparison. The fact that the SCR 274 or equivalent R/T Set had not been authorised for RAF local airfield control probably did more harm to RAF Signals and Flying Control prestige than any other one fact.

As soon as was practicable a Signals Staff Officer of the RAF Element of CCTF went to the Imphal area to inspect the two new Squadrons. As a result of this visit it became evident to CCTF Headquarters that the efficiency of these Squadrons was being hampered by lack of Signals spares, by insufficient personnel and by inadequate charging arrangements. It is pointed out, however, that the charging position did not arise through any fault of the Squadrons; batteries had become unserviceable due primarily to over-use through lack of replacements, and more than once it was found necessary to close down W/T servicing due to this cause.

At this time news was received that CCTF would shortly be reinforced by two Mobile Transport Wings. This news was very welcome to CCTF Headquarters who realised that with their arrival a Signals organisation would be available on the spot to provide the very necessary communications, to re-organize the existing land-line situation, and to be responsible generally for all Signals arrangements in the Imphal Plain when 221 Group Headquarters moved forward.

In due course 341 Mobile Wing arrived. The Signals Section, including equipment and all personnel, consisted of 1 Signals Officer. There was an establishment for telephonists only but none was held. At this point CCTF Headquarters, who had continually asked for personnel and equipment, decided that the Signals Centre at Comilla would have to be reduced to a very bare 3 Watch basis in order to supply a nucleus to the Wing. The Wing itself had undertaken to 'scrounge' and improvise equipment necessary to provide minimum communications. Nevertheless Eastern Air Command, by whom CCTF was operationally controlled, elected to withdraw a number of the Signals Centre personnel and equipment at Comilla in order to carry out an operation with 224 Group, which merely aggravated the existing Signals position. It is felt that Eastern Air Command was not fully aware of the severe strain placed on CCTF resources as their commitments increased. It is a fact that at this time much Signals equipment was available for use in various parts of India, and, furthermore, between 800 and 1,000 Signals personnel were located at Sambre doing no Signals duties whatsoever. Yet in the forward areas the existing resources were being further and further stretched in a rapidly expanding organisation.

By this time 342 Mobile Wing had arrived, and its Signals personnel were identical in strength to 341 Wing, with the exception of one additional Telephone Operator.

The Air Staff of Combat Cargo Task Force had now worked out, in conjunction with the Signals Section, a system of centralised control which they were anxious to put into practice. The American air-ground frequency of 5400 KC/S had become more and more crowded and was tending to encroach on the air-warning frequency of 5270 KC/S. This frequency was thereby becoming merely a second air-ground frequency, and consequently useless for the purpose for which it was designed, namely that of providing air warnings of enemy raiders. There was accordingly a multitude of transmitters set up on 5270 KC/S which, through excessive enthusiasm and poor R/T discipline, were causing further trouble. Unfortunately the greatest offenders had the most powerful transmitters.

It was therefore decided to call all transmitters off 5270 KC/S, except one set to be controlled from 221 Group Filter Room, one set to be controlled from 224 Group Filter Room, and one set to be used by 900 Wing in Comilla for the purpose of giving test calls and providing a monitor watch for Combat Cargo Task Force Headquarters.

221 and 224 Groups acknowledged their responsibilities in this matter and agreed to set up T1190 Transmitters on 5270 KC/S. Unfortunately, however, effective air warning was never provided since 224 Group's Transmitter remained too far in the rear to give early enough warning to aircraft in the forward areas, and 221 Group, who kept their warning set well forward, were always having difficulty with their power supplies and rarely produced any transmission audible to the monitor stations at base. It will be readily appreciated that this situation did not tend to encourage confidence in RAF. Signals, and both the RAF and USAAF preferred to listen out to the American air-ground frequency of 5400 KC/S which did at least give audible communications.

It should be noted that enemy use of radio countermeasures was on an extremely limited scale and consisted merely of attempts at "jamming" of frequencies. These attempts, however, never reached serious proportions nor did they noticeably affect our operations.

In early March two Mobile Signals Units, the first of a number recently formed arrived in Calcutta. They were just in time to be shipped to Akyab and thereby prevented 341 Wing being stranded without communications. The Wireless Operators came direct to Comilla and on arrival were found to be very inexperienced. They were given a week's intensive training at Comilla, and when they went into operation they put up quite good results having regard both to their inexperience and to the fact that they were using equipment on which they had not previously worked.

Mobile Signals Units continued steadily to arrive and by the end of April CCTF/232 Group was, as far as quantity was concerned, in a much more satisfactory position with regard to personnel and equipment. The Wireless Operators, although

very inexperienced and, not unnaturally, extremely bored with their unfortunate experiences at Sambre, nevertheless rapidly improved. The earlier situation, whereby aircraft operators lacked all confidence in their counter-parts on the ground, was now changed and the future appeared brighter.

By this time 232 Group had developed its own W/T Air-Ground Organisation. All flights were conducted in strict W/T silence, except in emergency, and it was possible to have all R.A.F aircraft on the same frequency, 4470 KC/S. Comilla, Akyab and Ramree all had HF/DF Stations on this frequency, and there was therefore every opportunity available for a 'fix' to be obtained on any aircraft in distress in the event of its non-return.

This frequency was found to be satisfactory, except in the immediate vicinity of Imphal where there was bad screening. It had never been possible to move the Signals Centre from Imphal to Tulihal due to the permanent nature of the power supplies at Imphal and to the lack of any others at Tulihal.

The direction of supply had now completely altered. Most flights no longer began, stayed, and ended in one Group area, but aircraft invariably took-off in the 224 Group area and flew and flew over the hills into 221 Group area and back again. By the time the monsoon was due the use of the air warning frequency had been altered almost entirely from its original main function of enemy aircraft warning to its subsidiary function of emergency meteorological warning. With the diminishing danger of enemy aircraft and the increasing danger from bad weather conditions, messages became far more frequent and at the end of May when 224 Group was withdrawn from the line and retired to India, their air-ground frequency was handed over to 232 Group, who split their main operational bases between 4470 and 4760 KC/S.

Frequent meteorological broadcasts were made in an attempt to offset the danger of aircraft losing communication in bad weather conditions. Reference has already been made in Chapter IV to the effectiveness of VHF in respect of meteorological broadcasts yet inspite of early promises of all aircraft being completely fitted with VHF by the time of the monsoon, only 20% were so fitted due to shortage of equipment.

Reference must here be made to the American AACS Tactical Flying Control Teams for forward airfields, mention of which has already been made in Chapter I. These teams were well thought out, contained experienced and keen personnel, were well-equipped including very sound power supplies, and proved extremely successful. When the Americans left Burma they naturally expected the R.A.F to improvise an equivalent. An equivalent Unit was suggested but it was not possible to provide from existing resources, and, owing to the long and complicated system of control in India, it is admitted that there was no chance of receiving them in time for the purpose for which they were intended. When eventually they were produced, the equipment was far too cumbersome, badly packed, and mostly arrived unserviceable; the power supplies on which the whole concern depended were unreliable and the personnel were inexperienced.

When the Americans did finally depart they were induced to agree to leave their major MF Beacons behind but not their tactical teams, and it is a matter for very considerable thought that by the middle of June there was still not one forward field yet in communication with base due to the reasons outlined above.

During July ACSEA displayed some interest in transit times of signals and as a result signals passing through 232 Group Signals Centre were scrutinised and efforts were made to reduce both the transit time and all unnecessary traffic.

Squadrons were now beginning to report a more satisfactory state of affairs with regard to radio aids. The most popular facility was the MF Beacon, this being a pilot interpreted aid. Base airfields now possessed VHF/DF, HF/DF, Eureka Beacons, MF. Beacons and Tower Control, while forward airfields were scheduled for MF Beacons and Tower Control only. If, however, it was envisaged that any forward airfields would at some time in the future be used as permanent fields, the long term policy was to fit them as base airfields.

Shortly before the end of the Japanese war Meteorological broadcasts, arranged in UCOPIL (Met. code) were put out at twice-hourly intervals on the air-ground channels and also from MF Beacons. The times of the broadcastswere staggered so that a broadcast was being made every 5 or 10 minutes.

Finally, it is pointed out that towards the end of May authority had been received from ACSEA for the use of SCR 274 Sets for airfield control, and during the interim period pack-sets were manufactured locally and proved satisfactory. Despite the receipt of this authority, it is nevertheless a fact that up to the end of the Japanese war not one SCR 274 Set had been received through the normal channels of supply.

Recommendations:

The following recommendations are made:-

(a) Equipment intended for use by Air Transportable Units should itself be air transportable. This means that it should be light and compact for ease in air movement, and at the same time robust in order to stand up to the rougher handling it will receive by virtue of its mobility.

(b) Transport aircraft should be completely fitted with VHF. At the moment, a large number of Group aircraft are thus fitted, but replacement aircraft are still arriving without this equipment. As these often replace aircraft already fitted, the VHF position can conceivably deteriorate rapidly.

(c) Signals Sections should at all times be kept up to established strength, thereby preventing undue strain on overworked personnel. Every effort should also be made to ensure that the delivery of equipment vital to the progress of operations is not at any future time sacrificed for the sake of preserving the status quo at rear Units hundreds of miles from the forward areas.

(d) It is of vital importance that there should be good land line communications between Group H.Q. and its Wings.

Radar Organisation in CCTF/232 Group.

It is desirable that more detailed information now be given on all aspects of the Radar organisation which was closely tied up with the Signals organisation. Mention of certain Radar facilities has already been made in earlier Chapters and in connection with other aspects, but it is impossible to fully appreciate all the difficulties encountered unless a complete picture is given.

A Radar Officer with the rank of Flight Lieutenant was one of the first CCTF Staff Officers to arrive at Comilla preceding the arrival of the main body of officers by several weeks. He had the advantage of having come direct from 38 Group with experience in Airborne work. At this stage, no normal facilities for work were available, nor were there any records of past work on the Squadrons. This officer then proceeded to set up an office assisted by 900 Wing Radar Officer and this task was achieved by begging and borrowing from neighbouring units. An initial visit was made to the Squadrons at Agartala and Imphal Valley, which revealed an acute lack of test equipment, spare main equipment and personnel - particularly experienced personnel and NCOs. It also revealed that there was little knowledge in the Rebecca-Eureka field of Radar.

Efforts were first turned to Eureka Base Beacons of which there were too few and those in operation were not reliable due to the lack of stand-by equipment, suitable power supplies and efficient maintenance. The existing installations were thoroughly overhauled, reinforced and made to work on a fixed time basis with a request period to cover the remainder of the twenty hours (for those that could not be put on continuous operation).

The supply position was then attacked and Headquarters Eastern Air Command were requested to negotiate for the supply or production of beacons to cover the needs of CCTF for base and forward airfields. In spite of repeated requests, however, these beacons were not supplied in workable quantities until May 1945, and then only under pressure.

To cover the interim period, CCTF succeeded in repairing the old beacons and in some cases beacons were made from American I.F.F. Sets (BC 966A Receivers), while a small number of installations were obtained from No. 6 B.S.D. for new bases. Great difficulties were still experienced in obtaining suitable and reliable power supplies.

Due to the previously unreliable nature of the Rebecca Eureka system in the Command, it was found necessary to prove to the Navigators that the system would work and that it could be relied upon. It was decided that the best method would be to start with the Base Homing Beacons and work out to the forward airfields and later to the Army supply dropping portable Eureka beacons.

After a short time the Base Eureka Beacons were on a good footing and it was possible to ensure a maximum use of all available Radar equipment either American or British. Although good results were obtained on the Base Eureka Beacons, it was not possible to provide a very extensive and fully reliable service due to the equipment and manpower shortages already mentioned.

Eureka Beacon installations at forward airfields were mainly provided till as late as June 1945 by Beacons owned by the USAAF but often operated or maintained by the RAF. This system worked quite well but was again spoilt by lack of equipment in the form of stand-by installations, shortage of reliable power supplies, mechanic deficiences, untrained mechanics and shortages of suitable test equipment.

To add to the difficulties, when the new Squadrons arrived early in 1945 they were even more poorly Radar equipped than those already in the area. Some had no test equipment and there were usually large deficiences of Radar personnel, particularly Officers and NCOs. This became a matter of considerable embarrasment to the RAF Element of CCTF.

Difficulties were experienced in obtaining Radar Servicing Vehicles Type 422, but in many cases it was possible to arrange for the issue of a substitute vehicle. The Radar Servicing vehicles were being manufactured in Bombay by No. R.S.D. and although after many representations Headquarters, CCTF/232 Group Units were allocated vehicles on a high priority, it took several months for the vehicles to reach them. When a Unit moved, there was difficulty in moving the Servicing Vehicle to the new location. To overcome this, establishment action was taken to obtain one jeep per squadron in addition to the Radar Servicing Vehicle, Type 422. The jeeps, being air-transportable, could thuse be used to solve the transportation difficulties. They were, however, not received until quite late in the campaign and were thus not available during the period they were most needed.

Radar workshop facilities also caused many problems. At bases such as Imphal, Comilla, Akyab etc., standard Radar maintenance buildings were constructed. Naturally enough, these buildings were not always ready for the Squadrons on arrival and difficulties were experienced with interim accommodation. In some cases it was not practical to build standard R.M.Bs. due to the temporary nature of the airfield.

In some cases it was possible to arrange workshop accommodation in Nissen or prefabricated huts, but in others the Units were forced to use tents. These were not considered satisfactory, particularly under the prevailing climatic conditions. Efforts were made to obtain air-transportable prefabricated huts for each Squadron or a percentage of the Squadron, but these were found to be unavailable.

Having cleared up many of the earlier difficulties, efforts were next turned to the use of Eureka Beacons for supply dropping to forward Army Units. Several attempts had been made to employ Eureka Beacons for this purpose prior to the formation of Headquarters CCTF/232 Group with varying success. These efforts had been on a small scale and were mainly hampered by lack of equipment and a single efficient maintenance organisation for the replacement and repair of such Beacons.

There were many discussions with various Headquarters over the policy for the issue, maintenance and replacement of these Beacons. Unfortunately, the proposal that a Beacon Unit should be established on Headquarters CCTF/232 Group under their full control for the purpose of issuing, maintaining and replacing of all Beacons required by the Army Formations was overruled. The organisation proposed was a similar one to that used by No. 38 Group for the supply of Beacons to the Airborne Forces for the Continent.

The organisation actually authorised was the formation of Eureka Supply and Maintenance Depots (Army) and No. 181 and 182 Signals Wings under 224 and 221 Groups respectively, with a parent feeder E.S.M.D.(A) at No. 6 B.S.D. Unfortunately this organisation took many months to finalise, whereas it was felt that the single unit as proposed by Headquarters CCTF/232 Group could have been established quicker and would have been more economical to equip with test equipment [illegible] beacons.

At the same time as these plans were being formulated, the task of training Army personnel to use the equipment was being tackled. Another Radar Officer with the rank of Flight Lieutenant was first loaned to CCTF Headquarters and later became part of the Radar Staff. This Officer with two BORs went out to forward Army Units to liaise with and train Army personnel. This training programme was later extended when the services of two more Radar Officers and two BORs were made temporarily available to CCTF for this purpose.

This training programme proceeded very favourably in face of many local difficulties but the operational aspect was not wholly successful. Difficulty was experienced in obtaining at an early date a policy from higher authority governing both the Army and the Air Force responsibilities, code letters to be used and periods of operation etc. Sufficient suitable beacons were not available at an early date to allow them to be treated as expendable items and replaced as they became unserviceable.

In co-ordination with the Eureka programme, the Rebecca fitting problem was attacked. After some delay, a BAFSEA fitting party commenced to fit all the unfitted Dakota Transport aircraft in the theatre. If the task was to be completed in good time, it would have necessitated several parties, but sufficient personnel were not available. Here difficulty was experienced on Squadrons where the fitting party had completed its task, since fitted aircraft going back for an inspection were replaced by unfitted aircraft, and new aircraft were also arriving unfitted. The fitting was slow and finally had to be stopped entirely due to a Command shortage of AN/ARN-2 Rebecca Columns 7 and 9.

All this time Headquarters CCTF/232 Group had been pursuing the Rebecca, Eureka and Radio Altimeter test equipment problems with quite good results. Certain vital items, however, were still in very short supply and the power supply problem was particularly acute.

The use of the Radio Altimeters was noticeably limited by the restriction placed on the use of the high range AN/APN-1 equipment in Dakota aircraft. Great difficulties were experienced with aerial breakages and even after repeated representations and suggestions, no modification was authorised in the Command. This was disappointing because it was felt that, if the altimeter could have been made to function satisfactorily on both ranges and the aerial system modified to prevent breakages, it would have proved to be a particularly useful piece of Radar equipment.

In early 1945 a requirement had been raised for Mobile Gee chains for deployment in Burma to meet the Radar Navigational Aid requirements for close support aircraft of CCTF/232 Group. There was considerable opposition to this requirement and the chains were not forthcoming. A requirement was raised for Loran on a high priority; as the Group had been previously allotted the lowest priority for its fitment the priority was raised and it was stated that the task was required to be completed by the beginning of the monsoon, i.e. May, 1945.

The difficulties encountered in the fitting of Loran have already been referred to earlier in this Review and it will be appreciated that trainers and adequate power supplies were not forthcoming at a sufficiently early date to enable a sound training programme to be got underway before the equipment was fitted. Aircraft were not available for training flights. Both Navigators and Maintenance personnel were inexperienced with Loran. The limited squadron Radar servicing facilities were already strained with servicing Rebecca, and with the introduction of Loran they were unable satisfactorily to maintain all equipment. In general, there were too few mechanics and these were inexperienced. Some mechanics had been sent to No. 51 Radio School for a course, but they were limited in number and had no Squadron experience on the equipment. All these problems were repeatedly stressed by Headquarters CCTF/232 Group.

The services of a Radar Officer from No. 5 B.S.D. were obtained for some three weeks during which time he travelled to the Squadrons giving assistance and guidance to mechanics employed in servicing Loran. Later a Loran expert from England came on loan to 232 Group. The efforts of this officer proved to be of great value. By this time the position was considerably easier but the weather conditions had now changed and the monsoon added to the servicing and maintenance problems.

Despite these difficulties the basic organisation was now well in hand and the day was in sight when an efficient Radar Servicing Organisation could be seen ahead. Towards the end of the campaign the servicing personnel were obtaining experience on Squadrons which has proved invaluable and the position with regard to equipment likewise improved.

Recommendations:

The recommendations already mentioned in respect of Signals equipment are endorsed in toto. It is further recommended that, in any future campaign involving transport support operations, every effort be made to train servicing personnel before their departure to the forward areas on posting to a Radar Servicing Section. Before new equipment is introduced, efforts should also be made to circulate technical information and provide the Group concerned with Technicians capable of instructing servicing personnel on that equipment.

CHAPTER XV

Responsibilities of Staging Posts, Handling of Air Traffic in Liaison with the Army.

The handling of Air Traffic at the time of the formation of Combat Cargo Task Force was vested in a number of Staging Posts located at Agartala, Comilla, Chandina, Chittagong, Hathazari, Imphal, and - towards the end of December - Indainggalle. This latter Staging Post was formed in order to handle the very heavy traffic and increased loads of supplies that were being delivered at Indainggalle in the wake of the Army's advance.

These Staging Posts were controlled by the RAF Element of Combat Cargo Task Force but manned by Headquarters 229 Group through 117 Wing, and the difficulties in administration caused by the complex links on control, and which affected all CCTF departments, necessarily influenced traffic arrangements. As the 14th Army advanced further into Burma the need for more Staging Posts on forward airfields became apparent, and early in January additional ones were formed.

There was, however, some confusion over the responsibilities that were to be assumed for the handling of the traffic on these Staging Posts, and some differences of opinion arose between the RAF and the Forward Airfield Maintenance Organisation of the Army as to their respective responsibilities. Furthermore, these forward Staging Posts themselves were initially hard-pressed inasmuch as their role of controlling passenger and freight traffic of internal Air Lines encroached on what might be termed 'more operational' duties.

Proposals accordingly went forward in January for the setting up of static sub-sections to Staging Posts, whereby these, already necessarily mobile, would be relieved of an additional responsibility. This, though, required an increase in establishment, and experience had shown that the current establishment was inadequate both in personnel and equipment. There was a marked shortage of mechanical transport on Staging Posts and the swift transportation of both heavy and light freight, personnel and equipment, was accordingly hindered throughout the campaign. Towards the end of the Japanese War more personnel and equipment were belatedly forthcoming.

During February, in order to clarify the respective duties of the local FAMO and RAF representatives on forward Staging Posts, a Conference was held at Headquarters, Eastern Air Command between the MGA 33 Corps, the AOC 229 Group, and the Deputy Commander of Combat Cargo Task Force. It was agreed there should be a period of experimental joint handling of incoming loads (bulk Army stores) by No. 5 Staging Post and the FAMO. This experiment was partially successful during the short time it was in operation. The Army Organisation concerned, however, found that due to lack of personnel they were unable fully to undertake their suggested responsibilities, and it was then agreed that No. 5 Staging Post should operate as formally.

This experiment had arisen out of proposals by Headquarters Allied Land Forces South East Asia suggesting that on forward airfields receiving supplies for Army Corps and Divisions etc, the Army Element of Staging Posts be withdrawn and the responsibilities of the RAF restricted and transferred to the FAMO. This plan envisaged the Air Force's remaining responsibilities in this connection being limited to the reception of purely Air Force packages and to the evacuation of casualties.

The reception in bulk of all main supplies for Air and Army Formations in the area was to be the responsibility of the FAMO. The same applied to the despatch and reception of all leave personnel and to the handling of reinforcements, together with the receipt and despatch of individual packages by mail on special aircraft.

This plan was not acceptable in toto to CCTF Headquarters, it not being considered that transfer of responsibility on such a wide scale would necessarily [illegible] all round efficiency. It was, however, agreed in principle that the responsibility for the reception of bulk supplies, both for the Army and the RAF, should revert to the Army. It is very unlikely that the Army would have found it necessary to put forward their proposals had not the acute shortage of RAF personnel prevented the building up of Staging Posts as swiftly as had originally been planned.

Nevertheless, the discussions held between Army and RAF representatives proved of value in co-ordinating existing requirements, and as a result clear cut duties and responsibilities of Staging Posts on both and rear and forward airfields were outlined. These responsibilities were drawn up by CCTF Headquarters and are quoted below as a general record of the work done by Staging Posts up till the time of the fall of Rangoon.

Staging Posts on Base Airfields.

The duties and the responsibilities of Staging Posts at base airfields were as follows :-

a) To work in closest co-operation with RAMO.

b) Marshalling and dispersal of aircraft under orders of Flying Control, except in such cases where there was a special organisation to undertake these duties, i.e. on certain USAAF bases.

c) Selecting of loads in accordance with instructions issued by RAMO and guiding of M.T. from control point to emplaning area. (Note: Load manifests had to be scrutinized to ensure that the weight was not excessive and that all that necessary precautions were taken concerning the loading of acids and other volatile stores).

d) To report suspected cases of tampering with canteen or other stores to the Officer Commanding R 40 or to the Captain of the aircraft concerned.

e) To supervise the parking of M.T. employed in loading and unloading aircraft, and to take all possible precautions to prevent damage to aircraft by such vehicles.

f) To supervise the loading of aircraft and to effect the lashing of loads, except when this was done by flying crews.

g) To ensure that adequate lashing materials, rails, etc, were available for (f) above.

h) To supervise the unloading of aircraft with special attention to speed and prevention of damage.

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j) Reception and despatch of all reinforcement, leave, and repatriation personnel in conjunction with the Army Movement Control Section or other Army Organisation. The manifestation of such personnel were undertaken by Army authorities except where scheduled air mail services were concerned. The responsibility of the Staging Posts was to check personnel emplaning against the manifest in order to guard against overloading.

k) Reception and despatch of casualties (in cases where no RAF CAEU existed) in conjunction with Army/RAF Medical authorities.

l) Reception of despatch of individual passengers, freight and mail on special or mail aircraft.

m) Reception and despatch of all mails in conjunction with Army/RAF Mail authorities.

n) Manifestation of all mails and freight with the exception of Army/RAF bulk supplies.

o) Ensuring that emplaning and deplaning bays were kept clear of stores, salvage materials etc, as received, and that temporary dumps were accessible to M.T. without interfering with the movement of aircraft.

Staging Posts on Forward Airfields.

The duties and the responsibilities of Staging Posts on forward airfields were as follows:-

a) To work in closest co-operation with FAMO.

b) To supervise the unloading of aircraft, with special attention to speed and prevention of damage to aircraft. It should be noted that the checking of loads against manifests was undertaken by Army personnel where a FAMO or other similar organisation existed. Furthermore, Officers Commanding Staging Posts were not responsible for detailed allocation of labour and M.T. for loading and unloading purposes. Any delays in turnaround of aircraft were reported by O.C. Staging Post to O.C. FAMO, since the responsibility for rapid turnaround rested with the O.C. Staging Post.

c) Selecting of loads in accordance with instructions issued by FAMO and guiding of M.T. from control point to emplaning area.

The remaining responsibilities of Staging Posts at forward airfields were identical to those undertaken by Staging Posts at base airfields.

At the time of the recapture of Rangoon Combat Cargo Task Force was operating eleven Staging Posts. At this time, however, instructions were received from Headquarters Air Command South East Asia to the effect that the Allied Air Commander-in-Chief had decided that forward operational Staging Posts had now become an unnecessary link in the chain between RAMO and the Air Supply Squadrons, and that they were therefore to be disbanded. Where an operation was being supported by Transport Supply aircraft, the responsibility of handling freight and personnel was no longer to be carried out by a Staging Post.

It was, however, not considered that RAMO could be held responsible for the stowing and lashing of freight. The Captain of the aircraft, who was responsible, was frequently not in a position to supervise the loading, and therefore if an accident should occur no disciplinary action could be taken against him. Consequently it was decided that two officers and twelve NCOs or ACs be selected from Staging Post personnel and attached to each of 232 Group's Squadrons to form Despatch Sections. They were to be responsible for checking the loads against the details given on the manifests and for supervision of the loading and lashing of aircraft.

This process of disbandment of forward Staging Posts - base Staging Posts remained unaffected - commenced at the end of May and continued steadily during the next two months, the surplus personnel being thrown up for re-allocation of duties. Many of these personnel were absorbed by the formation shortly before the end of the war of three Static Staging Posts located at Hathazari, Akyab, and Ramree. These Staging Posts took over the responsibilities of the old Mobile Staging Posts with the additional responsibility of controlling the operation of internal Air Lines on behalf of 117 Wing.

By the beginning of August only five Staging Post Detachments (passenger and freight sections) remained in the Field, located at Myingyan, Comilla, Ramree, and two at Chittagong.

CHAPTER XII

Army Air Transport Organisation

In the planning for the maintenance of the operations in the Burma campaign it was recognised that in addition to the provision of the requisite number of transport aircraft, the setting up and organisation by the army of a ground maintenance echelon which was to work with the air transport force, would be essential. There had been no precedent for such an organisation in any other theatre, and in fact, what limited use had been made of maintenance by air up to that time had, with the exception of the New Guinea operations, taken place in previous Burma operations. Consequently the selection of officers and other ranks to control and operate this new organisation was made from within the S.E.A. and India Commands.

This ground echelon was called the Army Air Transport Organisation and started to function on 17th October 1944. It consisted of a headquarters commanded by Brigadier (then Colonel) J.A. Dawson and eight other staff officers and six Rear Airfield Maintenance Organisations (RAMOs). The Headquarters was situated adjacent to the H.Q. of Combat Cargo Task Force/232 Group.

This organisation was virtually the voice of the Army and it conveyed to the RAF an expression of the Army's day by day requirements, where they were required, and in what quantities. Similarly, the numbers of reinforcements to be flown in or of personnel to be withdrawn from the line were detailed, and it was the duty of CCTF/232 Group to fulfill these requirements to the best of its ability. In the event of CCTF at any time being unable to meet the exact demands of the Army, AATO Headquarters was informed and the matter was referred to H.Q. ALF.SEA., who liaised with H.Q. Eastern Air Command. In this way the closest understanding between the Army and the Air Force was maintained.

The proximity of AATO Headquarters had another advantage. Valuable information could be exchanged between the Army and the RAF. on a variety of subjects. Combat Cargo Task Force Headquarters was always anxious to know whether supply drops were effective and accurate, and likewise the Army Air Transport Organisation was eager to receive from CCTF aircrews any comments concerning loads and equipment. The Trip Reports filled in on Squadrons after every trip proved a valuable source of information concerning defects, faulty loading, leaking containers etc. Local defects of this nature were invariably dealt with by the RAMO. If, however, it was found that any particular fault was occurring too frequently AATO Headquarters was immediately informed and the necessary action taken.

Here is a typical example of how this system worked. Reference has already been made elsewhere in this Review to Supply Dropping technique, but at one stage of the operations speed in dropping was being hampered by the sudden introduction of wicker panniers as containers for parachuted supplies. Their use proved to be a mistake as the baskets cut the hands of the ejection crew when they were being pushed out of the aircraft. There were many bitter complaints on this subject which were immediately brought to the notice of AATO Headquarters, who authorised the issue of leather gloves to all Squadrons until such time as the use of the wicker panniers could be dispensed with.

The RAMOs operated by AATO were situated one on each of the base airfields from which CCTF Squadrons operated. With the exception of the three RAMOs in the Imphal Valley each of the other RAMOs was affiliated with the Royal Air Force Wing (or U.S.A.A.F. Group); in the former case to ensure the necessary co-ordination with the RAF. Wing operating the Imphal Group of airfields a detachment of AATO was located at Tulihal.

In February, 1945, after three months practical experience in operating, it was decided by HQ. ALFSEA that the number of RAMOs should be increased from six to eight and that the HQ. of AATO should be strengthened by the inclusion of certain "service" advisers, bringing the officer strength of AATO H.Q. up from nine to twenty five. Further changes in the RAMOs were also made in order to meet the increasing tempo of operations; these included an increase in personnel and equipment.

At the peak period of operations in March and April 1945 when the monthly air lift of the transport force averaged 70,000 tons it is interesting to note that the army ground echelon behind this effort - AATO and its RAMOs - had a numerical strength of over 36,000 officers and other ranks, the greater proportion of whom were Indians. On the face of it this might appear expensive in personnel, but in comparison with a similar supply organisation over a ground L of C covering 1st, 2nd and 3rd line maintenance it was more economical in manpower.

The role of Headquarters AATO was to act as the agents of GHQ - in this case HQ.ALFSEA - in all matters pertaining to the maintenance by air of the forces in the field. This role was broken down into the following:-

(a) To accept demands from consumer units through Corps or other higher formations, including the tactical air force Groups.
(b) In conjunction with HQ. CCTF (later HQ. 232 Group), to correlate demands with capacity and, if necessary, to refer demands back to Army or Corps for reduction, or if acceptable to satisfy HQ. ALFSEA of this fact.
(c) To apportion the accepted demands within the capacity of RAMOs with particular reference to stock holdings.
(d) To provide RAMOs with air lift forecasts broken down into commodities, and specifying landing or supply dropping in sufficient time to allow them to work out the details.
(e) To ensure that balanced and adequate stocks were held at RAMOs.

The normal sequence of receiving and accepting of demands from formations in the field was:-

(a) Forecast demands for a monthly period in terms of gross tonnage, landing and/or supply dropping received on 1st of the month preceding the operative month. These would usually be accepted or when necessary modified by the 15th of the month preceding the operative month.
(b) Firm weekly demands in terms of gross tonnage with a commodity breakdown were received one week before the operative week. These were accepted except where an overall shortage of any commodity precluded it, and detailed breakdowns forwarded to RAMOs.
(c) QQ demands for ammunition recoupment were received and accepted by nominated RAMOs at 48, and sometime 24 hours notice.

In addition to the acceptance, preparation and delivery to the transport force of the supply demands of the forces in the field, AATO was also responsible for the programmed schedules for the fly-in of reinforcements and the fly-out of casualties and leave personnel. The fly-in at Thabukton in February and, later, the fly-out of the 36th Division were excellent examples of personal co-operation between the Army and the RAF. These tasks did not on the surface appear so very formidable; the evacuation of 36 Div; for example, consisted of a few basic principles. Troops had to get into an aeroplane, sit still and get out. The emplaning officer had to provide a constant and immediate supply of loads; the Operations Officer had to supply the aircraft in a spaced out flow; the de-planing officer had to get the troops to their reception camp when they landed. It was, however, only a spirit of co-operation between the Army and the Air Force which could put these basic principles into effect, and the extent towhich this co-operation was enjoyed between AATO and CCTF throughout the campaign was shown by the results.

In these operations it was found more pratical to concentrate these activities in the one area which contained both the reinforcement camps and the base hospital area, and one RAMO was concerned almost soley with this.

On the few occasions when formations were air transported from one forward airfield to another as part of a tactical operation AATO was called upon to provide personnel to help in the preparation of the movement tables and assist in the mounting of the operation.

The closest link between Squadrons and AATO was maintained by the establishment on all Wings and Squadrons of an Army Liaison Officer. The primary duty of these officers was to get to know, and obtain the confidence of the Squadron aircrews to which they were attached. Nothing could be less helpful to the efficient working of offensive support than if Army Liaison Officers were out of sympathy with, or disliked by, aircrews.

The duties of the Army Liaison Officers were as follows:-

1. To act as Army Staff Officers to the RAF Formation or Unit Commander, and to keep him at all times in the picture with regard to the military situation.

2. To ensure that all Squadrons were conversant with Army matters and were in receipt of full and up-to-date military information of all types in order that the aircrews might be properly briefed.

3. To ensure that aircrews were interrogated for all information of military value and that such information was passed immediately to the Army Formation concerned through the appropriate channels.

4. To supplement the work of Transport Wing and Squadron Intelligence Officers in briefing and de-briefing aircrews.

5. To act in the closest liaison with the Army Formations and Units in support of which the RAF Squadrons were working.

It is a notable fact that the co-operation between the Army Liaison Officers and their respective Wings and Squadrons was most marked, and did much towards effecting the success of the Transport Support operations throughout the campaign by giving practicable effect to the cordial relations which existed between Combat Cargo Task Force and the Army Air Transport Organisation.

At the conclusion of hostilities AATO Headquarters and certain RAMOs were moved forward with 232 Group to assist in the preparation of supplies for the POW camps, and to handle the fly-in and subsequent maintenance of our occupation forces.

On 1st December, 1945 after operating for just over thirteen months the Army Air Transport Organisation was disbanded, and only three of the RAMOs, now converted to RACO or RIASC status, remain to provide supplies for such limited air lift as is required, and as a nucleus in the event of further extended operations calling for them.

CHAPTER IX

An Outline of Difficulties Encountered in Providing Amenities and Services for Personnel in the Field with Recommendations for the Future.

The reasons behind the difficulties encountered during the campaign in Burma in providing suitable amenities for Wing and Squadron personnel can be summed up in one phrase - a phrase that covered most of the sins of omission in this theatre - "Shortage of supplies and lethargy in providing them".

The fact that Squadrons and Wings were operating on forward fields and that amenities were few or non-existent, made it necessary for considerable local improvisation to be effected and personnel of all ranks took pride in making their own entertainments and, where necessary in constructing suitable buildings in the form of bashas. These difficulties were largely inevitable but they could have been considerably lessened had welfare equipment, such as sporting gear, in-door games, confectionary, mobile cinemas with up-to-date films, etc. been forthcoming to the extent required. While it is realised that there was a definite shortage due to the demands of the war in Europe it is nevertheless felt that a greater effort could have been made in this respect. Futhermore, the visits of ENSA artists were few and far between and those who did come out to Burma, whether they were famous names or not, invariably received the support and enthusiasm of the men.

It is inevitable that a comparison should be made with the Welfare provisions of the Americans. At Combat Cargo Task Force Headquarters and on airfields from which British and American Squadrons were operating it was abundantly clear that the amenities provided for all ranks by the USAAF were unsurpassed. The American Canteen System, known as the PX, was always well stocked with varieties of supplies of all kinds watches, fountain-pens, candy, chocolate, beer, etc, etc.

Our own provision for our airmen was, by comparison, pathetic. Furthermore, the American basic food rations were superior in variety and quality. The American Mobile Field Cinemas were absolutely first-rate and the standard of films very high. At CCTF Headquarters, where the Mobile Cinema was typical of those provided at forward stations, it was a common event for first-class films to be shown months before their release to the public. The films sent for British Mobil Cinemas from BAFSEA Welfare were, on the other hand, almost invariably old and inferior.

Even in the provision of ordinary items of office equipment such as typewriters, stencils, coloured pins, etc. the Americans were greatly more prompt. If the British Units at CCTF were short of supplies it was a common occurrence to borrow from the Americans. And though it is desired to record that the fullest co-operation was afforded us by the USAAF in this respect, the necessity for taking advantage of their superior supplies was distinctly unfortunate and undesirable.

The welfare, health and happiness of airmen and officers alike is of very great importance in war, and, especially under monsoon conditions, these factors become paramount and if they are neglected efficiency will suffer with consequent loss of effort. If the morale of the men is high a maximum effort can be maintained for a prolonged period in the face of many adverse factors. The following recommendations for maintaining the morale of the men working under adverse conditions in this theatre are made in the light of experience and with an eye to the future :-

1) First in importance is the provision of home news. Regular and fast air mail services are essential and the fact that personal mail was received from England in a very short time during the whole of the past year has been greatly appreciated by all ranks.

2) Good sleeping accommodation should be provided and it is considered that every airman on a Mobile Squadron should be issued with a light portable camp kit made of durable tube and canvas not unlike the German Africa Korps' design but of better quality. Charpays are suitable when they are readily available locally but this was seldom the case and more often than not those without camp kit had to sleep on the ground. The shortage of camp kits in India was most marked and officers proceeding on posting from the U.K. by air often found themselves unable to obtain them on arrival in India. The so-called Indian Mobile Charpoy is heavy, bulky, and cumbersome and in its poor quality is a typical Indian product.

3) Airmen need a good canteen, more so in the field than anywhere else, and it should be well stocked with essential commodities and whatever luxuries are available. A games-room or tent should be made available wherever possible and must be comfortable and attractive. A supper bar is required where the men can have a good meal in comfort and at reasonable cost. Wherever practicable a writing room should be set aside for airmens' use. If these facilities are provided it is felt that the airmen will not complain if less space is provided in their actual billets, (compatible with medical requirements for good health), and in the long run less billets or tentage accommodation would be used to obtain better results.

4) The cook-houses, and dining rooms of all 3 messes must be well planned, be adequate in size and capable of being kept scrupulously clean with the minimum amount of effort. The type of field kitchen used by the RAF in Burma has long been out-of-date. A mobile unit should carry its own portable liquid fuel burners of an efficient design. This would eliminate the effort used in transporting bulky solid fuel and would decrease the dust, smoke, etc resultant from the burning of an open fire. Portable refrigeration plants should be on the establishment of all Mobile Squadrons in a tropical climate.

5) A good Mobile Cinema Unit should be carried by each Mobile Squadron and the maximum number of film changes, with good new films, effected. Cinema shows should be free to all. Similarly Squadrons should be visited regularly by touring concert parties. Commanding Officers should endeavour to promote interest in amateur shows within their Units, though this is necessarily dependant on the extent of operations.

6) Sports facilities are most important from the point of view of recreation and health. Dependent on the season and locality, varying types of sport may be indulged in and it is up to Unit Commanding Officers and their subordinate Commanders to promote a keen competitive spirit and to encourage all forms of sport. The Squadron Sports Store should be supplied with adequate stocks of sports gear. Inter-Section games are always popular.

7) Every Squadron should possess a good library for airmen and officers and the stocks of books should be changed regularly. A technical reference library is a great asset if it can be provided. Radios are also essential on Squadrons as they form a great and nesessary link with home.

8) When a Squadron is situated near a town where entertainments are available, regular 'Liberty' runs should be organised. The men should not be permitted to stay out on late passes long after the town's entertainments for the evening have closed down. If the beer ration on the Unit is adequate and the other Welfare facilities well looked after, airmen will not want to leave the Unit except for sight-seeing and special recreational facilities, such as swimming and dancing.

9) Commanding Officers must ensure that the NCOs and men are kept kitted to an adequate scale with serviceable equipment. A good 'dhobi' service must be organised and kept efficient. A Unit barber and tailor are required and it is essential that all hired services operate under a displayed price control fixed by the Commanding Officer.

10) The Medical Officer must keep constant surveillance on all ranks and advise his Commanding Officer of any measures he considers necessary to improve the health of personnel. On a mobile Unit particular attention must be paid to Latrines. They require careful inspection daily and regular treatment with D.D.T.

11) When a Squadron changes its locality, the move should be completed in a well-organised manner with the utmost speed. It is very bad for morale and efficiency to permit a Unit move to drag on into several weeks. No move should take more than a week at the maximum.

12) Regular leave must be arranged in healthy areas for all ranks. The better the climate, recreational facilities, and accessability, etc., the greater will be the benefits derived.

13) Finally, all Unit personnel should be kept informed of the current situation. A short talk by the Intelligence Officer and by brief written resumés posted where they can be seen by all, are heplful. If the men are kept informed of the progress of operations it prevents rumours and they can appreciate and feel proud of the results of their efforts. Similarly any instruction on policies concerning Unit personnel must be brought to their attention without any delay.

CHAPTER XIV

Administration of Combat Cargo Task Force
Difficulties Encountered Through Complexity of Control.

The formation of 232 Group in April of 1945 (anti-dated February 1945) came as the result of the necessity, proved by experience, of clarifying and simplifying the complex chain of Command which had been seriously hampering the smooth administration of the RAF. Units of CCTF. It should be remembered that all the operations leading up to the fall of Rangoon were conducted by CCTF at a time when the RAF. Element was constantly hampered by these administrative difficulties, and it is therefore worth noting them in some detail.

During this period, the control of the RAF. Transport Squadrons of CCTF was exercised, and their needs provided, by three different authorities, as follows :-

Operational Control - CCTF/EAC/ACSEA.
Administrative Control - 229 Group/T.C.
Administrative Services - 221 & 224 Groups/HQ. Bengal-Burma.

This was a double contradiction of the first principles of sound organisation, namely that operational and administrative control of Units should not be divorced but vested in the same authority. The results of this system were administratively chaotic, as might have been expected when Squadrons had to look to three different masters for their essential needs and direction.

In devising a remedy for this state of affairs two basic and unalterable facts had to be taken into account. First, that the Squadrons were Transport Command Squadrons and, secondly, that while in the forward areas their operations had to be controlled by Air Command South East Asia through Eastern Air Command. These two factors had somehow to be reconciled in a way in which all possible control could be vested in some formation answerable to Eastern Air Command on the one hand and to 229 Group/Transport Command on the other.

The first and most important step to be taken was to relieve 221 and 224 Groups of any administrative responsibilities for Combat Cargo Task Force Squadrons. As these Groups moved forward they were finding these responsibilities more and more irksome and more difficult to discharge. In order to achieve this, it was obvious that another administrative service area would have to be formed behind these Groups, and it was appropriate that the RAF. Element of CCTF should be made responsible to Headquarters RAF Bengal/Burma for the administrative services in this area in which their Squadrons were operating. It was felt that this would then afford the RAF Element of CCTF the right, and the duty, to look after the needs of the Squadrons which they were controlling. At the same time it would considerably simplify and shorten the geographical chain of administration.

There still remained the question of administrative control. In approaching this problem it again had to be borne in mind that the Squadrons were Transport Command Squadrons; there had therefore to be some Transport Command agency in India responsible to Transport Command itself for all their personnel, postings, promotions, etc. This agent was 229 Group but the fact that the RAF Element of CCTF was not a Transport Command formation, while both the Squadrons and 229 Group were in that Command, placed a severe strain on the relationship between CCTF and 229 Group and deprived the former from exercising an essential measure of administrative control.

The only solution to this difficulty was for the RAF. Element of CCTF to become a fully-fledged Transport Group with a

clear-cut division of responsibility vis-a-vis 229 Group. CCTF in its new form would then emerge as an accredited agent of Transport Command and, as such, would be licensed to exercise administrative control over Transport Squadrons, the degree of this control being a matter for arrangement with 229 Group.

These then, briefly, were the administrative problems with which the RAF. Element of CCTF was faced during the first months of its formation, and it appeared that the solution outlined above was the only possible one to transform this Element from its emasculated state into a useful formation capable of fulfilling its essential functions.

All these points were eventually recognised by higher authority and during April official intimation of the redesignation of the RAF. Element of CCTF to Headquarters 232 Group was received from Headquarters, Air Command, South East Asia. Nevertheless the receipt of this order was somewhat sudden inasmuch as Headquarters RAF. Burma had previously stated that before such action was taken the necessary administrative staff would be made available to handle the heavy increase in administrative services which the redesignation of the RAF. Element of CCTF to 232 Group entailed. Yet by the beginning of May only two additional officers had been posted to augment the administrative staff of the Group Headquarters.

In addition to the responsibility for the provision of these administrative services to all RAF. Units located in its area, Headquarters 232 Group was responsible to Headquarters RAF. Burma for the operational, functional, and administrative control of Units assigned to 232 Group but not belonging to Transport Command. Furthermore Headquarters 232 Group was also responsible to Headquarters RAF. Burma for all matters of administrative control of all Transport Command Units operationally controlled by Eastern Air Command through Combat Cargo Task Force.

It will be seen that the formation of 232 Group now gave the RAF Element of CCTF the necessary administrative powers over its Units, but in order to relieve the Group of too much additional responsibility it was decided that it would remain under the administrative control of Headquarters 229 Group on the following matters concerning 232 Group and its assigned Transport Command formations and units:-

(i) Posting of Officers and aircrew
(ii) Specification of Specialist Transport requirements.
(iii) Honours and Awards - Recommendations received through HQ. RAF. Burma for transmission to HQ. Air Command.
(iv) Establishments
(v) Manning, through Air Command channels to agreed levels of manning.