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THE TENTH AIR FORCE

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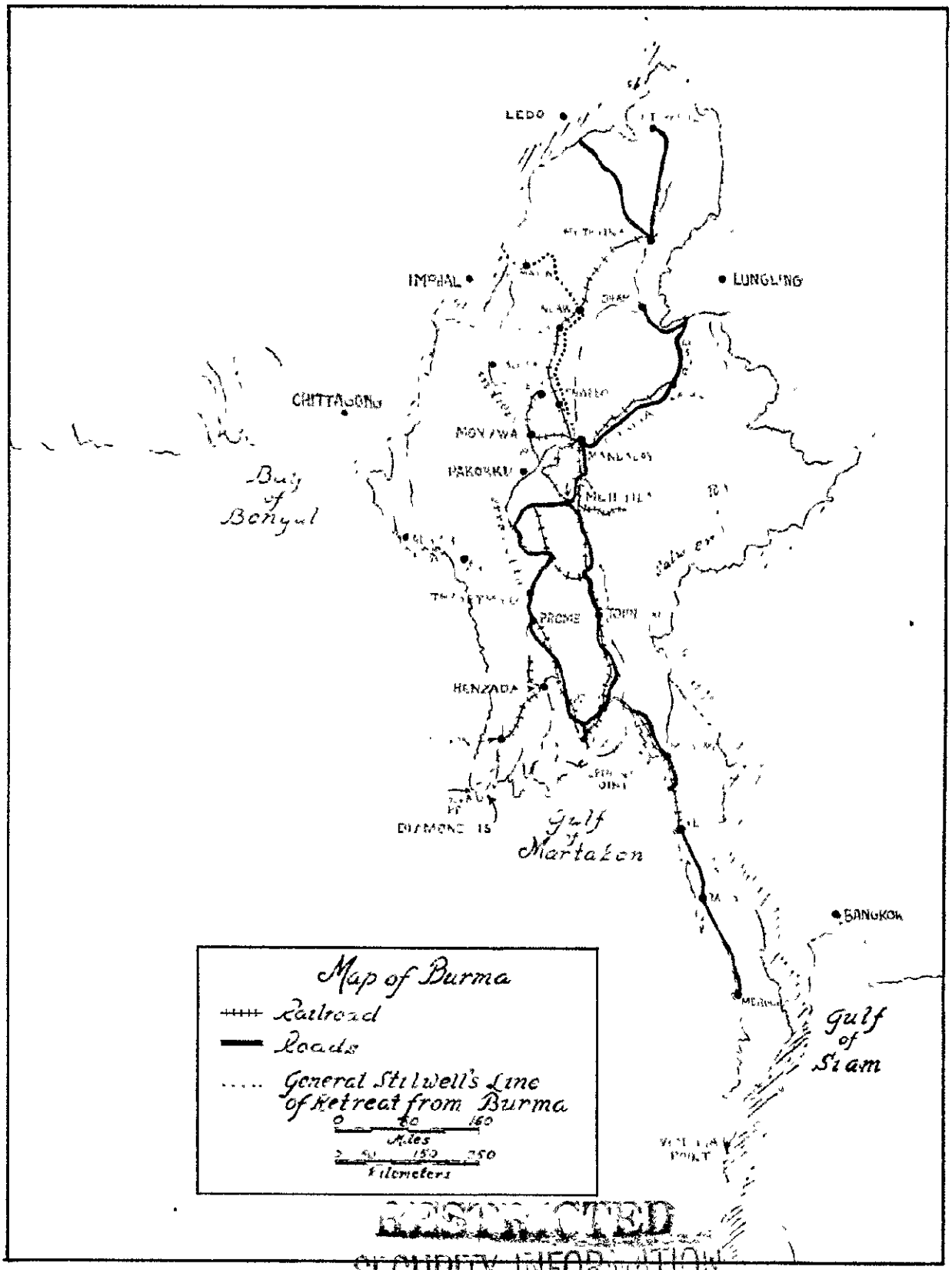

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FOREWORD

This study, prepared by Maj. Herbert Weaver of the Combat Operational History Branch, AAF Historical Office, gives an account of the Tenth Air Force in 1943, covering organizational changes as well as combat operations over Burma. A previous study, AAFHS-12, The Tenth Air Force, 1942, has treated the origins and development of the Tenth, and the operations of its two major components, the China Air Task Force and India Air Task Force. Another study, AAFRH-4, The Tenth Air Force, 1 January-10 March 1943, has given a more detailed account of the split in the Tenth involving activation of the Fourteenth Air Force. Like other studies prepared by the Historical Office, this study is subject to revision as additional information becomes available.

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The Tenth Air Force, 1943

Chapter I

INTRODUCTION

On 1 January 1943 the Tenth Air Force, commanded by Brig. Gen. Clayton L. Bissell since 18 August 1942, was almost a year old, and had been operational in the China-Burma-India (CBI) theater for nine months. During those eventful months much had been accomplished in Asia, yet most of the basic problems which had confronted Maj. Gen. Lewis H. Brereton upon his assumption of command of the Tenth the preceding March were still on the agenda for General Bissell and his staff to ponder.[1]

When China, Burma, and India were defined as an American theater of operations in February 1942 the three main strategic objectives in the war against Japan had been: (1) stabilization of the situation in the Far East, (2) security of India and Indian Ocean bases, and (3) security of the Middle East.[2] Stabilization of the situation in the Far East could be accomplished only on vastly constricted lines, for the Philippines, Singapore, and Java obviously were doomed. The impending loss of these strategic outposts accentuated the importance of China as the only likely base from which Japan's island empire could be attacked from the air. To keep China in the war so that her bases might eventually be utilized, India and Indian Ocean ports must be held, but the Axis advances in Asia, North Africa, and the Caucasus threatened India from the west as well as from the east. Security of the Middle East therefore was mandatory. At this unpropitious time the War Department assigned the Tenth Air Force the mission of supporting the Chinese,

expecting that Burma could be used as a major base of aerial operations, but leaving plans so flexible that units could be diverted to the Middle East should that area appear to be in greater danger.[3]

During 1942 only one of the basic strategic aims was completely reached--security of the Middle East. Stabilization in the Far East took place only after the Japanese had driven a block between India and China by the occupation of most of Burma. India seemed safe after the Japanese failed to follow up their victory in Burma, but Rangoon, a vital Indian Ocean port, was gone.

With inadequate numbers of combat aircraft and trained crews, the Tenth Air Force, organized into two air task forces, did what it could in 1942 to contain the gains of the Japanese in Burma. From April through December the heavy bombers flew 179 sorties and dropped 300 tons of bombs on enemy installations. From July through December the medium bombers flew 331 sorties and dropped 346 tons of bombs; and the fighters flew 791 sorties, dropping 25 tons. The total bomb tonnage in 1942 therefore was only about 670, but the year 1943 was to see a considerable increase both in the number of sorties and the tonnage of bombs dropped.[4]

In spite of the rather meager contribution of the Tenth, the situation in India had begun to change radically for the better by January 1943. German threats from the west had been removed, and the Japanese had accomplished little in their efforts to expand into northern Burma. American air units had secured themselves on the mainland of Asia, but this security itself lessened the urgency of sending them reinforce-

ments; changing tides of the war had left them in the backwash. Those units already in the theater were forced to translate their mission of aid to China largely into establishment, maintenance, and defense of the aerial supply line and its terminals.

Leaving a minor force at Yunnanyi and Kunming for protection of the ferry the small mobile China Air Task Force (CATF) under General Chennault had concentrated its offensive efforts during the last months of 1942 against targets in eastern China, particularly along the coast. Meanwhile the India Air Task Force (IATF) under General Haynes centered its operations around major targets in Burma. But in December shortage of gasoline at forward bases induced General Chennault to recall the outlying squadrons to the vicinity of Kunming, and from early January 1943 until 10 March when the CATF was absorbed by the Fourteenth Air Force, they turned much of their attention to targets in Burma, thereby assisting the growing effort of the IATF in crippling enemy transportation and in neutralizing Japanese air power.[5]

Shift of the CATF operations to the west was a peculiarly fortunate development for the IATF, for in addition to its routine tasks the IATF was now confronted with another problem which threatened to develop into a major crisis. Japanese land forces, halted during the summer monsoon of 1942, came to life in the autumn and winter, and by January a two-pronged drive--from Myitkyina toward Fort Hertz, and from Lashio toward Kunming--was unfolding.[6] During January, February, and March, aided on occasion by the CATF, the IATF bent its efforts toward stopping these drives. Chinese armies on the Salween, Kachin levies with the British in northern Burma, Brig. Orde C. Wingate's long-range penetration columns

in north central Burma, and the British who made diversionary thrusts at Akyab, all possibly made more tangible and direct contributions toward defeating the enemy movement; but the almost daily battering which the two air task forces gave the transportation system and airdromes of Burma denied the enemy offensive columns proper air support and adequate supply, and doubtless had no small part in the eventual turning of the drives.[7]

At the beginning of 1943 IATF--composed of the 7th Bombardment Group (H), 341st Bombardment Group (M) (less 11th Squadron), and 51st Fighter Group (less 16th Squadron)--plus the five squadrons of CATF, could cover all of Burma with an overlapping in central areas. To each of his units General Haynes assigned that part of the over-all task consonant with the capabilities of its particular type of plane. Because of the long range and the heavy bomb capacity of the B-24's the heavy squadrons stationed at Pandaveswar and Caya were given the job of destroying transportation facilities south of Mandalay, with bombing emphasis on the Rangoon area through which most of the Japanese military supplies entered Burma. By mining waters, sinking ships, wrecking docks, and blowing up railroad tracks and bridges from Rangoon to Mandalay the 7th Group interfered with the flow of war freight to the interior of Burma.[8]

Using Chakulia and Ondal as lay-back bases and Argatala as a forward staging field, Mitchells of the 341st Group were restricted by lack of range. Hence they carried out most of their operations in the more easily accessible central portion of Burma. Storage areas, bridges,

railroad yards, trackage, locomotives, and rolling stock in the Monywa-Mandalay-Maymyo region were attacked so that enemy military supplies which had succeeded in running the gauntlet from Rangoon to Thazi were constantly subject to destruction or serious delay in delivery.[9]

From Assam bomb-carrying P-40's of the two fighter squadrons of the 51st Group patrolled that section of Burma extending from Naba to Fort Hertz near the northern border. In this area they strafed and bombed villages and installations along the road from Myitkyina to Sumprabum and from Logaung toward Dinjan and Ledo. They performed "cooperation missions" for the 4th Corps of the British Eastern Army which was battling to halt the enemy short of Fort Hertz. The P-40's also escorted transports of food-dropping flights and at the same time provided protection to the routine Hump flying. They attempted to destroy whatever supplies had eluded the heavies and mediums to the south by attacking locomotives, warehouses, dumps, railroad yards, and bridges, and managed at the same time to keep Japanese airdromes in northern Burma almost completely neutralized.[10]

Meanwhile the CATF, precariously short of aviation fuel, ran a few bombing and strafing missions in the region from Lashio to Bhamo and along the Burma Road. The single bomber squadron of CATF, the 11th (H), was forced into almost complete idleness by lack of fuel, and the four fighter squadrons had to plan with utmost care so as to make maximum use of their limited supply. Despite their curtailed activity the CATF was given considerable credit by the Chinese for helping to stop the Japanese Salween drive.[11]

These operational spheres covered the whole of occupied Burmese territory and brought under bomb and gun sights of the Tenth Air Force many key enemy air bases and the whole network of enemy communications. Obviously American airmen could interrupt periodically rail, river, and motor traffic by blowing up key bridges, sinking river boats, destroying docks, and blowing up trains; but shortage of equipment and conditions of terrain and weather prevented them from striking permanently crippling blows. After the Fourteenth Air Force absorbed CATF in March 1943 it turned its attention once more to China, leaving Burma targets exclusively to the Tenth. With the coming of the summer monsoon the enemy had an opportunity to repair much of the damage to critical points under cover of rains and clouds. The geography and weather of Burma so influenced the conflict that it became largely a contest between accuracy of American airmen and persistency and skill of Japanese workers who rebuilt bombed-out installations.

Larger than prewar Germany and nearly as big as Texas, Burma, with its 261,000 square miles of territory, has been likened to a giant wedge driven between India and China. On three sides the country is locked in by a massive ring of mountain ranges which form most of its 3,300 miles of land frontier, and until completion of the Burma and Ledo roads it had no rail or road connections with China or India. In the past these natural barriers seem to have discouraged trader and soldier alike; except for some intrepid adventurers who had more of the explorer than the entrepreneur in their souls, few had ventured out with caravans along the tortuous jungle and mountain trails that connect the three

countries. Indeed, until World War II no conqueror had ever passed from Burma into China or India, and with one minor exception, into Burma from China or India. Any considerable military force occupying Burma and controlling the sea flank to the south would have reason to feel secure; early in 1943, therefore, the Japanese probably had little fear of an ordinary frontal attack by the Allies.[12]

Branching off from the Himalayas at the northern tip of Burma the Patkai-Naga Hills, with peaks rising to approximately 20,000 feet and valleys of very dense jungle, interposed an effective bar to transportation between Assam and northern Burma. Farther to the southwest an extension of that range, the Arakan Yomas, frequently rising to 10,000 feet and stretching to the shores of the Bay of Bengal, prevented land communications between India and lower Burma. On the China-Thailand side the Himalayan range branched out into numerous parallel north-south chains, extremely high along the China border, tapering gradually in the Shan States to the south, and stretching far down into Malaya. On the east, too, Burma was long isolated from its neighbors by rugged and forbidding mountains.[13]

In shape and contour Burma itself resembles a slightly cupped hand, a tumbled mass of parallel ridges running north and south giving the palm a corduroy-like appearance. This central basin, its ridges dwindling in altitude toward the middle, extends from Fort Hertz in the north to the Bay of Bengal, varying in width from 100 to 150 miles. North-south ranges hindered lateral traffic, but the valleys between developed into heavily traveled routes. Upon the southward flowing rivers--most

important of which is the Irrawaddy-Chindwin--and upon motor roads and rail lines closely paralleling their courses, normally passed the bulk of freight; after Japanese victory in 1942 this sytem became the life line of their occupation forces.[14]

Thus, in Burma there developed a battle of life lines--the Japanese, endeavoring to break the aerial line across Burma to China while maintaining their own line from Rangoon to Lyitkyina and beyond, versus the Allies, striving to break the Japanese transport system while keeping their own supplies flowing into China. Upon the Tenth Air Force devolved a major share of Allied offensive and defensive responsibility in Burma.

The double responsibility was not easily discharged, for the airmen faced dangerous terrain, a battle-wise and determined foe, and some of the worst flying weather in the world. Lying almost entirely within the tropics, Burma has four seasons: wet monsoon, dry monsoon, and traditional periods between. Moreover, conditions are not uniform for the whole country during any of the seasons. The high mountains and deep valleys disturb the general circulation of the monsoons, causing great variations in cloudiness and precipitation from section to section. For example, the average annual rainfall on the western or Indian slope of the Arakan Yomas is over 150 inches. In the central basin it ranges from 60 to 80 inches, and eastward in the Shan States it again increases sharply.[15]

The most difficult flying season over most of Burma is the summer monsoon--mid-May to mid-October--during which most of the rains fall. During this season there are few days when sky conditions are not "heavy

broken to overcast," and only in the dry area of central Burma could aerial missions be planned and executed with a reasonable degree of regularity. Despite the difficulties involved, however, American aircraft operated in 1943 throughout the wet monsoon, a season formerly regarded as a period for training, refitting, and planning for future operations.[16]

Weather was also a limiting factor in operations over the Hump, but transport pilots often preferred fog, rain, and clouds to clear skies because of the protection thick weather afforded their defenseless craft from Japanese interceptors. Flying blind over the mountains was itself a hazardous procedure, however, and crumpled remains of transport planes rusting atop jagged peaks along the route indicate the nigh price paid for this type of protection. Yet most of the planes got through, and eventually one flyer was able to state without undue exaggeration: "We have faced and licked the toughest weather in the world--the equatorial furnace of India, the eternally upturned buckets of the monsoon, the bone-penetrating winter of the Chinese mountains."[17]

In comparison with movement to other theaters the flow of goods to China was only a trickle, but it was probably a major factor in keeping alive the Chinese will to continue the fight for survival as an independent country. Development of the aerial supply line, increasing its efficiency under most adverse conditions, and protecting bases and operations from intruding enemy aircraft represented on the part of the Americans a truly great effort to fulfill their obligations to prostrate China, and a significant accomplishment in the CBI theater of operations.

Chapter II

ORGANIZATION AND ADMINISTRATION

The already confusing administrative and organizational problems of the AAF in CBI became progressively more complex during 1943. In December 1942 assumption of responsibility for operation of the aerial ferry by the India-China Wing of Air Transport Command (ICWATC) under Col. H. H. Alexander had simplified operational problems, leaving defense of bases and the skies over northern Burma as the most pressing operational problem of the Tenth. For this task General Bissell's force in January 1943 had only 259 planes: 32 heavy bombers, 43 medium bombers, and 184 fighters.[1] This total of 259 planes indicated that the Arnold-Portal agreement of the preceding summer, which called for 252 operational planes in CBI by October 1942,[2] had been implemented fully, but further examination shows that such was not the case. Ten of the 32 heavy bombers were ancient B-17's which had not been off the ground for more than six months; several of the 184 fighters were obsolete P-43's, and others were worn out P-40's which had been in constant use with the American Volunteer Group and China Air Task Force for over a year.[3] Actually, the Tenth Air Force could not have put into the air 200 planes which were fit for combat operations.

In all, four combat groups were present: one heavy bombardment of four squadrons (7th); one medium bombardment of four squadrons (341st); and two fighter groups of three squadrons each (23d and 51st). Five of these 14 squadrons were in China where they had been operating as the

CATF under Brig. Gen. Claire L. Chennault since 4 July 1942: 11th Bombardment Squadron (H) of the 341st Group, the 74th, 75th, and 76th Fighter Squadrons of the 23d Group, and the 16th Fighter Squadron of the 51st Group. On 1 January they were based in the Kunming area and were equipped with 85 aircraft consisting of 12 medium bombers and 73 fighters.[4]

The nine squadrons remaining in India, organized in October 1942 into the India Air Task Force under Brig. Gen. Caleb V. Haynes, consisted of the 9th, 436th, 492d, and 493d Bombardment Squadrons of the 7th Group (H); the 22d, 490th, and 491st Bombardment Squadrons of the 341st Group (H); and the 25th and 26th Fighter Squadrons of the 51st Group. They included in their equipment 174 aircraft: 32 heavy bombers, 31 medium bombers, and 111 fighters.[5]

In China, air operations had been going on continuously since December 1941, and the five squadrons of the CATF had been in action for more than six months. A sufficient number of airfields was available and deployment in that sector was no longer a problem. In India, on the other hand, full deployment in 1942 had not been possible. Heavy bombardment operations had ceased for several months when all available bombers were transferred to the Middle East. Upon the return of the pilots and planes from the Middle East the 9th and 436th Squadrons had provided cadres for two newly activated squadrons, 492d and 493d, and the 11th and 22d Squadrons had given up cadres for activation of the 490th and 491st Squadrons (H). This action, in effect, had given the IATF four heavy and three medium bombardment squadrons, all with experienced

cadres, but largely manned by comparatively inexperienced pilots who had recently arrived. The 25th and 26th Fighter Squadrons of the 51st Group had been moved to Assam upon completion of training at Karachi but had little combat experience before January. Experience level of the IATF therefore was far below that of the smaller CATF when 1943 operations began.[6]

Deployment of squadrons eastward from Karachi had been a slow process in 1943 and had not been completed by the end of the year. Heavy squadrons operated from Allahabad, then moved to Gaya, and by January were on the move to the area of Pandaveswar where they stayed for the first months of the new year. Medium squadrons similarly moved eastward and were at Ondal and Chakulia. The two fighter squadrons were at Sookerating and Dinjan in Assam.

The changing situation in the theater also brought about an eastward shift in other air force installations. Air Service Command units arriving at Karachi in 1943 had fanned out to set up installations in support of combat squadrons. The 3d Air Depot Group had established the main depot at Agra while the 51st Service Group had provided small detachments for every operational sector. Meanwhile the Karachi American Air Base Command had continued its reception and training of personnel arriving in the theater. Late in 1943 the 305th Service Group had arrived in India. Shortly thereafter it was moved to Ondal to begin a service center, exchanging many members for experienced personnel of the 51st Group. Constantly yielding up seasoned men to new organizations, the 51st finally arrived in the Dinjan-Chabua area. One of its squadrons,

the 54th, went to Kunming to serve the CATF, and later became the nucleus of the air service command established in China. Preparations were also being made for a depot at Calcutta, to be put into service as soon as full use of the port could be resumed.[7] Hindustan Aircraft, Ltd., at Bangalore was supplementing the work of the 3d Air Depot at Agra, and plans for expanding its responsibilities were under consideration.

After little more than a year of war neither the Japanese nor the Allies were yet in position to take positive offensive action in CBI. The hard-pressed Chinese, far more war weary than the British or Americans, felt, however, that there should be no further delay in formulation of offensive plans. Chiang Kai-shek informed the Allies that China's condition was critical, and that without something more than token aid from the outside the Chinese could not long continue resistance. He urged that immediate action be taken to increase the Hump tonnage, and requested that American air units in China be greatly augmented and placed under full tactical control of General Chennault.[8]

At the Casablanca Conference late in January 1943 important discussions centered on the CBI. Preliminary plans for reoccupation of Burma were drawn up although the date for implementation of the plans could not yet be fixed definitely. The Generalissimo was informed that by 30 March the number of transports on the India-China flight would be raised to about 150, and that the C-47's would be replaced by newer and larger C-46's as rapidly as was practicable. He was also apprised that a heavy bombardment group would soon arrive in China, and that activation of an independent air force under General Chennault had been approved.[9]

Following the Casablanca meetings high-ranking British and American military leaders visited CBI to confer with the Chinese. In subsequent conversations they agreed on the roles to be played by each Allied participant in the coming campaign to remove the Japanese from Burma, and on tentative target dates for each phase. Soon thereafter, 10 March, activation of the Fourteenth Air Force under General Chennault was announced.[10]

Changes involved in the formation of an independent air force for operations in China had far-reaching effects on the Tenth. It lost control over five, out of a total of 14, of its most active and experienced squadrons but retained responsibility for their supply and maintenance. No change in mission of the Tenth was involved although the Fourteenth was to share responsibility for protection of the aerial ferry. China and northeastern Burma were removed from the sphere of operation of the Tenth. The relief of responsibility, however, was hardly comparable to the loss of strength incurred by the Tenth. The most dangerous part of the Hump flight was still in the area to be patrolled by the fighters from Assam; and ATC installations in the Chabua-Dinjan region were more vulnerable to Japanese attacks than were those on the eastern terminal at Kunming because of the difficulty of establishing an effective air warning net.

Reduction in strength was somewhat offset by the reduction of the sphere of operations, but administrative problems were complicated rather than simplified by the division. Because of the small number of squadrons in CBI it was found impossible to maintain the integrity of

groups and at the same time provide each of the two air forces with the different types of squadrons necessary to carry out effective operations. Consequently two groups, 341st Bombardment (H) and 51st Fighter, had their squadrons divided between two air forces. Efforts to reorganize the groups failed because of the probability that the remainder of both divided groups eventually would be sent to China.[11]

In addition to the difficulties posed by the activation of the Fourteenth Air Force, the staff of the Tenth faced an increasingly pressing problem in Assam. Clarification of responsibility and greater coordination of effort in that area were urgently needed, but these were theater problems rather than problems of the Tenth. The most immediate concern of General Bissell and his command was the establishment of a satisfactory defense for this vital area. Prime requisites--an adequate air warning net and a sufficient number of suitable fighter aircraft--could not be met fully.

The air warning system for Assam was a problem of long standing. Extensive experiments with radar equipment proved that while this device could be used as a supplementary aid, the nearness of the high Naga Hills to Assam air installations made a normal radar net impossible. Chief dependence for warning of approaching enemy aircraft would continue to rest upon small outposts far up in the hills, equipped with portable radio sets and supplied by air. Eighteen warning stations were already functional in January 1943, but to assure the maximum coverage, and longest possible time for fighters to attain altitude, General Bissell believed that six more stations were necessary. After it was finally

demonstrated that radar could not be depended upon completely to replace the radio warning system, the six additional stations were approved. Arrival of men and equipment was slow, however, and the new detachments were not put into action until the end of the 1943 summer monsoon.[12]

Meanwhile the question of more and better fighter aircraft for defense of Assam was raised repeatedly. Unable to climb rapidly or to reach a sufficiently high altitude, the P-40's available were unsuited for their defensive work. Furthermore, the two squadrons present could not provide an adequate defense for the growing number of airfields and installations. As a result small flights were stationed where full squadrons were needed.[13] Further developments had to await the arrival of a new fighter group already assigned to the Tenth, and the final decision as to the eventual transfer of the 51st Group to the Fourteenth in China.

While improvement of the warning net and augmentation of fighter strength in Assam were dependent upon arrival in the theater of personnel and equipment, another major difficulty became serious enough to require immediate attention. Activation of the Fourteenth represented a further division of responsibility in a theater where divided responsibility already threatened to lead to widespread confusion and duplication of effort. The situation in Assam was particularly complex. Defense of the area, including both British and American installations, was an American responsibility, but shortage of American ground troops led to the use of native guards to protect aircraft and equipment about the airfields. Ground transportation, establishing priorities, and handling

of freight were under supervision of the theater commander. Air transport was accomplished by ICWATC and China National Airways Commission (CNAC), the former having its command channel direct to Washington, and the latter to Chungking. The Tenth and Fourteenth shared the task of providing aerial protection for installations and aircraft of the air transport agencies.

Late in April General Stilwell made clear to General Bissell the responsibilities of the Tenth Air Force in Assam, and the outcome of subsequent discussions was a decision to create a new command for the Assam area, which, in addition to its defensive responsibilities, would act as a coordinator of all air activities. Accordingly the Assam American Air Base Command (later American Air Command No. 1) was projected and General Haynes was relieved of his post with IAAF to command the organization.[14] General Haynes, because of his experience with the Assam-Burma-China Ferry, the CATF, and IAAF, was peculiarly fitted for his new duties.

On 13 June General Bissell personally discussed with General Haynes the latter's responsibilities, and the next day notified General Stilwell that orders creating the new command had been issued. A B-25 with full combat crew was placed at the disposal of General Haynes, who arrived at Dinjan and assumed command on 16 June.[15]

The primary mission of the Assam American Air Base Command(AAABC) was active defense of ICWATC, and its secondary mission was destruction of the enemy. Furthermore, General Haynes was instructed to coordinate in Assam the activities of the Tenth with ICWATC, Air Service Command,

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CMAC, Weather Service, Army Airways Communications System, and elements of the Fourteenth operating there. The new command was to be composed of the 51st Fighter Group (less 16th Squadron), 679th Air Warning Company, 2d Troop Carrier Squadron, all antiaircraft batteries in the area, the Anti-Smuggling Detachment, and any other Tenth Air Force units which should be assigned later.[16] Thus the IATF, now commanded by Col. Cecil Combs, was left without any fighter squadrons, and became in effect a bomber task force.

The usual difficulties of activation were encountered. The housing situation in Assam was still acute; accommodations for headquarters of the AAABC were not available until 3 July; and personnel for the new headquarters were not immediately available.[17] Upon the day of his arrival at Dinjan General Haynes submitted a table of organization for his command, asking for 21 officers and 67 enlisted men, requesting certain specified personnel who had served with him in IATF. Approval of the table of organization was granted only after reduction to 16 officers and 25 enlisted men, and General Bissell refused to approve the request for individual officers of IATF. Not all the approved personnel arrived immediately and for two months General Haynes faced his peculiarly difficult assignment with what he considered insufficient personnel.[18]

Meanwhile, in Washington, plans were laid for a larger organizational change in CBI. It was recognized that the current military setup in that theater was not conducive to close cooperation among the Allies. Endeavoring to live up to their obligations to support China, Americans found themselves operating in a portion of the British Empire where the

British themselves were having political difficulties. The British, on the other hand, were not committed to aid China, and their strategic aims in Asia therefore did not coincide with those of either the United States or China. Closer coordination of effort by British, Americans, and Chinese did not seem probable without considerable change in the theater organization.

American military organization in Asia, dictated partially by exigencies of war and partially by political necessity, obviously was not ideal. All United States Army Forces in the CBI theater were under command of General Stilwell, who maintained a Forward Echelon headquarters at Chungking for Chinese operations and a Rear Echelon headquarters at New Delhi. Since General Stilwell spent most of his time in China, relations with the British suffered. The Tenth Air Force was operating from the Assam and Calcutta areas but retained headquarters at New Delhi. The Fourteenth Air Force was operating in China from headquarters at Kunming. ICNAFC, responsible for air transport throughout the theater, had headquarters at Chabua. Although operations of the Fourteenth and the Chinese-American ground troops under General Stilwell were dependent upon air supply, channel of command of ICNAFC did not lead through headquarters of the theater commander.

The majority of American troops in the theater were AAF personnel and the principal function of Services of Supply had been to support the two air forces. General Stilwell, however, tended to place more and more emphasis on construction of the Ledo Road and training of Chinese ground troops under American officers at Ramgarh. It was feared

by AAF personnel that if too much emphasis were placed upon these two projects the air forces would suffer, and to prevent too radical a change of policy it was believed that a high-ranking AAF officer should be placed on General Stilwell's staff.[19] Publicity in the American press given to increasingly strained relations between the commanders of the Tenth and Fourteenth Air Forces also pointed to the desirability of a senior air officer in the theater organization.

As the number of troops in the theater was relatively small, the most logical solution probably would have been a reduction in the number of headquarters and a general streamlining of the theater organization. The solution, however, could not be determined by sheer logic, nor by the most intelligent military planning, but would have to be reached largely in terms of the political factors involved. In order to solve the problems it was decided to send a senior air officer to the theater to serve as air adviser to the theater commander and at the same time to act as a sort of ambassador at large to improve relations between our forces and those of our Allies. For this important and complex assignment Maj. Gen. George E. Stratemeyer, former Chief of the Air Staff, was chosen. General Stratemeyer had recently made a tour of the theater and was thoroughly conversant with conditions there.[20]

Patience and tact were of highest importance in the ticklish position which General Stratemeyer was to occupy, and even before he left Washington some of the handicaps under which he would have to work were manifest. As senior air officer in the theater it was to be expected that he would have command control over the Tenth and Fourteenth Air

Forces, but because of objections by Chiang Kai-shek the assignment carried with it only advisory authority over the Fourteenth.[21] A second air force organization, ICWATC, was also to be excluded from his command. ATC was a globe-circling organization, and despite the fact that ICW activities were confined to the Asiatic sphere, it was believed best to retain a command channel direct to Washington.[22]

On 28 July The Adjutant General authorized constitution of "The Headquarters of the Commanding General, Army Air Force Units, India-Burma Theater and Air Adviser to the Asiatic Theater Commander," and directed that it be activated at the earliest possible moment by the Commanding General, United States Army Forces in China-Burma-India. The letter was misleading for several reasons: officially at that time there was neither an "India-Burma Theater" nor an "Asiatic Theater"; nor was General Stratemeyer to be vested with command of all air force units in the theater. Nevertheless, on authority of the above letter General Stilwell announced on 20 August the activation of Headquarters, United States Army Air Forces, India-Burma Sector, China-Burma-India, under command of Maj. Gen. George E. Stratemeyer.[23]

At the same time General Stilwell announced the activation of provisional Headquarters and Headquarters Squadron, China-Burma-India Air Service Command, and asked for authority to inactivate the XIV and X Air Service Commands. He notified the War Department that the Karachi American Air Base Command, no longer required, was being inactivated. Activation of provisional Headquarters China-Burma-India Training Unit at Karachi under Brig. Gen. Julian Haddon was announced. Further,

said Stilwell, headquarters of the Tenth would be moved to Calcutta as soon as possible, at which time the India Air Task Force would be inactivated. Meanwhile, the following units were assigned to General Stratemeyer's command: Tenth Air Force; Headquarters and Headquarters Squadron, China-Burma-India Air Service Command (provisional); China-Burma-India Air Forces Training Unit; 10th Weather Squadron; 10th AAC Squadron; and 22d Statistical Control Unit.[24]

General Stratemeyer's duties included coordination of activities of ICBATC with other theater activities, assistance to the theater commander in over-all planning for air warfare, and supervision of the air training of Chinese personnel through the Air Forces Training Command at Karachi. He was in direct control of the Tenth Air Force and the CBI Air Service Command. Furthermore, he was responsible for the supply and maintenance of the Fourteenth Air Force in China and for protection of the Hump operations of ICBATC.[25]

Because of geographical and political considerations it was contemplated that General Stratemeyer's headquarters would be a small and highly mobile group.[26] Consequently, on 21 August a small, selected group of officers reported for duty, and on 23 August were given their new assignments. These included: Col. (later Brig. Gen. Charles B. Stone III, Chief of Staff; Col. Edward P. Streeter, Deputy Chief of Staff; Col. Alvin P. Luedecke, Assistant Chief of Staff, Plans, Operations, Training, and Intelligence; Col. James H. Riggs, Assistant Chief of Staff, Administration; Col. W. Frank DeWitt, Surgeon; Lt. Col. Joseph S. Clark, Jr., Management Control; Lt. Col. Frank R. Schneider,

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Deputy Chief of Management Control. Personnel of the Tenth Air Force and Air Service Command were used to round out the staff.[27]

Despite this most economical utilization of personnel it soon became evident that an organization different from that originally contemplated was required. Lack of adequate communications and the necessity that General Stratemeyer have ready access to the various administrative and policy-making agencies with which he had to work were important considerations. Location in New Delhi of British and Indian authorities, Services of Supply, Rear Echelon of theater headquarters, British GHQ, Air Headquarters Royal Air Force, and the Government of India, and the desirability of daily contact with many of these agencies made this the only logical location for General Stratemeyer's staff. Plans for a mobile group had to be abandoned in favor of a permanent, stable headquarters, and hope for establishing the headquarters in a forward area near the actual scene of combat was given up. After it was seen that mobility of headquarters was impracticable and that doing double duty was working hardships on officers serving in dual capacities, General Stratemeyer asked that allotment of personnel for his headquarters be increased.[28] On 1 October approval was granted for 302 officers, 16 warrant officers, and 1,004 enlisted men; but even this substantial increase represented only 75 per cent of the personnel requested.[29]

Meanwhile on 19 August, the day before General Stratemeyer assumed command, another significant change had been made in the theater--Brig. Gen. Howard C. Davidson succeeded General Bissell as commander of the Tenth Air Force. General Bissell had long been persona non grata to the Generalissimo because of the friction between Generals Chennault and

Bissell.[30] Political expediency undoubtedly contributed to the decision to make the change.

Simultaneously with the changing of American military organization, plans were being made at Quadrant Conference, Quebec, August 1943, for even more far-reaching organizational changes in Asia. As the time for offensive action in Burma approached, the need for closer cooperation between the Allies became more acute. Creating a unified command with a supreme allied commander was an obvious procedure, but selection of a commander acceptable to the United States, Great Britain, and China, and defining the geographical limits of the operational sphere of such a command proved almost insuperable obstacles. A British commander for the entire theater would not be acceptable to the Chinese; an American commander might be acceptable to the Chinese, but the British could not agree to such a plan because of the necessity of bolstering Empire prestige, already at a very low ebb in the Far East; a Chinese commander was not seriously considered.

Once more the political situation was the governing force which led to further confusion of the already complicated organizational setup. At Quebec the Southeast Asia Command (SEAC) was established, and Lord Louis Mountbatten designated Supreme Allied Commander-in-Chief, with General Stilwell as Deputy Supreme Allied Commander. From the operational sphere of SEAC, however, China, Indo-China, and India, were excluded.[31] Mountbatten would have no control over the Chinese except through General Stilwell in his capacity as Chief of Staff of the Chinese Army, and ultimate authority there rested with the Generalissimo.

Furthermore, SEAC operational sphere did not include India, where the major part of its assigned forces would have to be based, nor did Lord Mountbatten's command include the large Indian Army.

Meanwhile, General Stilwell continued in his capacity as Commanding General, United States Army Forces in China-Burma-India, and as such, was in direct command of all American troops, whether in India, Burma, or China. The position to be occupied by General Stratemeyer in this new organization was not immediately clear. It was contemplated, however, that he would be in command of all AAF units assigned to SEAC. The difficulties of the situation arising from superimposing the new command were recognized, and on 28 August General Arnold wrote to Generals Stilwell, Stratemeyer, and Chennault, asking that each do his best to make the unwieldy organization function, and to act as unofficial ambassadors in the theater. The following extract from his letter to General Stratemeyer acknowledges that the entire plan was based upon expediencies and was by no means perfect:[32]

> You have undoubtedly learned by this time of the new Southeast Asia Command and the appointment of Lord Louis Mountbatten as Supreme Allied Commander and General Stilwell as Deputy Supreme Allied Commander. . . . You remain responsible for the training in India of air force personnel for the 14th Air Force and the Chinese Air Force. Operational control of the 10th Air Force is vested in Stilwell. It is necessary therefore that Stilwell, Mountbatten and yourself work out plans for its operational control and use in the Southeast Asia Command. It is contemplated that some or all of the combat units will be employed in the Southeast Asia Theater. . . . This new command setup and your relationships with Generals Stilwell, Mountbatten and Chennault, is somewhat complicated and will have to be worked out to a great extent among yourselves. We feel that it can be made to work efficiently. The success of this complicated command setup depends in a great measure on personalities. If a true spirit of cooperation is engendered throughout the command, it will work. If the reverse is true, it is doomed to failure. I know I can count on you to play your part and pass the word right down the line.

In his explanation of the situation to General Stilwell, General Arnold said:[33]

> U. S. Chiefs of Staff realize this new assignment imposes on you a third extremely difficult task. Each of your jobs might well occupy the full time of one of the best general officers. We feel here, however, that best results can be achieved by designating you as senior representative of the War Department in India, China, and in the Southeast Asia Command. You are in fact the only one who can do this job successfully. . . . Stratemeyer will serve in the dual role as commander of all U. S. air units in India and all U. S. air forces assigned to SEAC. . . . He is being advised to appoint an air officer to serve on Mountbatten's staff. This officer should be of inestimable value to you in your capacity as Deputy Supreme Commander. . . . The attitude the Generalissimo will take toward this new organization has caused us some concern. You and Chennault can to much to allay his fears. You may assure him that this command has been established to insure the vigorous and effective prosecution of the war against Japan in southeast Asia and the rapid development of the air route through Burma to China. The new command does not take from the Generalissimo any of his prerogatives nor does it rob him of any of his units. It does offer an opportunity to employ his units in a coordinated allied effort against the enemy.

In reply General Stilwell cabled:[34]

> I think I get the general idea of the new command set up. You have cast me in an intriguing role. I am looking for a Philadelphia Lawyer to tell me what to do. Probably Wedemeyer can straighten out some of the perplexities. In any case, we will all jump in and do our best to make it go.

To General Chennault, General Arnold wrote:[35]

> Mountbatten's relationship to the Generalissimo is that of two neighboring commanders engaged in fighting a common enemy. . . . In your association with the Generalissimo you can, and I am sure you will of your own volition, do everything possible to impress upon him the purpose for which this new command was organized. . . . This command is designed to provide the means for supporting larger forces in China and southeast Asia in order to hasten the liberation of all China and the defeat of Japan.

The place that General Stratemeyer was to have in the theater, not clearly defined at the outset, now became more vague. It was apparently encumbent upon him to work out from rather general instructions his more

specific duties and responsibilities, and in spite of vigorous efforts to carry out the terms of his assignment, the process of clarification dragged out for weeks.

In the organization of Mountbatten's command, selection of the air commander of SEAC was of highest importance. It was felt by Americans that General Stratemeyer's background of administrative experience eminently fitted him for the position, and that the major role of American air units in the theater justified appointment of the senior American air officer as air commander of SEAC. Therefore at the request of General Ferris, Commanding General, Rear Echelon of General Stilwell's headquarters, Colonel Stone prepared a memorandum setting forth reasons for consideration of General Stratemeyer for the post. The memorandum cited his long and varied experience and followed with quotation of figures to show that the AAF had been more actively engaged in the theater against the enemy than had the RAF:[36]

> General Stratemeyer's striking force, the Tenth Air Force, has developed within one year from a skeleton organization into the most powerful aviation striking force in this Theater. It has effectively attacked Japanese communications throughout Burma and environs and has virtually denied the port of Rangoon to the enemy. It has successfully defended the vital air route to China, carried out the longest bombing raids on record and sunk a vast amount of enemy shipping, accomplishing these missions with the smallest combat losses of any Air Force. To illustrate, the following are comparative tons of bombs dropped by the Tenth Air Force as against tonnage dropped by the R.A.F.:

	Tenth Air Force		R.A.F.	
	1942	1943	1942	1943
May	59	1122	60	320
June (Monsoon)	19	447	69	105
July "	43	760	30	139

Further, the memorandum stated, as of 30 August 1943 the Tenth Air Force had only 237 aircraft assigned, of which an average of 76 per cent had been maintained in commission. The RAF, on the other hand, had 502 aircraft assigned with an average of 52 per cent in commission. The recent decision that the AAF would be responsible for maintenance and supply of all American-built aircraft used by both the RAF and AAF and the responsibility of General Stratemeyer for training Chinese and American airmen in the theater were also advanced as reasons that he should be named to the top air position in SEAC.[37]

Meanwhile, General Stratemeyer and his staff were also concerned about the place of the AAF IBS CBI in the new command. A "Plan for System of Operational Command in Southeast Asia" was prepared by the staff. It assumed two operational theaters, India-Burma and China, which "must out of necessity be coordinated and integrated into one unified command." The plan was predicated on certain other assumptions, some of which were not accepted. It assumed that operations in the theater were to be combined, as distinguished from joint operations; that China would accept the principle of a combined command; that there would be an integration of units and staff personnel; and that the senior American air officer would be SEAC air commander and equal in stature to the SEAC naval and ground commanders. It also contemplated "the staffs and commands--composed of allies working as one and the same team against one and the same enemy, as distinguished from various national teams working on a project in which there is mutual self interest. In effect

it contemplates a unity of purpose, a unity of organization and a unity of command whose sole mission is the destruction of a dangerous enemy."[38]

China, however, had been excluded from SEAC, and the British were unwilling to grant the top air position to an American lest the action be construed by the enemy and malcontents in India and Burma as a British admission of weakness. British wishes prevailed and Air Chief Marshal Sir Richard Peirse was named Air Commander Southeast Asia, with General Stratemeyer as Deputy Commander.

Once this matter was closed the problem of integration of staff officers was attacked. On 26 October General Stratemeyer recommended that his headquarters supply certain officers to the staff of the Air Commander SEAC, and that the Air Commander SEAC in turn send certain British officers to serve on the staff of CG USAAF ISC. Similar integration of American and British officers for combat units was also recommended, but because of the peculiar functions of the Air Service Command, and because the Air Transport Command was primarily concerned with supplying China, General Stratemeyer did not feel that integration of these commands was necessary or desirable.[39]

During the morning of 28 October the subject "Integration of American and British Air Forces within South East Asia Command" was discussed at a meeting in the office of the Supreme Commander and presided over by Lord Mountbatten. A proposed organizational diagram was discussed, the stated purpose of which was "to set out the ideal organization for command and administration of the American and British Air Forces within South East Asia Command, regardless of the decisions at the Quadrant Conferences on this subject, and regardless of directives that may have been

issued by the Air Commanders." American officers present were concerned over the proposal to ignore former decisions and directives and immediately made their position clear. Neither General Stilwell nor General Stratemeyer was willing to subscribe to a proposal which failed entirely to take into consideration American commitments to China which lay behind the establishment of both the Tenth and Fourteenth Air Forces in Asia. General Stilwell pointed out that under existing directives from Washington which he could not afford to ignore, he alone could issue orders to the Fourteenth Air Force, but that it was General Stratemeyer's responsibility to provide, through the Air Service Command, proper maintenance to the Fourteenth. In view of objections by American officers Lord Mountbatten ordered that the chart be completed with certain minor amendments, and that a note be prepared suggesting amendments to certain existing agreements so that there would be no conflict. He stated that he would write to Air Chief Marshal Portal and to Generals Marshall and Arnold in an effort to obtain clarification.[40]

Subsequently the minutes of the meeting were sent to General Stratemeyer with a request for comment, and he replied:[41]

> I should like to amend paragraph 3 so as to read as follows: "It was agreed that the diagram would represent the ideal organization which should be aimed at if the primary mission given to the American Commander of protecting commitments to China did not stand in the way. Major General Stratemeyer stressed Lieutenant General Stilwell's obligation to withdraw any part or all of the Tenth Air Force from the Southeast Asia Command in order to protect those commitments if such a course became necessary. He was, therefore, unable to concur in the proposed organization in view of present directives in quadrant."
>
> Particularly in view of Twilight, I believe it important that the American Air Commander should be in a position to concentrate all available American Air Forces in China without being embarrassed by commitments to the Southeast Asia Command. He must also be sufficiently independent of British control to be able to

insist upon obtaining adequate facilities and equipment for Twilight in India. I believe I can achieve these results more effectively if I am not personally responsible to Air Chief Marshal Peirse for all air operations over Burma. I, therefore, prefer the plan which I submitted, calling for separate American A.A.F. and R.A.F. Air Forces fighting on a cooperative basis on the eastern front.

However, the plan discussed at the October 28th meeting is entirely workable and I have no objections to it provided a note is placed on the chart to the following effect: "The Deputy Air Commander, Southeast Asia Command, may, after so advising the Supreme Commander or the Air Commander-in-Chief, withdraw any part or all of the American Air Forces shown in this diagram for the purpose of protecting American commitments to China."

Additional communications on the subject continued for several days but General Stratemeyer stood firm on the point that he could not agree to any plan that ran counter to his previous directives or would in any way prejudice American commitments to China; otherwise he was willing and anxious to cooperate completely in waging war against the Japanese.

The relationship of the USAAF to the Supreme Allied Commander, Mountbatten, was still not clearly defined as late as 10 November, and on that day a memorandum on the subject was presented to the Deputy Chief of Staff, Air Marshal Garrod, by an American staff officer attached to Headquarters, SEAC. Attached to this memorandum were quotations and important documents, which, because of some contradictions, did not clarify the situation. Certain conclusions, however, had been reached by the American officers: the Supreme Allied Commander had no control over the Air Transport Command, for the coordination of whose activities General Stratemeyer was responsible directly to the CG USAAF; he had no control over the supply and training establishments of the Fourteenth

Air Force in India, for which General Stratemeyer was responsible through General Stilwell to the Generalissimo; nor could Lord Mountbatten control units assigned to the defense of the air ferry route and the Indian air transport terminals, for which General Stratemeyer was responsible through General Stilwell to the American Chiefs of Staff. General Stratemeyer, however, was responsible, again through General Stilwell, to the Supreme Allied Commander for the operation of AAF units committed to the SEAC, but the only unit thus committed at that time was the 1st United States Air Commando Group. The memorandum, however, recommended that certain units of the Tenth Air Force be committed to SEAC without delay.[42]

Most of the difficulties encountered in attempts to define command relationships might be traced to the somewhat vague instructions issued from Quebec. It was intended that details should be worked out in the theater but recognized that the job would not be easy. Wide variance of strategic concepts held by British and Americans in the theater and fear on the part of Americans that USAAF in CBI would be entirely under RAF control prolonged the process. At Quadrant, General Marshall had made clear the American attitude by the statement: "It must be remembered that politically, all U. S. forces in China, or in the Southeast Asia Command, are regarded as being there for the sole purpose of supporting China, and therefore a system must be evolved whereby, while retaining this political principle, the maximum support can be obtained for operations into Burma."[43] Shortly thereafter General Somervell, after a tour of the CBI, said: "Our interests and those of the British are not identical in South East Asia." He went on to say: "He [Mountbatten]

apparently is a commander without a front or a rear and in an unenviable position. . . . Believe that the basis of effective cooperation has been established between Mountbatten, Stilwell and the Generalissimo. The Generalissimo has apparently accepted Mountbatten with enthusiasm."[44] The British, however, continued to interpret Lord Mountbatten's title--Supreme Allied Commander-in-Chief--rather literally; and despite sincere efforts to arrive at a workable agreement, little was accomplished before the Sextant Conference at Cairo in November andDecember 1943, at which Lord Mountbatten and General Stratemeyer were present.

In November General Stratemeyer asked General Arnold to obtain clarification on certain points while at Cairo. The first concerned command relationships within SEAC. It was generally agreed in the theater, he said, that all AAF and RAF units assigned to SEAC should be integrated, and that he would have operational control under Peirse. He requested that a higher priority be given construction of bases in India to serve the long-range-bomber (B-29) project, adding that Lord Mountbatten understood that requirements for the forthcoming Burma campaign would have first priority. Little could be accomplished on the B-29 project before 1 June 1944, he warned, unless personnel, equipment, and materials were provided from outside the theater. Furthermore, if the long-range operations were to begin as scheduled, some facilities and aircraft of ATC would have to be diverted tosupport them, probably interfering with commitments to China.[45]

In connection with the above letter General Kuter, AC/AS, Plans, told General Arnold that he believed General Stratemeyer should have

operational control, under Peirse, of all air forces integrated into SEAC. He said that the British not only had accepted the long-range-bomber project in principle, but had taken steps to provide port facilities at Calcutta and sites in India for airfield construction. Arrangements had been made to have American construction personnel and equipment arrive in India by 15 January as requested by the British. The question of priority between the B-29 project and commitments to China, said General Kuter, would have to await a final decision at Sextant.[46]

In a letter of 3 December 1943 General Arnold wrote Lord Mountbatten that the Combined Chiefs of Staff (CCS) had decided that the Supreme Allied Commander should have command responsibilities for all operations and all allied forces--land, sea, and air--operating in SEAC, except ATC and certain agreed elements of the British Navy. The Supreme Commander's authority over U. S. and Chinese forces in operations against Burma, however, was limited to operational control. Lord Mountbatten was to accept responsibility for defense of all ATC facilities in SEAC, and in exercising operational control over USAAF units the Supreme Commander would respect the integrity of groups in integrating RAF and AAF units, allow administrative control to remain with U.S. commanders, and leave responsibility for supply with U.S. commanders.[47]

Upon his return from Cairo, Lord Mountbatten issued a directive integrating the Tenth Air Force and the Bengal Air Command of the Royal Air Force under the ultimate unified control of Air Chief Marshal Peirse, the purpose being to form within the administrative organization of Air

Command, South East Asia, a well integrated operational unit. The combined forces thus merged were formed into a unit subordinate to Air Command, South East Asia, and designated Eastern Air Command (EAC). General Strateneyer was placed in command of this operational unit, and upon him and his staff fell another problem of organization and employment of air power.[48]

Again complicated strategic and political considerations made the organization of EAC a problem necessitating careful planning and well-thought-out decisions. The Tenth Air Force and the Bengal Command each had within its organization both fighters and bombers. It seemed logical that the integrated force should be divided for operational purposes into a tactical and a strategic force, one under command of an American and the other under a British air officer. Air Marshal John Baldwin of the Bengal Command and Brig. Gen. Howard C. Davidson of the Tenth Air Force were the logical men for the posts. There were still other complications which required cautious planning.

The American fighter squadrons assigned to the Assam American Air Base Command (American Air Command No. 1) in June were still based in Assam with the mission of protecting ATC bases and operations, but under the new setup were assigned to 5330th Air Defense Wing (Prov.) under Brig. Gen. W. D. Old.[49] With the British neither engaged in the operations from Assam nor committed to China it seemed illogical to place General Old under a British chain of command. Yet, if the fighter squadrons were to be assigned to EAC they should be in the tactical rather than the strategic air force.

At a meeting of the staff of AAF IBS on 12 December a projected organization was worked out and certain recommendations made. These were passed on to General Stratemeyer the following day in a memorandum entitled: "Organization of Eastern Air Command and Integration with the . . R. A. F., and Location of Your Headquarters." It was recommended that all heavy and medium bombardment units of the Tenth be assigned to the strategic force, while to the tactical should be assigned the 5320th Air Defense Wing and the Troop Carrier squadrons. Responsibility for defense of both the Calcutta and Assam areas should be given to a single force--the tactical. The staff believed it important that the integration should not lead to subordination of AAF to RAF and recommended that General Stratemeyer keep his headquarters at New Delhi near that of Peirse so that he could represent the American view in all policy-making decisions. It was the staff's opinion that integration should be operationally complete but not administratively so. Pertinent quotations from the memorandum to General Stratemeyer follow:[50]

> It was the unanimous conclusion of all present that your mission was: As Senior Army Air Forces officer in the China-Burma-India Theater, to protect the interests of the United States Army Air Forces and to cooperate with the British in their employment to maximum effect against the enemy. . . . It was agreed that you should occupy a position as high in the chain of the Southeast Asia Command as possible. Integration does not mean subordination. You have been offered the position of Air Chief Marshal Peirse's Deputy. The Northwest African Air Force experience indicates that there should be British and American "opposite numbers" in each key position. Lieutenant General Spaatz, for example, is always in the same place as Air Chief Marshal Tedder. He was also Commander of the Northwest African Air Force, thus in effect holding two positions. It is believed that you should occupy a similar relationship to Air Marshal Peirse and also have ready access to Lord Mountbatten.

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On 14 December, in line with the above recommendations and suggestions, General Stratemeyer presented a frank, carefully worked out memorandum to Peirse. In a subsequent conference with Peirse, Baldwin, and Lt. Gen. W. J. Slim of the British 14th Army, General Stratemeyer stressed the point that the term "deputy" in the British Army was the equivalent of chief of staff, and insisted that he should be Peirse's "opposite number" rather than his "deputy." He maintained that he should have direct and speedy communication with Baldwin in his capacity as commander of the tactical force, and said that the suggestion by a British officer that this would not be necessary indicated a misconception of the responsibilities of the head of the Eastern Air Command. Following a very frank discussion Peirse approved General Stratemeyer's recommendations.

On 15 December General Stratemeyer assumed command of EAC and General Orders No. 1, Eastern Air Command, was issued. The order announced appointment of Air Vice-Marshal T. H. Williams as Assistant Commander of EAC, and gave the general organization of the command. EAC was to be organized into four components: a Strategic Air Force, composed of AAF and RAF heavy and medium bombers, under General Davidson, who retained command of the Tenth; a Tactical Air Force, composed of RAF and AAF fighters and fighter-bombers, under Air Marshal Baldwin; a Troop Carrier Command, composed of AAF and RAF troop carrier units, under General Old; a Photographic Reconnaissance Force, under a commander to be announced later.[51]

It was specifically stated in the order that in exercising operational control the respective commanders would retain the integrity of AAF groups and RAF wings. Administrative control and responsibility for maintenance and supply were to remain under the respective AAF and RAF commanders, but operational staffs of the four components were to consist of both RAF and AAF personnel in such proportions as the commanders deemed necessary. American staff officers were immediately assigned to Baldwin's staff and RAF officers to General Davidson's. The other components were subsequently organized along similar lines.[52]

In this first order, General Stratemeyer, despite his early opposition to integration, addressed to his new command an appeal for closest cooperation in carrying out the mission of the new command. He said:[53]

> A resourceful, able and wily enemy must be blasted from the jungles of Burma and driven from the skies in days to come. His lines of communication must be obliterated, his shipping destroyed, his will to resist crushed. Against the inevitable day of retribution when Japan's cities will meet the fate of Berlin, our lifeline to China must be strengthened and protected. Every ounce of energy of every man of this Command will be required to accomplish this purpose. We must merge into one unified force in thought and in deed--a force neither British nor American, with the faults of neither and the virtues of both. There is no time for distrust or suspicion. I greet the forces of the Bengal Command, and their Commander, Air Marshal Baldwin, as comrades in battle, as brothers in the air. A standard of cooperation which we must strive to surpass has been set by the inspiring example of joint achievement of our colleagues of the Northwest African Air Force. We must establish in Asia a record of Allied air victory of which we can be proud in the years to come. Let us write it now in the skies over Burma.

American contribution to the Eastern Air Command was much greater than would have been possible a few months earlier. After General Davidson assumed command of the Tenth in August reinforcements arrived. The 51st Fighter Group had finally moved to China, and movement of the

remainder of the 341st Bombardment Group (H) to China was imminent. Meanwhile, however, the 80th Fighter Group with P-40L's, and the 311th Fighter-Bomber Group with A-36's and P-51's had arrived and gone into action. An additional medium bombardment group was en route to take the place of the 341st when it went to China. Thus the AAF contributed one heavy bombardment group, one medium bombardment group, one fighter group, and one fighter-bomber group to the Strategic and Tactical Air Forces which were to take over operations in the India-Burma Sector.

The entire command setup in the China-Burma-India theater remained most complex and final arrangements for organization of MAC and SEAC were still in progress as 1943 drew to a close.

Chapter III

FIGHTER OPERATIONS FROM ASSAM

Activation of the Fourteenth Air Force in March 1943 did not affect the mission of the Tenth but removed China and extreme northeast Burma from its sphere of operations. This reduction in area of responsibility was not entirely commensurate with the loss of strength entailed, for transfer of the CATF to the Fourteenth left the Tenth with only two fighter squadrons. Resultant composition of the Tenth--four heavy bombardment, three medium bombardment, and two fighter squadrons--was hardly an ideal proportion for an air force, especially one with an essentially defensive mission. Highest priority in operations was given to protection of the air supply line to China; hence major responsibility fell to the 25th and 26th Squadrons of the 51st Fighter Group. Bombardment squadrons could give limited and indirect aid in defense, but they were more immediately concerned with carrying out a secondary mission--destruction of the enemy.[1]

Based in Assam, the small fighter force under Col. Homer L. Sanders (relieved by Col. John F. Egan on 23 March) of the 51st Fighter Group faced appalling operational problems with full knowledge that reinforcements would not be available until late summer. The 80th Fighter Group, scheduled for early arrival in the theater, was still in training in the Zone of the Interior.[2] After the middle of May clouds and fogs of the monsoon would lessen the threat of large-scale air attacks on Assam bases and offer cover to transport planes in their Hump flights, but in the interim the defensive situation was critical.

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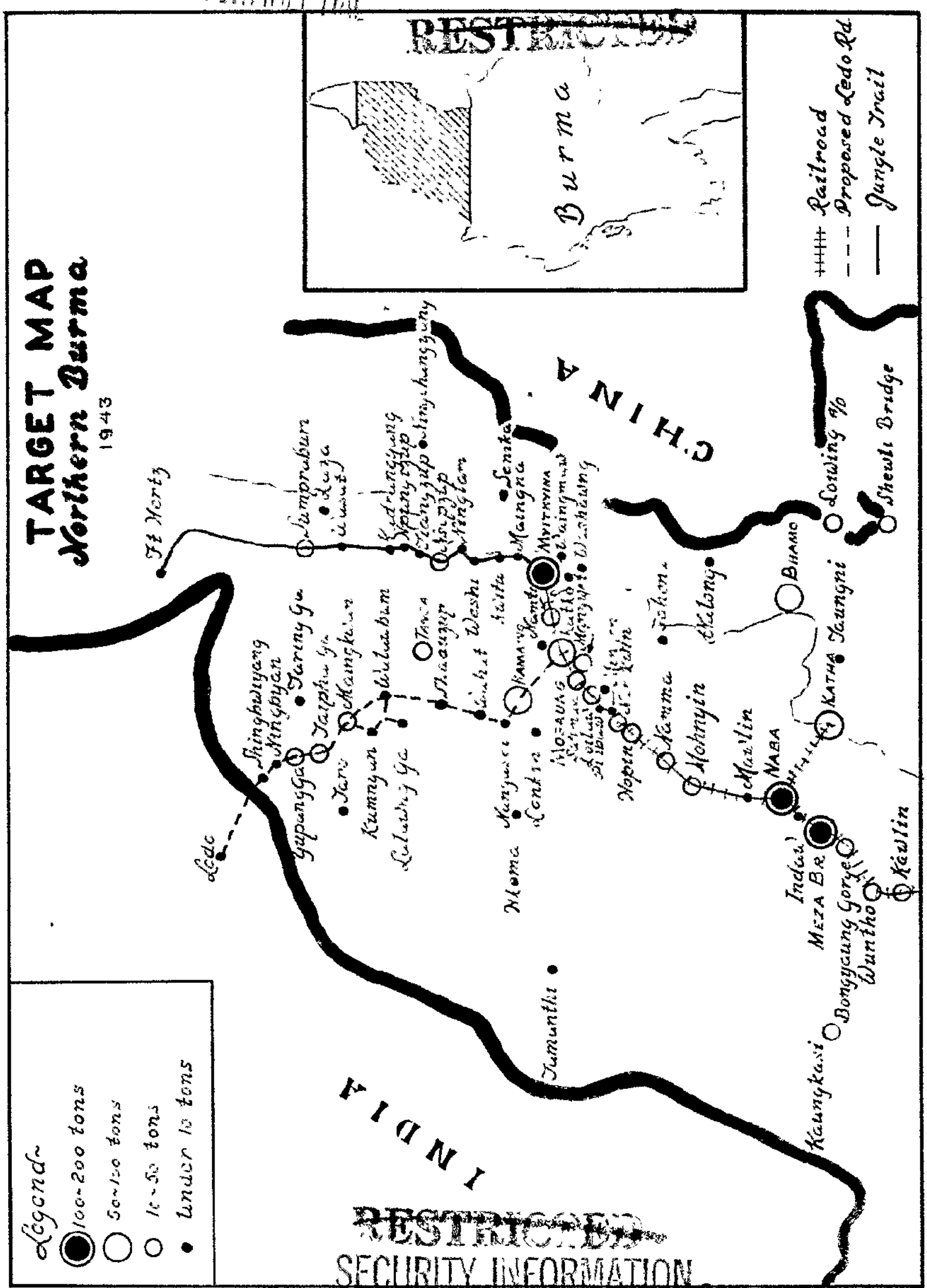

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American fighter pilots in CBI were accustomed to being outnumbered and had adopted hit-and-run tactics featuring sudden attacks from above and escape by diving away.[3] They had long since learned that it was fatal to try to outturn or outclimb the lightly constructed Japanese planes; now they were finding it increasingly difficult to obtain altitudes necessary for their diving tactics, for enemy planes were coming in at higher altitudes than ever, and a few new ones showed greatly improved diving speeds. Shortly, it seemed, fire power and sheer ruggedness would be the only advantages held by the P-40's. High-altitude bombers accompanied by these new types of fighters could do great damage to vital ATC installations in the face of the most determined defense the 51st Group could muster.[4]

A problem hardly less grave than inferiority and scarcity of fighter aircraft was the deficiency of the air warning net. When defended by a small number of slow-climbing fighters an area must of necessity be served by the most extensive and efficient warning net possible. Because of the nature of the terrain between Assam and Burma an ordinary net was out of the question. A complete radar system was impossible because of the high hills rising abruptly from the floor of the Brahmaputra Valley where Assam bases were located. The only solution lay in dispersing small detachments carrying portable radio sets to almost inaccessible points in the rugged Naga Hills. Difficulty of transportation to the most strategic points excluded use of heavy equipment and in many cases called for supply by air dropping. Still farther to the east another network of listening posts was established to give warning of marauding

Japanese fighters operating across the line of flight of Hump transports. Clustered about Fort Hertz these outposts relayed their reports through that point to bases in Assam. Here, too, air supply was frequently necessary.[5]

Some natives in regions occupied by the outposts were reputed headhunters.[6] Others were of doubtful loyalty so that the detachments had to risk betrayal and were largely dependent upon their wits and their small arms for defense. A few were so far forward that they were in constant danger of being overrun by Japanese ground patrols.[7] Additional men and equipment were en route to extend and improve the net, but for many weeks the few stations already in operation would be the only source of air warning.[8] This makeshift air warning net could hardly be expected to give sufficient warning to allow slow-climbing fighters to become airborne and attain enough altitude to make effective intercention over Assam or northern Burma.

The vast expanse of their area of responsibility, the scarcity and poor performance of their aircraft, and inadequacy of the air warning net made the task assigned Assam fighters in March 1943 so difficult that only by careful planning, efficient execution, and a generous amount of luck could they acquit themselves creditably. Probably the most effective method of giving transport aircraft positive protection while in flight over Burma would have been some form of convoy system; but because of limited airfield facilities, cargo planes had to fly singly rather than in groups. Admittedly it was impossible for some 40

fighters to provide convoys or escorts for all the approximately 150 cargo planes flying the Hump. Furthermore this system could not have been used without leaving Assam itself practically denuded of fighter protection. On the other hand it had been proved conclusively that merely having planes alerted on the ground was useless; Japanese bombers could appear over Assam before alerted planes could get aloft to intercept, or their fighters could swoop down on transports in flight before American fighters could interfere. The lumbering transports could take little evasive action, and their only escape once they were jumped was by plunging into clouds before the enemy could close in. On fair days they were doomed.

Supplies and aircraft brought with greatest difficulty to the theater over the world's longest supply line were irreplaceable, and Americans could ill afford to lose them. Nor could transport pilot morale be ignored. Natural hazards of Hump flying were awesome enough, and as long as Japanese fighters could intercept cargo planes with impunity, transport pilot morale would be a critical problem.

In search of the best possible solution of this defense problem, experiments were conducted with continuous daylight fighter patrols, both over Assam and in northern Burma. Small because of the limited number of planes available, these patrols had the advantage of being airborne in case of emergency. Should bombers approach Assam the few fighters already in the air could at least interfere with bombing accuracy by attacking formations before or during bomb runs. Over Burma an emergency call from a transport threatened with attack might possibly reach a patrol near enough to intercept enemy raiders before the attack

could develop. Or patrols might intercept marauders even before they were able to sight the transports. Furthermore it was felt that the mere sight of an occasional friendly patrol would be invaluable in boosting morale of cargo pilots.[9]

Once the patrol policy was formulated and adopted a few planes were always cruising over Assam during daylight hours of clear days. In northern Burma four fighters kept vigil over Fort Hertz whenever weather permitted.[10] This, however, was only a part of the activity of the 25th and 26th Squadrons located at Sookerating and Dinjan, respectively. Beginning in March at the time of the activation of the Fourteenth Air Force, they used their meager force (19 P-40E's, 22 P-40K's, and 2 PT-17's) in a display of great versatility by successfully carrying out a wide variety of missions. Ultimately most of their sorties were directly or indirectly for defense, but a few at least had the appearance of offensive action. They maintained patrols over the air route from Assam to Fort Hertz, sometimes flying direct escort for transports; they made frequent offensive and photographic reconnaissances, covering the entire northern "triangle" and occasionally penetrating as far as Shano and Katha; almost daily they rode herd on cargo planes flying food-dropping missions, especially to outposts of the air warning net; they flew numerous intercept missions when enemy planes were reported within their patrol circumference; once they flew escort and top cover for a PT-17 which landed in enemy territory to rescue an American pilot.[11]

Assam fighters, however, could not devote full time to passive defense against enemy air action. Japanese penetration into northern

Burma, begun in January, gradually developed into a full-scale invasion with the obvious objective of occupying the entire "triangle" including strategically located Fort Hertz.[12] High tide of Japanese conquest at the beginning of the monsoon in 1942 had spent itself just short of this far northern area, but when development of the aerial ferry threatened to nullify their effort to beleaguer China they hastened to rectify their error of not taking Fort Hertz when it was theirs practically for the asking. Rapid expansion of the Hump flight had made this small village the crux of the immediate strategic situation in southeast Asia.[13]

The Allies were not unaware of the importance of Fort Hertz. To the British it represented the last vestige of their authority in Burma. If it could be held, the loyalty of some faithful Burmese peoples might be preserved. Kachin levies had already demonstrated their ability as guides, scouts, intelligence agents, and jungle fighters; if their loyalty were maintained they would be of inestimable value in the reinvasion of Burma. But occupation of their only remaining stronghold by the Japanese might well ruin British prestige and remove their last hold on natives of Burma.[14]

To the Americans, on the other hand, Fort Hertz was more than a symbol. It was a forward emergency base for patrols protecting Hump-flying transports; it was an important weather and radio station through which information from air warning outposts cleared; it was a center of native intelligence activities, already providing vital military information. Moreover, its loss might result in establishment of an enemy fighter base from which the entire air supply route could be interdicted.

But most important perhaps, in long-range planning, was the fact that once enemy troops were in Fort Hertz they could flank the entire route of the projected Ledo Road.[15]

Providing a defense now would be far less expensive than mounting an offensive later, and all agreed that Fort Hertz must be held at all costs. But holding it seemed more than the British could do alone. They deployed about 750 Kachin levies and one company of Ghurkas astride the line of advance, but the Kachins were neither properly armed nor trained in modern methods of infantry defense. They needed reinforcements but the only available troops were partially trained Chinese-Americans at Ramgarh. Some of these Chinese were sent to Ledo to check a movement of the Japanese up Hukawng Valley, but it was months before any reinforcements were sent to Fort Hertz. Meanwhile active defense during the summer fell to the small force of British colonials. The Japanese moving forward from Sumprabum and Mogaung were digging in as they went, establishing supply dumps, repairing roads, building bridges, and in general strengthening their position north and west of Myitkyina.

The 25th and 26th Squadrons were the only fighters based in flying distance of Sumprabum, and in answer to desperate calls from the British for air assistance the fighters began to fly strafing and bombing missions with greater regularity, striking at specifically designated targets rather than targets of opportunity. Enemy camouflage discipline and methods were excellent, however, making it almost axiomatic that targets which were spotted from the air were not worth attacking. Eventually the 51st Group evolved a five-point program to help stem the enemy advance,

meanwhile preventing Japanese ground forces from benefiting from direct aerial support. The program included:[16]

1. Persistent strafing and "fragging" of trails north of Sumprabum, in close support of British ground forces.

2. Making Sumprabum untenable by demolition and incendiary bombs.

3. Persistent fighter sweeps against motor convoys, troop concentrations, and supply dumps along the road from Myitkyina to Sumprabum.

4. Dive-bombing assaults against bridges at those points which would create most formidable difficulties to the enemy line of communication.

5. Bombing attacks in strength against main bases and nerve centers at Myitkyina and Mogaung, disrupting diversionary movements and causing disorganization at points from which basic supplies were moved.

The results of many of their missions could not readily be assessed, and striking day after day at targets without knowing what had been accomplished was not good for pilot morale. But one series of missions flown during March, with favorable results immediately known, gave a tremendous lift to sagging spirits in Assam. KC-8, an air warning outpost strategically located at Hkalak Ga in Hukawng Valley, had proved a most valuable installation, its alertness late in February enabling Assam fighters to inflict heavy losses on an enemy formation of bombers attempting to strike Assam bases. Aware of the existence of the warning post and of its threat to future air operations, the Japanese determined to capture it. Its location was probably revealed by air dropping, and early in March KC-8 reported that it was in imminent danger of being overrun by a Japanese ground patrol. A small detachment of the British "V"

Force and Kachin irregulars met the enemy six miles from the radio installation and checked his advance. Weather prevented answering their call for air support until 8 March when the P-40's began a series of bombing and strafing attacks, directed by air-ground liaison with men from KC-8. After four days the enemy withdrew with casualties, and the warning post was able to continue its excellent work.[17] Meanwhile the enemy was slowly moving toward Fort Hertz.

While the fighter operations prior to the monsoon rains doubtless caused the enemy serious embarrassment at points other than Hkalak Ga, they gradually edged forward. In attacks on the enemy line of communications the Americans found that they badly needed heavier bombs, especially for striking at bridges. A bridge suffering a direct hit with a 500-pound bomb, the largest carried by the P-40's at that time, might have its superstructure damaged, but the Japanese could easily repair such damage and put the bridge back in commission in a short time. This obvious need for bombs large enough to destroy foundations as well as superstructures led to a demonstration of American daring and ingenuity that was to affect aerial operations in other major theaters of operation.

The 51st Group, using every plane that would fly, on one occasion pressing a C-87 transport into service as a bomber, and frequently using PT-17's for weather checks,[18] had failed in its efforts to break the main line of supply to northern troops--the railway. With considerable reluctance, it was decided to divert B-25's to targets farther north even though this would mean impairment of the bombing program in central Burma. In preparation for future operations of medium bombers 1,000-pound demolition bombs were shipped to Assam.

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Looking at these bombs, Col. John E. Barr, executive officer of the 51st, thought that perhaps the P-40 could be converted into a fighter-bomber with 1,000-pound capacity and thus obviate the necessity of bringing B-25's to overloaded bases in Assam. Undeterred by the fact that the 1,000-pound bomb was twice the previous bomb load of the P-40, Colonel Barr set to work on the gamble. By 19 March necessary modifications were completed, the load being lightened by limiting .50-caliber ammunition to 100 rounds per gun. The trial flight was set. The plane made a normal take-off, but rate of climb was slow, and level flight speed was reduced by about seven miles per hour. With other P-40's as top cover, a luxury not as yet enjoyed by the heavies and mediums, the "B-40" headed for Hogaung, where the bomb was directed at the spans of a bridge just south of the town. Over the target the dropping proved normal except for a slight jump or jerk at the instant of release. The bomb overshot the bridge, hitting the north abutment, but as far as carrying and releasing the bomb were concerned the test was a complete success. Diversion of B-25's to northern targets was no longer necessary.[19]

It now remained for Colonel Barr to work out an approach and bomb run to assure better accuracy, and to train pilots more thoroughly in the new techniques. The second test, on 21 March, was carried out by six bomb-carrying planes with others as top cover. The first flight of three planes made three hits from 2,800 feet on the town of Hogaung, demolishing two whole blocks. Antiaircraft was intense over this target, but because of the great speed attained in the dive the planes received no damage. The second flight struck once more at the bridge south of the town, releasing their missiles at 2,000 feet. Although the pilots

did not claim that the bridge was destroyed, the result was described as very good, all bombs striking in the assigned target area.[20]

After these initial experiments, further modification and refinements were made and pilots given additional training. Colonel Barr advised the pilots to "come in at 10,000 to 20,000 feet, razzle-dazzle to 5,000 feet on a course 90 degrees to the target." At this level the airmen were to turn into a 45-degree dive, keeping their sight on the near end of the target to 2,000 feet. Then by relaxing pressure on the stick they were to let the sight move through the far end of the target and then release the bomb. As the bombs began to explode the P-40's were to continue diving to the deck for a quick get-away. Speed, Colonel Barr advised his pilots, was the main protection against flak.[21]

Using the tactics which they had learned in training, the bomb carriers on 14 April dropped 12 x 1,000-pounders on enemy airfields at Myitkyina and Mogaung, rendering both unserviceable. On the morning of 16 April the railway bridge at Mogaung was temporarily put out of commission by near misses which further damaged the bridge and blew up approaches. One direct hit was scored on the bridge, but the bomb failed to explode. That afternoon the railroad bridge at Pinbaw, farther to the south, was demolished by direct hits. Three days later serious damage was done to Namti railway bridge between Mogaung and Myitkyina. Bridge attacks continued until early in May when the supply of 1,000-pounders was exhausted. Other bridges which had suffered serious damage from the "B-40's" included Loilaw, Naukwin, and Myitkyina.[22]

This preliminary success in "bridge busting" was by no means decisive,

however, for Japanese construction crews repaired damage and rebuilt demolished bridges with remarkable rapidity. For example, Pinbaw bridge, described as completely destroyed on 16 April, was again in use on 1 May. Damage to bridges intermittently checked all flow of goods northward by rail, and repeated strafings of trails, motor roads, and rolling stock restricted enemy movement of supplies largely to hours of darkness; but to isolate the Myitkyina area from supply bases in the south would require a greater force of aircraft and more heavy bombs than were available in Assam.[23] Meanwhile the enemy would probably be able to sneak much materiel into the north under cover of the monsoon. Development of the P-40 as a carrier of the 1,000-pound bomb had shown the way, but the contest had only begun.

In May torrential rains made sustained operations impossible but permitted further pilot training especially needed by recently arrived replacements who had not been oriented in the theater. Construction of several new fighter strips was begun and reasonable progress made despite bad weather. Fortunately, however, the monsoon deterred the Japanese also, making Assam comparatively safe from air attacks. Enemy ground troops stalled north of Sumprabum, probably because rains interfered with their tenuous supply line.

As the summer dragged on the 25th and 26th Squadrons ran missions as often as weather allowed, but sometimes no flying was possible for two or three weeks at a time. Work was pushed on fighter fields to be used during the dry season, yet life of pilots in Assam was generally monotonous. In July weather cleared sufficiently to permit a short

flurry of missions, but in August the monsoon closed in again. During the two months, July and August, a total of 254 sorties was flown, but practically all were for reconnaissance, weather check, or routine patrols over the Hump route. Reconnaissance showed, however, that the Japanese ground troops were similarly handicapped; their columns had not moved from their positions just above Surprabum.[24]

In August Maj. Gen. George E. Stratemeyer assumed command of all American air units in the India-Burma Sector, and Brig. Gen. Howard C. Davidson succeeded General Bissell in command of the Tenth Air Force. Shortly thereafter General Haynes and Colonel Combs, both with long service in the theater, were returned to the Zone of the Interior, Brig. Gen. W. D. Old assuming command of American Air Command No. 1 (formerly AAAB) and Col. Torgils Wold taking over command of IATF. General Old, having served with Assam-Burma-China Ferry and as Chief of Staff of Tenth Air Force, was of course well informed on the situation in Assam, and Colonel Wold as commander of the 341st Bombardment Group (M) had long since become familiar with operating conditions in Bengal.[25]

During September monotony in Assam was broken by the arrival of the 80th Fighter Group and transfer of the remaining squadrons of the 51st to the Fourteenth Air Force in China. The 80th Group, originally trained on P-47's and scheduled for shipment to Europe, had arrived at Karachi late in June and carried out operational training while awaiting the aircraft they would eventually fly in combat. Late in July their P-40N's had begun to arrive, and by the first of September two of the three squadrons were ready to move forward, the third to follow in two

weeks. Shortly before 1 October the 25th and 26th Squadrons, after exchanging many combat-experienced personnel for inexperienced ones of the 80th, moved to China, leaving responsibility for defense of the air ferry and its installations to the 88th, 89th, and 90th Squadrons of the 80th Group.[26]

Perhaps more encouraging than the increase in squadrons from two to three was the fact that fighters in Assam were now equipped with aircraft capable of attaining greater altitudes than ever before. In the spring Japanese reconnaissance planes had figuratively thumbed their noses at the heavy P-40K's of the 51st by spying on Assam at will from high altitudes. Eventually a P-40, stripped of everything removable except one machine gun, climbed to sufficient altitude to make a pass at an intruder, luckily shooting it down.[27] Thereafter the 51st repeatedly requested fighters with better altitude characteristics. With the arrival of the 80th Group, the entire Assam force was equipped with such planes, while the 51st flew their older models with them into China.

In the few remaining weeks of bad weather which followed their arrival the fighters of the 80th became accustomed to their surroundings, adopting much the same routine as had been followed by their predecessors. They flew patrols, made reconnaissance and weather checks, escorted transports on food droppings, and occasionally bombed and strafed enemy-occupied areas. They also adopted the 1,000-pound bomb as the standard weapon for use against major targets. Rarely did they see enemy aircraft, and antiaircraft fire encountered was generally light and ineffective.[28]

Before the monsoon had entirely disappeared the situation in Assam was further improved by the arrival of the 311th Fighter-Bomber Group equipped with A-36's and P-51A's. This brought an even greater improvement in aircraft than the arrival of the P-40F's, for the P-51 could fly higher and promised to be a far better fighter than the doughty P-40. The A-36, designed for dive bombing, would prove extremely valuable in ground-support missions. Only the 528th, 529th, and 530th Squadrons of the 311th Group moved into Assam, however, the other squadron being inactivated upon arrival in the theater and most of its personnel transferred to the 459th Squadron. The 459th, activated in the theater as a fourth squadron of the 80th Group, received the first P-38's to be used in India. These planes, transferred from the Mediterranean theater, were sent to Kurmitola, where the new squadron was to operate.[29]

The fighter situation in the Tenth Air Force was thus improved immeasurably in the space of a few weeks. The number of squadrons rose from two to seven, and instead of having to use P-40E's, P-40K's, and P-40M's for every conceivable kind of mission, P-40...'s, P-51A's, A-36's, and P-38's were available. For the first time there could be a division of labor among the fighters in the theater. P-38's of the 459th in the south soon gave bombers their first long-range fighter escort, while in Assam P-40F's took over patrol duties, interspersing an occasional bombing and strafing mission. P-51A's and A-36's engaged largely in giving air support to ground forces moving down from Ledo in advance of the road builders, but frequently flew reconnaissance and patrol missions. Late in November, however, the 530th Squadron was pulled down into Bengal to fly escort to bombers on a series of special missions

against Rangoon. Versatility of the fighter force promised to make it more effective in countering enemy moves in Burma.[30]

Before the new fighter and fighter-bomber squadrons had time to be lulled into a feeling of security the enemy gave notice that he intended to challenge the Americans for air ascendancy over northern Burma. During the wet season the Japanese had repaired many old airfields and built several new ones in central Burma, and in October they gave some indication as to how they would use them. On 13 October Japanese fighters appeared in strength over Sumprabum to challenge the Hump flight. Probably aided by enemy ground radios, they evaded American patrols, attacking transports as they passed through the region. During the day they shot down one CNAC Douglas transport, one AEC C-46, and one AEC C-87, while damaging a B-24 of the Fourteenth and two C-47's of a troop carrier squadron. Immediately the 80th Group increased its north Burma patrol to eight planes, keeping them over Sumprabum from dawn to dark. On 16 October three A-36's of the 311th Group failed to return from a mission over Sumprabum, but pilot error in navigation rather than enemy action was considered a probable reason for their loss, as two were known to have belly-landed westward near Taro. On 20 October another C-46 was lost, and three days later three others were reported missing; on 27 October still another C-46 was shot down and two formations of freight-hauling B-24's of the Fourteenth were attacked. Fighter patrols attempting to cover too large an area without guidance from ground radio and obviously proved ineffective in protecting the Hump flyers.[31]

In consultation with representatives from Tenth Air Force Headquarters and AFC, General Old mapped out a program for securing the transports from further attacks. Henceforth all transports were to fly the route from Chabua to Kunming via Fort Hertz and Likiang, avoiding the vicinity of Sumprabum; a radio control station at Fort Hertz was set up to keep in constant contact with transports and fighter patrols; and immediate attention was given to destruction of all Japanese airfields in central Burma from which marauding fighters might be operating.[32] On the day of the first attack on transports regular bombing and strafing raids on airdromes began, and to prevent repetition of the disastrous attack all airfields were kept under close surveillance. As soon as a field was reported serviceable, missions were sent out to put it out of action. As an example of the treatment accorded enemy airdromes, the field at Myitkyina was attacked on 13, 18, 21, and 27 October, on 3, 8, 9, 25, and 30 November, and on 2, 4, 11, 18, and 28 December, most of the attacks being carried out by P-40's bearing 1,000-pounders variously fuzed to make repairs more difficult and risky.[33] Strafers worked over the field thoroughly, giving particular attention to antiaircraft positions.

It is impossible to say definitely which of the precautions was most effective in stopping depredations on the Hump flyers, but in November no transports were lost to enemy action, and in December only two were shot down. In view of continuing attacks on transports flying food-dropping missions, however, it seems likely that changing the route northward was the key.[34]

The pattern of the approaching all-out battle for air supremacy in

North Burma was beginning to unfold. Against more determined enemy resistance the greatly increased air force in Assam had already experienced greater difficulty in protecting the aerial supply line than had the two squadrons of the 51st Group in the preceding months. Japanese fighters could still slip by American patrols, swoop down on transport planes, and escape. Moreover, the necessity of increasing the size of patrols and concentrating on destruction of airfields tended to reduce the effectiveness of attacks on enemy lines of communication and to cut down on the amount of support given ground forces fighting in Hukawng Valley.[35]

As an additional precaution against further attacks on the Hump flight it was felt that Chinese troops should be flown to Fort Hertz, whence they could move against Sumprabum. Retaking Sumprabum would have the double advantage of facilitating a vast extension of the air warning net and of securing the flank of troops moving down the Hukawng Valley. By October the ground campaign along the route of the projected road from Ledo was taking form. Chinese troops under American command were spearheading an advance to clear the way for the road builders. On 11 October Assam pilots were informed that Allied forces had moved into what had formerly been considered enemy-occupied areas, and instructions were issued that no aerial offensive action would be undertaken north of a line Sumprabum-Maingkwan-Taro-Tsawlaw without specific orders from ground force commanders.[36]

From that time on, the tempo of air support operations was quickened. As the ground forces moved further down the valley they encountered more

prepared positions and with ever increasing frequency called upon fighters and fighter-bombers to substitute for heavy artillery. Day after day pilots bombed and strafed specified areas, striking at targets they were rarely privileged to see. Their reports generally stated laconically, "results unobserved," and in many cases they were never able to ascertain what damage was done or what casualties caused by their attacks. Undoubtedly they were more effective than squadron reports indicate, for ground commanders were lavish in their praise of the accuracy of attacks.[37] In November Brig. Gen. H. L. Boatner of General Stilwell's staff stated that air support had been "superior and absolutely indispensable during the operation of the last few weeks."[38]

Most pilots, however, preferred to strike visible targets where results could be observed. There was no dearth of such targets in operational range of Assam, and many a pilot derived satisfaction from seeing destruction being wrought by his bombings and strafings. Lines of communication and rearward installations serving the considerable enemy force in north Burma presented numerous suitable objectives. Barges, ferryboats, trucks, locomotives, and rolling stock were excellent targets of opportunity, and those venturing to move during daylight hours suffered heavily. Supply and oil dumps, troop concentrations, and enemy headquarters were generally well concealed, but occasionally native agents under command of an American, Col. Carl Eifler, provided exact information which enabled the flyers to make damaging and extremely disconcerting attacks on perfectly camouflaged or otherwise well concealed installations. Resultant fires frequently gave indication of the accuracy of

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both military intelligence and bombings.[39]

Although bridge attacks had now become only a part of the campaign to disrupt enemy transportation, they were none the less important. Particularly vital were the railway bridges on the only rail line northward through Mogaung to Myitkyina, and smaller bridges on the motor road from Mogaung west to Kamaing. Using 1,000-pound bombs and techniques worked out by the 51st Group, pilots of the 80th kept up the harassing and frequently devastating attacks on Loilaw, Mogaung, and Namkwin railway bridges. The 311th chimed in with frequent dive-bombing attacks, using smaller bombs, and also attacked many major motor bridges. These targets were still difficult to hit squarely, but near misses and hits on approaches made many bridges unusable for extended periods. So effective and persistent were the assaults that from 7 October to the end of the year there was hardly a day when rail traffic could move unimpeded into Myitkyina. Motor traffic was similarly hampered. But the Japanese were equally persistent. Repair crews worked so rapidly that major damage frequently was mended in a few hours, and to assure a minimum of stoppages they built by-pass bridges at vital points. On 15 December they had repaired the main bridge at Namkwin, knocked out a few days before, and since 5 December had almost completed a by-pass bridge; Loilaw was unusable, but there too a by-pass was under construction. The Japanese were fighting back to keep their supply lines open.[40]

Undoubtedly they recognized the serious threat to their hold on Burma, for information seeped through the lines that Japanese troops were arriving in northern Burma from the Salween front, where the drive toward

Kunming had failed; aerial reconnaissance showed a substantial increase in aircraft on Burma airfields; antiaircraft was appearing at all major enemy installations. Chinese forces in Hukawng Valley after initial successes were stalled by increasing Japanese resistance, and advanced units were isolated by enemy flank movements. Every indication pointed to a bitter contest along the entire route to be followed by the Ledo Road.[41]

East of Hukawng the ground situation was somewhat more favorable to the Allies. Enemy units penetrating north toward Fort Hertz during the summer had retired to Sumprabum where their position was being made difficult by Kachin levies who ambushed patrols, waylaid supply caravans, and blew up bridges on the main supply road from Myitkyina. The Allies had decided to fly troops into Fort Hertz for a drive southward.[42]

In spite of stepped-up aerial activity since the end of the monsoon American fighters still rarely encountered enemy aircraft. Defense of Rangoon required a large part of the moderate enemy fighter force in Burma, and in the north they perhaps avoided encounters with Assam fighters purposely, intending to do as much damage to transports as possible while keeping their losses at a minimum. They probably knew that they were doomed to lose a battle of attrition. As a result there were only two Assam-based fighter aircraft known to be lost in actual combat from 1 October to the end of the year.[43]

Far to the south the situation was entirely different. The only American fighter squadron there, the 459th, met fighter resistance regularly, and when its planes flew escort to bombers they suffered

losses from antiaircraft fire. Late in November also the 530th Squadron's P-51's were pulled out of Assam to act as escorts in a series of special bombardment missions to Rangoon. On four missions flown the fighters had serious losses--five planes known shot down, two missing and not expected to return, and eight others damaged. They left Assam with 21 planes and within a week returned with only 11, leaving 3 others behind for major repairs. Although their losses were heavy, they had done well on their first missions of this type, shooting down 6 enemy fighters and claiming 12 probables and 15 damaged. One of their own planes was shot down by antiaircraft fire, and 3 had suffered damage from the ground. The score on fighter aircraft perhaps favored the 530th, since of the 7 ships which it lost, only 4 were known to have been shot down by fighters, while the squadron definitely shot down 6 of the enemy.[44]

By the first week in December it was obvious not only that American aerial reinforcements to Assam had come none too soon, but that in the immediate future fighter squadrons for bomber escorts could not be diverted from that area. Chinese ground forces fighting to extricate themselves from encircling columns had to be supplied entirely by air, and each air drop had to have fighter protection. Furthermore, calls for air support to ground units were more frequent and insistent. Constant patrolling of air lanes kept a large part of the fighter force busy, leaving no planes to be spared for any operation outside the immediate area. On 11 December enemy fighters once more evaded patrols without trouble and struck viciously. After reporting that it was being attacked by three Japanese fighters, a lone B-25 on reconnaissance was never heard

from again. At Fort Hertz a troop carrier C-47 crash-landed and burned after being crippled by enemy fighters. Another C-47 simply disappeared. On a food drop near Kajitu Japanese planes slipped between dropping planes and their top cover, shooting down two C-47's before being engaged by escorting fighters.[45]

Although the loss of four C-47's and a B-25 in a single day was a disaster, it did not represent a failure on the part of the air command in Assam to carry out the primary mission of protecting ATC flights and installations, for these were not ATC aircraft. But it did demonstrate again a basic weakness of the patrol system, and indicated that in the air war north Burma was still "no man's land."[46]

Two days later, however, the Japanese did strike at Assam installations. Since October their aircraft had been probing the defenses of the American-occupied zone in northeast India, appearing in the air warning net every few days, causing alerts and scrambling of fighters, but never attacking. Possibly their agents near vital installations warned them away when there was danger of interception; perhaps they were only testing the warning net. On 13 December, however, a formation of some 20 twin-engine bombers and 25 fighters appeared over Dinjan only 12 minutes after the alert was sounded. No interception was made until after they had dropped 32 x 100-pound fragmentation bombs from 18,000 feet, but their aim was poor and little damage resulted. Before they could get out of the vicinity American fighters made contact and took a heavy toll of the intruders. Soon after they succeeded in shaking off the first group of interceptors the Japanese ran into American fighters

returning from a mission to Bhamo. Again they suffered losses. When the final score was posted 12 bombers were claimed as shot down and 1 probably destroyed, and 5 escorting fighters claimed as shot down. American losses on the ground and in the air were small. That enemy losses were so high was due in part to their misfortune of meeting the returning fighters, but the Japanese had demonstrated that they could slip through the warning net to vital parts of Assam and drop their bombs before being intercepted. Had their bombing accuracy been better, their aircraft losses might well have been overbalanced by damage at Dinjan.[47]

The fact that Assam was still vulnerable to enemy air attack led to the suggestion that all P-40N's be replaced by higher flying fighters, for Japanese bombers had been encountered above the optimum operational altitude of the P-40's. Moreover, night fighters were urgently requested for defensive work against possible attacks on moonlight nights. Obviously there was not yet any feeling of security in Assam.[48]

In mid-December another significant administrative change in Assam was accomplished, although it did not affect operations until the next year. Fighters of the 5320th Air Defense Wing (formerly AAABC and American Air Command No. 1) were joined with RAF fighters of the Bengal Command to form the Third Tactical Air Force, a part of Eastern Air Command under General Stratemeyer. General Old took over the theater Troop Carrier Command, and was succeeded at 5320th by Colonel Egan, formerly of the 51st Group. Commander of the Tactical Air Force was to be Air Marshal John Baldwin of the Bengal Command.[49]

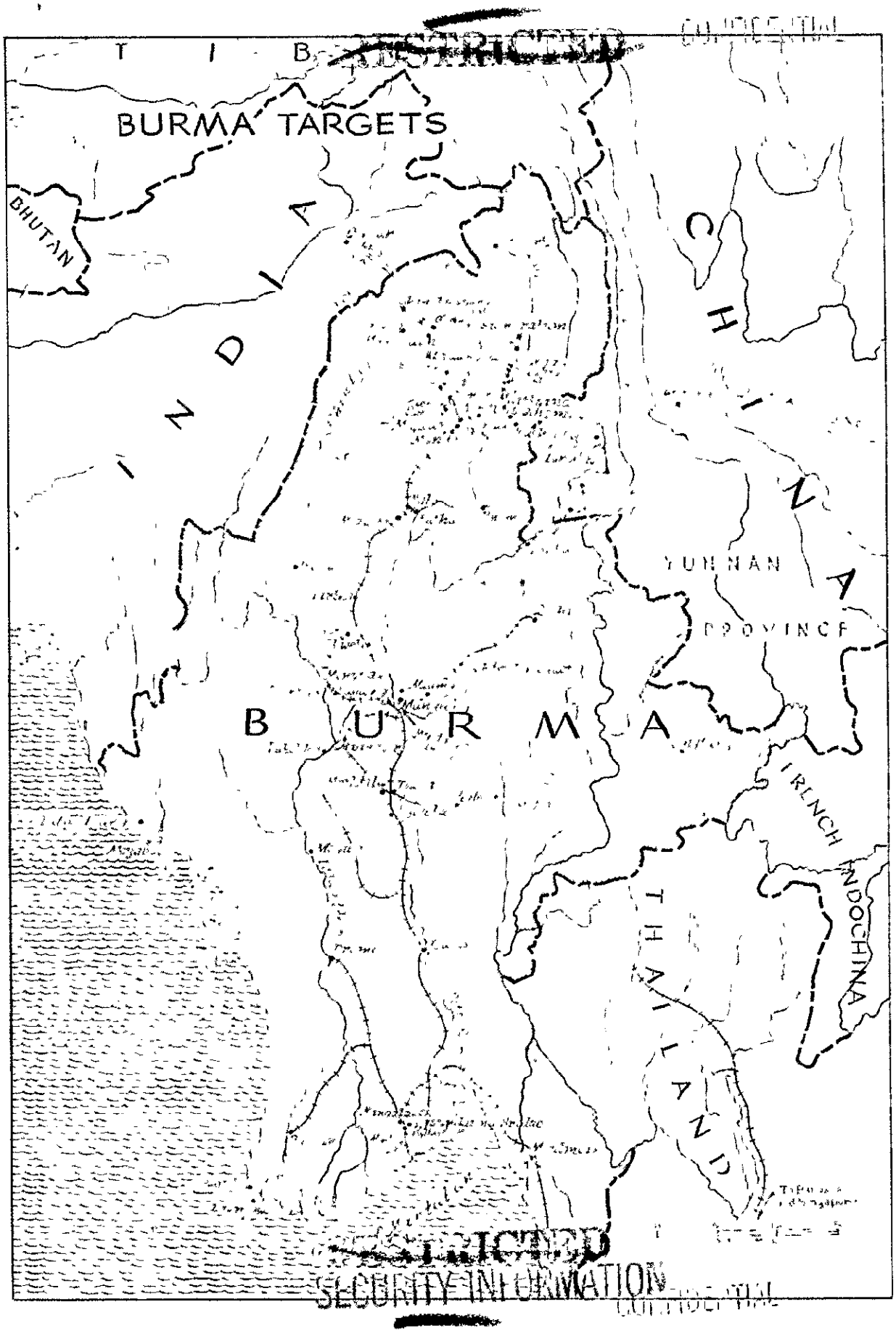
The long-awaited ground offensive to recover Burma had begun during the last weeks of 1944, and it was now fully recognized that its success hinged upon air superiority. Experience gained in three months of action would be of tremendous value to the fighters and fighter-bombers. Since 1 October the 80th and 311th had carried out hundreds of sorties, engaging in almost every imaginable type of aerial activity, from weather checks to bridge busting. They knew the territory over which they flew, and the strong and weak points of their equipment. Their three months of combat, however, was merely a preview--the main show was scheduled for 1944.[50]

Chapter IV

BOMBER OPERATIONS IN SOUTHERN BURMA

While the relatively few fighter planes in north Burma were carrying out the primary mission of the Tenth Air Force by protecting the China ferry, the remainder of the air force, composed of medium and heavy bombardment squadrons, was engaged in the secondary but nonetheless vital task of attempting to destroy enemy installations, supply routes, and lines of communication into and across Burma. As previously pointed out, composition of the India Air Task Force, which originally included all combat squadrons based in India, was not suited to its primary mission of tactical operations, and as a result the greater part of its aircraft participated in what, in Burma at least, could be considered strategic bombardment.

In Burma there were two phases of enemy transport offering strategic objectives to the bombers. The first included movement by sea, landing, processing, and transshipment of goods from the coast; the second was movement of materiel over the interior transportation system from port of entry to troops in the field. The first phase centered around Rangoon, for while Bangkok, Moulmein, Tavoy, Mergui, Singapore, Saigon, and other coastal towns served as ports of entry for the Japanese in southeast Asia, only Rangoon was both located within operational range and linked closely enough with the transportation system inside Burma to become a regular bombardment objective. Moulmein had been cut off from the main transportation lines by destruction of the Sittang River bridge in 1942



and was under further disadvantage as a port of entry because of the necessity of ferrying all northbound goods across the Salween. Until ferries over the Sittang and Salween were greatly enlarged or the bridge over the Sittang rebuilt, very little materiel would reach the interior of Burma from that port.[1]

Because of their greater range and heavier bomb load B-24's of the 7th Bombardment Group took over the first phase, their activities including sea searches and attacks on shipping in the Andaman Sea, destruction of docks, railroad yards, railway repair facilities, and storage areas in Rangoon, and whatever else was necessary to stem the flow of goods to and from that port. To the medium bombers fell the assignment of interfering as seriously as possible with movement of goods along interior transport lines. Railways and rivers were the most important routes over which materiel moved, although a few motor roads were heavily used. Bridges, railroad yards, junctions, locomotives, river boats, truck convoys, troop concentrations, barracks areas, and supply dumps became prime targets of the mediums and occasional targets of the heavies.

During 1942 experimental attacks had been made on enemy transport in Burma and by January 1943 the following priority for strategic bombardment had been worked out:[2]

1. Merchant shipping
2. Docks, storage and repair facilities, including transfer terminals
3. Rail centers
4. Bridges
5. River shipping
6. Rolling stock, with particular emphasis on locomotives
7. Barracks areas and storage dumps

The first offensive operation of the Tenth in 1942 had been against merchant shipping, and other similar missions were flown during the year. But because of the great distances involved, unpredictable weather in the Andaman Sea, and paucity of intelligence on movement of enemy bottoms, goods had continued to move in and out of Rangoon. At the beginning of 1943 the Tenth Air Force Intelligence Section estimated that from 30,000 to 40,000 tons of enemy shipping was passing weekly along the Rangoon River.[3] The Japanese thus far had failed to recondition oil fields in Burma, so an important part of the materiel received through Rangoon was gasoline and oil upon which their air force in Burma depended.[4] Denial of use of this port therefore would curtail all types of military operations in the entire Burma sector.

For some months the Tenth Air Force staff had desired to carry out mining operations at Rangoon to supplement sea search action, and efforts had been made to acquire magnetic mines and technical experts to aid in their use.[5] Finally, after technical assistance was obtained, one of the most significant operations in the theater was planned. Called Project IOW, this plan contemplated sowing of magnetic mines in the Rangoon estuary as soon as mines could be obtained and weather conditions were favorable. In January 1943 it was found that mines suitable for the operation were either already in the hands of the RAF or en route to them. Upon query RAF officers signified their willingness to provide the necessary mines and turned over to the Tenth adequate harbor charts and necessary information on moon phases and tides. Furthermore the Tenth gladly accepted their offer to supply trained personnel for

mounting the mines and instructing pilots in methods of dropping. Subsequently 300 magnetic mines were moved secretly by steamer from Ceylon to Calcutta and thence distributed to American air bases. After coordination with the Commander-in-Chief of the Eastern Fleet of the Royal Navy and other proper British authorities, the Americans began working out details for Project LOW.[6]

Utilizing British personnel provided by the RAF, they began to make technical changes necessary to fit the mines into B-24's. Modification of the bomb shackles and lengthening of the parachute static lines by six feet proved to be the only adaptations required. It was found, however, that only the rear bomb bays could be used, as parachutes from front bays fouled rear bulkheads. Consequently only four mines could be loaded in each Liberator. Perhaps a more serious complication was that modifications precluded use of bomb bay fuel tanks, thereby restricting range of the aircraft.[7]

As success of this enterprise could have far-reaching effects on the course of the Burma campaign, the Tenth gave serious thought to every phase of the planning. It was believed that if the operation could be kept secret severe damage would be done before the Japanese knew of the presence of the mines. They therefore planned to run the mission at night, with simultaneous diversionary missions over Mingaladon airdrome and Rangoon. Secrecy also depended upon absolute accuracy in the drop, for if a single mine fell on shore or in too-shallow water secrecy would be compromised. To assure greatest possible accuracy the flyers needed a full moon for visibility and low tide to prevent dropping mines on

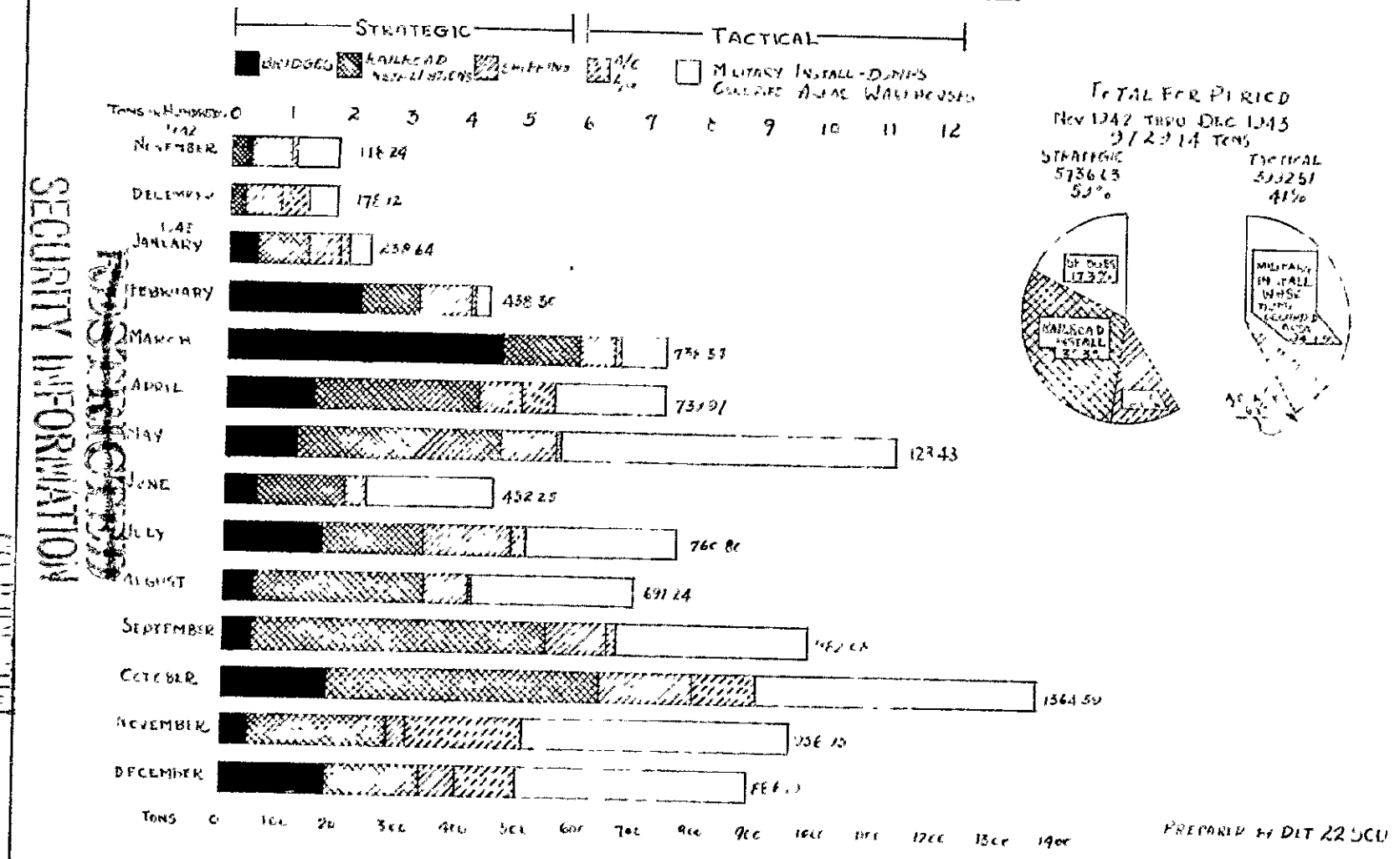
sand bars. Actual dropping would be accomplished at minimum altitude.[8]

The type of mine to be used was also an important consideration. Those chosen were Type A Mark V. If properly placed these would sink to the bottom of the river taking the telltale parachutes with them. Set for two days' delay, they would imbed themselves in the mud and silt of the channel, making sweeping difficult. The mechanism was set in such a way that as many as 12 activations by magnetic materials would not detonate them. Thus, if the enemy suspected that mines had been dropped, sweepings for conventional anchor-type mines would be fruitless, or if they persisted and swept for magnetic mines the operation would have to be repeated 13 times before the mines could be exploded. Heretofore no mines had been dropped in Rangoon River, and it was considered highly unlikely that the Japanese would be able to remove them before they caused some damage. Meanwhile, if sweepings continued until all mines were removed, it would still be a time-consuming operation during which vessels could not move through the channel. If, on the other hand, the mines were not removed, hulks of sunken vessels in the narrow channel might cause even greater interruption to enemy shipping.[9]

Full moon during February occurred on the 20th and lowest tide on the 24th, so the mission was scheduled for the night of the 22d, actual dropping to be done shortly after moonrise. Altogether the operation was to be one of the largest in the theater up to that time, involving all American B-24's in the theater plus some RAF Liberators. On 21 and 22 February the special RAF detail finished preparations and loaded the mines into aircraft; on the 22d all airfields in eastern Bengal

TENTH AIR FORCE

DISTRIBUTION OF BOMBING - NOVEMBER 1942 THRU DECEMBER 1943



were alerted to accommodate any of the minelayers which could not return to base because of shortage of fuel.[10]

At the appointed time, about an hour before moonrise, the planes began to take off. Flying over the Bay of Bengal they kept an altitude of 6,000 feet; when they sighted Pagoda Point they swung southeastward and descended to 1,000 feet, running into a low "scud" of clouds. Over the Gulf of Martaban they turned north at a point calculated to bring them over the estuary, meanwhile reducing altitude to 500 feet. Low clouds cast shadows on the water, making it extremely difficult for the bombardiers to distinguish land from patches of shadow on the water. The pilots located Elephant Point, a key check mark, but soon afterward got off course and had to circle back. The extra time consumed in searching for the target increased anxiety over gasoline supply, but on the second run they located the right spot. Planes throttled to 165 miles per hour, bomb bay doors opened, and mines parachuted into the water exactly where they were supposed to fall. This part of the mission was entirely successful, and there was every reason to believe that the mine laying was unobserved, for the diversionary raids on Mingaladon and Rangoon taking place simultaneously received full attention from the Japanese.[11]

After Project Low was carried out no shipping passed through Rangoon River for several months. Information on the number of ships actually sunk is not yet available, but the mining operation doubtless was an important factor in inducing the enemy temporarily to abandon Rangoon as a port of entry for supplies and troops. Completion of the Bangkok-

Moulmein railway was imminent, and construction of the Sittang River bridge was progressing, but there was no substitute for Rangoon as a supply point, and as long as the Japanese were not able to use its facilities their defensive position in Burma was greatly weakened.

Elated over the success of their initial mine-laying venture, the Tenth Air Force staff sought other waters to be interdicted. Unfortunately, however, only two other ports, Bassein and Moulmein, were in operational range of mine-bearing Liberators. Information on Bassein indicated that hydrographic conditions were ideal; but reconnaissance revealed that only river boats and small coastal steamers were using that port, and therefore the volume of marine traffic was too small to warrant such an operation. As for Moulmein, Royal Navy Intelligence reported that the channel there changed as frequently as once a month, and at no time was of sufficient depth to assure successful results.[12]

Throughout 1943 Rangoon River was the chief target of Tenth Air Force mining operations, but preparation for arrival of aircraft which could bring other important ports into operational range required endless experimentation and determination of general policy. Eventually a theater program was evolved outlining targets for which mining was approved. Priority was left flexible so that changes could be made as current intelligence dictated. Opportunity mine laying was permitted only in specified areas, but reinforcement of mine fields already plotted could be done without prior approval. After the Southeast Asia Command was set up late in the year, mining of new ports or areas was subject to

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INDIA-BURMA THEATER MINING REPORT 1943

DATE	OBJECTIVE	ORGANIZATION	SUCCESSFUL SORTIES	MINES LAID	TYPE	REMARKS
22/23 Feb	Rangoon R	10th AF	10	40	A-MKV	B-24's
26/27/28 Mar	Rangoon R	10th AF	10	40	A-MKV	B-24's
27/28 Mar	Pan-Nayet Cr (Near Rangoon)	10th AF	1	4	A-MKV	Pilot mined wrong target
22/23 May	Rangoon R	10th AF	2	8	A-MKV	
13&14 Jul	Irrawaddy R	10th AF	16	32	A-MKV	B-25's
31 Jul/ 1 Aug	Rangoon R	10th AF	9	36	MK-13	B-24's
7/8/9 Sep	Rangoon R	10th AF	6	31	MK-13	B-24's
6/7 Nov	Rangoon R	10th AF	2	10	MK-13	B-24's
8/9 Nov	Rangoon R	10th AF	5	30	MK-13	B-24's
12/13 Nov	Rangoon R	10th AF	2	12	MK-13	B-24's
12/13 Nov	China Bakir R (96°03'E, 16°21'N)	10th AF	1	6	MK-13	Pilot mined wrong target
13/14 Nov	Rangoon R	10th AF	1	6	MK-13	B-24's
4/5 Dec	Rangoon R	10th AF	5	25	MK-13	B-24's
4/5 Dec	Moulmein (Salween R)	14th AF	12	60	MK-13	B-24's
5/6 Dec	Moulmein	14th AF	6	30	MK-13	B-24's
5/6 Dec	Rangoon R	14th AF	5	26	MK-13	B-24's

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approval by the Supreme Allied Commander. Meanwhile the following basic principles were adopted for the theater:[13]

1. Persistent operations should be attempted against regularly used enemy ports, with size and distribution of effort depending on current shipping intelligence.

2. An assortment of mines should be used so as to complicate enemy sweeping problems.

3. Except where definitely prescribed by higher command, sterilizers should not be used.

4. Where weather or extreme range made it impractical to mine ports regularly, limited use of delaying arming mechanisms was to be permitted.

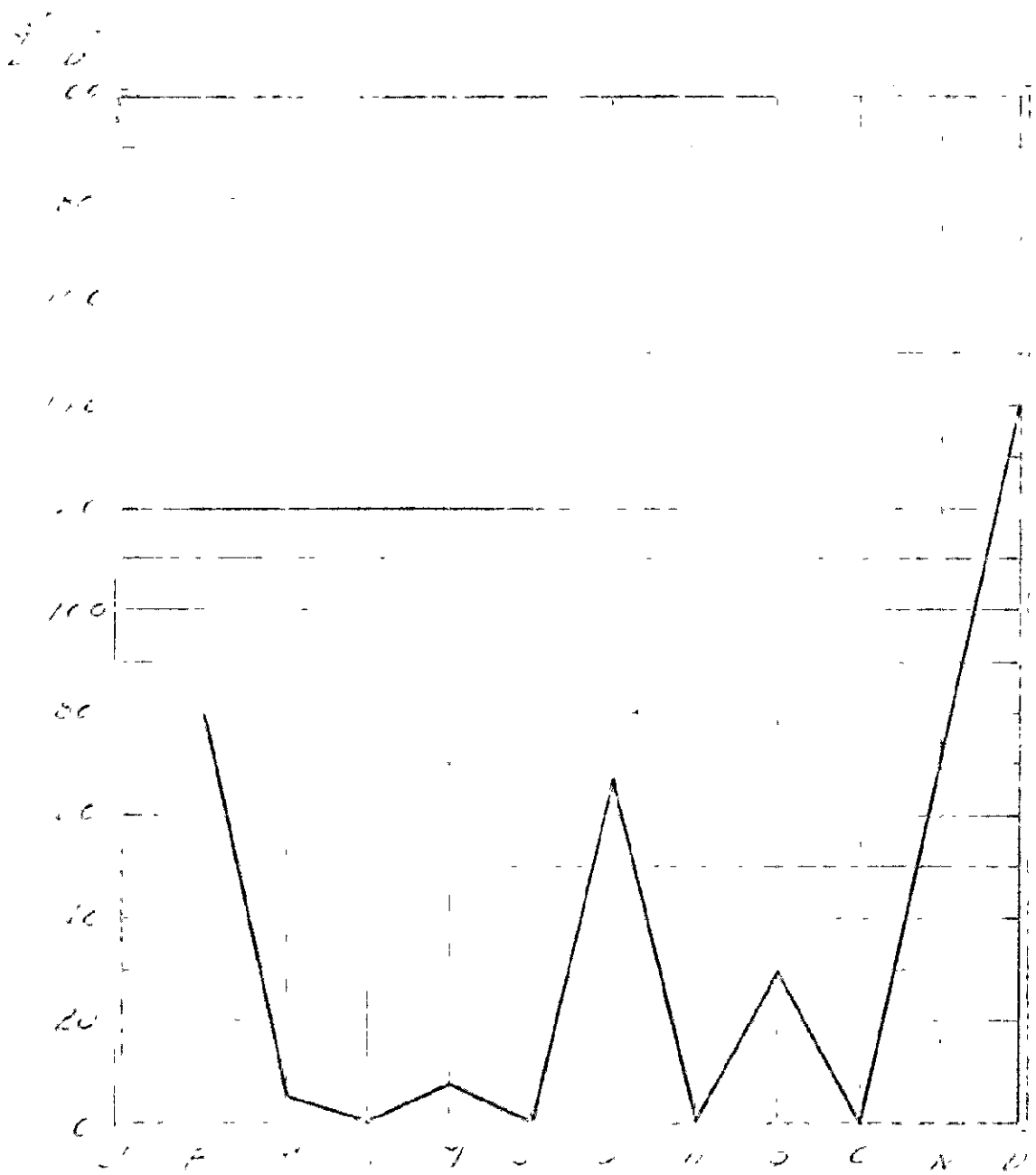
Despite extensive planning and experimentation, however, mine laying throughout the year followed the general pattern of the first mission. Because of limitations set by plane range as well as the importance of the Rangoon port, attention centered on Rangoon River. Much of the surprise element was eliminated by the first effort, for the Japanese were on the lookout for mines after each night appearance of planes over the Rangoon area, but whether or not mines were laid the enemy had to engage in constant sweeping operations. A few daylight mining missions were flown and attempts were made to sow fields from high altitudes, but neither was successful.[14]

In addition to limited range of aircraft and scarcity of targets, the weather, tides, and moon phases set definite restrictions on this type of operation, preventing a regular sustained program of mining. Nevertheless the Liberators mined Rangoon River frequently enough to keep mine sweepers always at work and to provide an ever-present threat to vessels attempting to enter or leave the port. They remined the channel

in March, May, and July, on the latter date using Mark XIII mines for the first time. On a mission in September B-24's carried five and six mines per plane instead of the usual four, and thereafter it became standard practice to load at least five mines into each plane.[15]

During four nights in early November a total of 58 mines was sowed in the channel. After an all-out series of bombing attacks on the Rangoon area in late November and early December, Fourteenth Air Force Liberators cooperated with the Tenth in mine layings contemplated to close the port at Moulmein as well as to keep Rangoon idle. During the afternoon of 4 December they placed 51 mines in the Rangoon estuary and 90 in the channel leading to Moulmein. In these missions surprise was hardly considered necessary, for with Rangoon facilities crippled from bombings any delay caused in the use of Moulmein would be costly to the Japanese.[16]

In summary it may be said that the mine-laying activity of American air units in India during 1943 was experimental in nature and somewhat limited in scope. Like most other Tenth Air Force operations its success cannot be measured alone by immediate accomplishments, for consideration must be given to the backlog of experience which was greatly to affect future operations undertaken on a much larger scale. Nevertheless the more than 250 mines laid in Rangoon River alone during the year undoubtedly prevented much materiel from entering Burma, and caused serious delays to all goods which did eventually succeed in running the gauntlet. Mining placed a great strain on port facilities at Moulmein and on the tenuous line of supply from there into central Burma; it consumed the full time of many enemy personnel and required the use of much equipment which could well have been used elsewhere; and it was



10TH AIR FORCE MINING OPERATIONS - 1943

probably a more lucrative operation for heavy bombers than bombing minor land installations.

Hardly less important than mining missions were occasional strikes at rail targets and other outlying installations including major airdromes. In the program of rail interdiction conducted mainly by the B-25 Mitchells the Liberators lent aid by striking key points beyond normal B-25 range, and occasionally adding weight to the efforts of the mediums to knock out critical rail centers and bridges. Most of their strikes were against objectives in the area south of Thazi, difficult if not impossible to reach with Mitchells. Railway yards, barracks, and storage areas at Toungoo, Pyinmana, Yamethin, and Pyawbwe on the Rangoon-Mandalay rail line were hit repeatedly. Other places regularly visited were Prome on the Irrawaddy at the end of a spur going northwest out of Rangoon, and Thanbyuzyat on the line into Moulmein from Ye to the south. Letpadan and Henzada, control points on the railway into Bassein, received several bombings, while oil fields at Chauk and Yenangyaung were attacked in the latter part of the year when reconnaissance showed that the enemy was trying to recondition them. Pazundaung was the most important bridge target in southern Burma and received considerable attention from the B-24's.[17]

On occasion the heavy bombers lent assistance to the mediums operating in the Mandalay region of central Burma. On 22 June they hit Ywataung yards throughwhich all traffic passed from Mandalay north, and Monywa on the Mandalay-Lashio line. On 20 July and 1 September Mandalay itself was attacked. A second strike at Monywa on 19 September was followed

the next day by a mission to Sagaing and another to Naba on the Mandalay-Myitkyina line. The latter was the northernmost point struck by the Liberators during the year.[18]

In October Sagaing and Myingyan were bombed and Kanbalu, on the Yeu branch was hit twice. The heaviest missions flown in the north by the B-24's were on 17 October when 14 B-24's collaborated with 18 Mitchells in giving Naba a thorough "pasting," and on 30 December when 20 Liberators gave Monywa a coup de grace. In most of these missions targets other than railway yards also were attacked. For instance, at Myingyan an important objective was the cotton mill.[19]

Meanwhile a few heavy-bomber missions were directed at important bridges in the internal transportation system. These included Sinthe and Myittha bridges on the Rangoon-Mandalay line, Meza bridge between Mandalay and Myitkyina, Gokteik viaduct on the Lashio branch, and Shweli highway bridge on Burma Road. Damage to Meza, Gokteik, and Myittha was of a minor nature and easily repaired.[20]

Like Pazundaung bridge near Rangoon, Myitnge bridge if destroyed would cut all rail traffic from Rangoon into Mandalay. Hence it was the most frequently attacked bridge and the most heavily defended point outside the Rangoon area. On 10 different days B-24's struck at this tantalizing target which long defied even the Mitchell "bridge busters." On 24 March 23 Liberators from high altitude attacked the bridge in several waves without disturbing the structure. In their exasperation they utilized two old B-17's which had flown no combat missions since the preceding June. These planes braved heavy ground fire to drop their missiles from 50 feet, but again the bridge was unscathed. In July and

August the heavies made two more attacks on Myitnge but failed to do more than damage approaches.[21] Obviously the Liberators were being misused, for bridges were hardly suitable targets from high altitudes; but at the same time the mediums and fighter-bombers had not developed the techniques which later proved so successful against bridges, and could not, therefore, be used against this unquestionably vital point to the Japanese.

Sea searches or sea sweeps, begun in April 1942, continued throughout 1943, but with questionable success. Undertaken as the first effort to cut off supplies from Burma, the activity eventually became only a supplement to the heavier effort to knock out docks and facilities by bombing and to close the port of Rangoon by mining.[22] The water expanse of the Andaman Sea was too great for anything approaching complete coverage by the limited force available, and missions were in reality reconnaissance sorties sent out on the chance that enemy surface craft might be located. Should a convoy be spotted, additional aircraft could be directed to attack.

Notoriously bad weather in the waters south of Rangoon thwarted many sorties, and doubtless many Japanese reached their destination under cover of clouds and fogs. Yet the chance for sea sweeps to succeed was probably greater during the monsoon when overcast was expected, for in clear weather enemy shipping hugged the Malay coast, lying inshore by day and moving at night. This coastal area was outside the optimum operational range of current model B-24's and little could be done to stop coastwise shipping, but regular sweeps over open sea were maintained throughout the monsoon.[23]

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Without radar-equipped aircraft or accurate intelligence on enemy shipping, comparatively little material damage could be done on sea sweeps. On infrequent occasions ships were located and a few were sunk or damaged, but the greatest contribution of these operations perhaps lay in delays resulting from enemy vessels being forced to take round-about courses to destinations. During the summer radar equipment was used experimentally and promised to make sea searches more effective when sufficient aircraft were radar-equipped. Meanwhile, to prevent wasting time, fuel, and airplanes on fruitless missions each departing search flight was provided with alternate land targets. It became habitual for planes returning from unsuccessful sweeps to fly over points in southern Burma and unloose their bombs. In several instances heavy damage was done to enemy installations selected as alternate targets.[24]

Aside from shipping, all strategic targets worthy of attack by, and in range of, the Liberators lay in the vicinity of Rangoon, and the weightiest effort of the 7th Group was directed at objectives in that region. Distance flown by American aircraft on these missions was greater than that required for planes based in Britain to strike at Berlin, but inspite of this handicap it had long been a "milk run" for India-based B-24's. In recognition of its critical importance the Japanese had made Rangoon one of the areas most strongly defended against air attack in all southeast Asia. Heavy antiaircraft and large batteries of search-lights were concentrated at vital points, and the larger part of enemy fighter strength in Burma was based at Mingaladon and other near-by fields. A majority of missions to Rangoon met resistance, and losses there were always the heaviest suffered by the bombers. Until arrival

of P-38's and P-51's late in 1943 all missions were flown without escort, the B-24's depending upon their own field of fire and cloud cover for protection against enemy fighters. Eventually the Japanese discovered the weak point of the B-24D model--lack of defense against frontal attack--and combat damage to aircraft rose alarmingly until the B-24J arrived late in October.[25] Yet in the face of the best defense the enemy could muster, the heavies flew many successful daylight missions and wrought heavy damage.

From the first of the year until the monsoon closed, heavy bombers attacked key targets in the Rangoon sector with some degree of regularity. Several of the most frequently bombed objectives during this period were directly connected with the program of rendering the city useless as a port and storage area for materials awaiting shipment to the interior. Among these were ships anchored at docks, the docks themselves, and adjoining warehouses. As a part of the general plan for upsetting the land transportation system the Central Railway Station, Mahlwagon roundhouse and rail yards, and the railway bridge over Pazundaung Creek were given a generous showering of bombs. Destruction of Pazundaung bridge would have delayed all rail traffic northward on the Mandalay line, but the bombers were unable to do more than make it unserviceable for short periods. Damage to railway repair facilities and trackage at Mahlwagon yards and the Central Station probably was more vexing to the Japanese. Other heavily bombed targets prior to the monsoon were Syriam oil refineries, Thilawa oil storage area, and the large airdrome at Mingaladon.[26]

Rain and fog cut down the number of missions during the summer, but in July weather permitted a flight to bomb Syriam refineries, and in

September both the refineries and Sule Pagoda docks and storage area were bombed. With better weather in October, regular missions were resumed. Just prior to the combined effort of the Tenth and Fourteenth Air Forces and the RAF to give Rangoon a knock-out punch in late November and early December, Liberators visited the most important airfields where interceptors might be based, dropping heavy bomb loads on Mingaladon, Zayatkwin, Minzu, Aungban, and Minhla.[27]

During November plans were laid for the most significant series of missions executed in the theater to that time. General Stratemeyer, eager to promote closer cooperation between RAF and AAF, even while complete integration of the Bengal Air Command and Tenth Air Force was pending, proposed to Air Chief Marshal Peirse that the two forces collaborate in a series of attacks contemplated to destroy completely the most vital installations in the Rangoon vicinity. While this was a tacit admission of the limited effectiveness of previous small-scale heavy-bomber operations, it was more significant because it marked the beginning of a period in which collaboration of British and American units became closer and closer.[28]

Possibly influenced by the danger of attacks on Calcutta and the Assam line of communications by the fast-growing enemy air force in southern Burma, Peirse readily agreed to the proposal, and preliminary planning began immediately. To accomplish the chief objectives--destruction of vital port and communications facilities and elimination of as much enemy air strength as possible--the strikes would require maximum bomber strength. General Stratemeyer conveyed to General Chennault an outline of the plan and its objectives, asking that the air echelon of the 308th Bombardment Group (H) be temporarily transferred to

India to add weight to the effort. Heavy bombers of the Fourteenth in China at that time were hamstrung by shortage of gas, and one outstanding advantage of participation in the missions was that upon their return to China the Liberators could augment their fuel supply by doubling as transports. Moreover, destruction of any considerable part of Japanese air strength in Burma might relieve pressure on the air ferry across northern Burma, where Japanese fighters were always a menace, and forestall any impending air attacks on Assam where stores for the Fourteenth were being amassed.[29]

General Chennault agreed to lend the heavy group to implement the plan, and after thorough discussions, the following conclusions were reached:[30]

1. Joint employment of the 7th and 308th Bombardment Groups was operationally and logistically sound.

2. The objective was vulnerable to the type of attack planned, and warranted employment of all forces available.

3. Successful accomplishment of the missions would contribute greatly to protection of the Assam line of communications and ATC transport route.

It was agreed that operational procedure would be worked out by the Bengal Command and Tenth Air Force from whose bases all aircraft would operate. An officer entirely familiar with the operational plan would go from the Tenth to China to acquaint General Chennault and the 308th Group with details, returning to India with the flight echelon of the 308th. Meanwhile final decision was being made on specific targets to be bombed. After giving close study to damage resulting from previous

bombings, chief targets were ranked as follows in a tentative priority list:[31]

(A) Railway communications which include
1. The Insein locomotive shops
2. The Botataung wharves and railway depot
3. The Kemmendine station
4. Central Railway Station
5. Mahlwagon marshalling yards
6. Engine shed

(B) Rangoon Power Plant

(C) Wharves and warehouses
1. Ahlone wharves
2. Keigley Street wharves
3. Sule Pagoda docks
4. Botataung wharves

(D) Barracks

(E) Pazundaung foundry and MT depot

(F) Four large dump areas; workshops; government dockyard

Most of these installations were interrelated, yet each had an importance all its own. Only a limited number of potential targets could be attacked in this series of missions; hence great care was given to selection of those whose destruction would be most damaging to the enemy. A few, such as the Rangoon Power Plant, were of vital importance but had to be eliminated from consideration because they would be too difficult to hit, even in daylight raids. Insein Locomotive Works stood out, however, as probably the most remunerative target in the region and eventually was given top priority. Strafing and bombing along the rail lines had done considerable damage to locomotives, placing a strain on workshops, and Insein was the only place in Burma having the necessary machinery for heavy repairs to railway engines. Elimination of this single plant therefore would supplement the continuing campaign against rail transport and would go far toward bringing rolling stock to a complete standstill.

Other possible objectives were railway stations, marshalling yards, and wharves. Mahlwagon marshalling yards and engine sheds where locomotives were likely to be concentrated were selected as a good night target, easily spotted because of its distinctive position between two bends of the river. Railway stations were passed over because of difficulty in hitting them and the minimum permanent damage which could be wrought by destroying them. In the long run, destruction of locomotives and the only facilities for repairing them would be a far more telling blow.[32]

The Tenth Air Force staff had always considered docks at Rangoon lucrative targets and its bombers had flown some successful missions against them. Nevertheless attacks heretofore had been too light to do more than superficial damage to the huge dock area along the river. With an opportunity to use larger numbers of bombers in a succession of missions it was decided that the first attackers would begin with the westernmost wharves and each succeeding group would drop its bombs slightly farther to the east. If all the missions planned were mounted and bombing accuracy was satisfactory, the entire water front could be seriously crippled. Thus it was decided that Insein locomotive works, Mahlwagon marshalling yards, and the wharves should receive a major portion of the bomb tonnage.[33]

All attacks by night were assigned to RAF Wellingtons and Liberators, and AAF missions were to be flown by day. Heretofore all American heavy bombardment missions had been run without escort, but as this was an outright challenge to the increasing Japanese air power in Burma it was thought advisable to provide escorts. The only American fighters outside

of Assam were the P-38's of the 459th Squadron, and preliminary plans were laid with the assumption that no other fighters would be available. At the last moment, however, the 530th Fighter-Bomber Squadron brought its P-51's from Assam to aid the P-38's.[34]

Once arrangements were concluded for using Fourteenth Air Force aircraft the American bomber strength to be employed was set at two B-24 groups, the 7th and 308th, and one B-25 squadron, the 490th. When the flight echelon of the 308th arrived, half of it went to Pandaveswar and half to Panagarh. Thus at each base there were two squadrons from the 7th Group and two from the 308th, enabling personnel of the 7th to aid the 308th in maintenance. Extra trucks and jeeps were provided to assist in hauling supplies and personnel of the visiting group. Although the bases were somewhat crowded the arrangement worked out quite satisfactorily.[35]

Arrangements for the mediums and fighters were not so easy. Neither had sufficient range to make the flight from their base at Kurmitola, and forward staging fields were necessary. It was decided that the medium squadron would stage at Chittagong, 485 miles from Rangoon, and the fighters at Ramu, near Cox's Bazaar and 430 miles from Rangoon. A number of 750-gallon refueling trucks were sent to the staging areas to service the aircraft.[36] Fighters, of course, were equipped with belly tanks.

The operational plan adopted was as follows: On D-day, 25 November, maximum strength of B-24 and B-25 aircraft of the AAF, escorted by the fighters, was to attack in two waves. The 7th Group, forming the first wave, was to hit Insein locomotive shops; the 308th, the second wave,

would bomb fighter fields in hope of destroying aircraft on the ground. It was believed that as there had never been two attacks on the same day by whole bomber groups the second wave, if correctly timed, would catch fighters being reserviced on the ground after they had intercepted the first wave. That night maximum strength of RAF Liberators and Wellingtons would attack Mahlwagon marshalling yards, with AAF bombers repeating the attack on the following day. Beginning with the night of D plus one, the RAF and AAF would strike by night and day against the wharves, beginning at Ahlone wharves and moving east on each successive raid. If each dock were attacked once by day and once by night the whole series of missions, including those on Insein and Mahlwagon, would last six days and five nights. It was considered likely, however, that it would be necessary to divert part of the daylight effort against airfields if results of the first attack were not adequate. At approximately D plus eight the AAF was to mine shipping lanes at Rangoon and Moulmein. This operation would be undertaken as soon after the main attacks as possible, but time would have to be allowed for smoke to clear. Exact timing of these mining missions would be governed by the moon phase should they be undertaken at night.[37]

Weather was entirely unfavorable on 25 November when the combined operation was supposed to begin, but as the 308th would be in India for only a short time it was believed best that the set schedule be followed. Bad luck set in from the take-off on the first mission when two B-24's crashed, killing all on board. When the heavies passed the point at which they were to pick up their escort from Ramu, overcast prevented the fighters from contacting the bomber formation, leaving it to proceed

to the target alone. The primary target at Insein was completely closed in by weather and tne first wave was unable to attack. The second wave encountered the same conditions at their Mingaladon objective, and this second major target also was abandoned. While circling to find an opening through the overcast, however, one B-24 sustained a flak hit which later caused it to crash. On the return some of the bombers hit Akyab and the airdromes at Zayatkwin and Minhla with indifferent or undetermined results.[38]

The only part of the task assigned for the first day which was accomplished was performed later by the 490th Squadron escorted by P-51's of the 530th Squadron. Flying at lower altitude than the heavies, the B-25's were able to bomb Mingaladon airdrome with some success. Damage was done to buildings and the revetment area and two aircraft were believed to have been destroyed on the ground. Enemy fighters rose to intercept, and in the ensuing battle the P-51's claimed one enemy aircraft destroyed and four probably destroyed. Two P-51's were shot down and two others damaged. Gunners on the Mitchells shot down one plane, damaged two, and claimed three others as probables, the mediums escaping without damage.[39]

The result of the initial effort was extremely disappointing. Three heavy bombers and two fighters were lost and the major target at Insein was untouched. Nor was the anticipated blow at enemy air power successful. Furthermore, the element of surprise, heavily depended upon to cripple enemy interception in succeeding missions, was gone; the general schedule of missions was upset and plans had to be revised. The Japanese were now

well aware that two heavy groups were operating from India and would be on the alert for double blows such as were planned for the first attack. It was improbable thereafter that enemy fighters could be caught on the ground, and as they were alerted for attacks by larger formations than usual they would probably offer more determined resistance to subsequent raids.

On 26 November no flights were possible because of weather. With two days gone and nothing accomplished, the planned schedule was thrown aside, and on the 27th AAF Liberators escorted by Lightnings, and Mitchells accompanied by Mustangs struck at Insein. Despite determined interception by a large number of enemy fighters just prior to the bomb run, results of the attack were excellent. In a subsequent report General Davidson estimated that at least 70 per cent of the buildings and installations of the locomotive works were destroyed.[40] In the aerial flight which developed from the interception, Japanese pilots pressed their attacks home time after time. After the mission returned it was found that four P-51's, two P-38's, and three B-24's had been lost. One of the Mustangs shot down was piloted by Col. Harry R. Melton, commander of the 311th Group, who was seen to bail out and land in territory where natives were generally friendly. One of the B-24's landed in water off the coast and nine of the crew were rescued. Thirteen enemy fighters were claimed destroyed, seven probably destroyed, and four others damaged.[41]

An attack on Botataung docks was set for the following day. The escort of heavies flying at approximately 18,000 feet and mediums operating at about 9,000 feet was too great an undertaking for the few P-38's and P-51's available, so on the 28th the mediums attacked Sagaing instead

of flying with the heavies to Rangoon. Over their target the B-24's encountered far less resistance than on the preceding day and no American aircraft were lost. Four interceptors were shot down and five more claimed as probables. Heavy damage was done to the dock area and results of the mission were considered very good.[42]

The 29th and 30th of November were set aside for maintenance, but on 1 December the B-24's revisited Insein while the B-25's bombed Myitnge bridge, which the Japanese had succeeded in repairing. All available fighters, now only 10 P-51's and 15 P-38's, were assigned as escorts to Insein. Delayed in taking off from Kurmitola by heavy fog and unable because of poor communications to warn the bombers, the P-51's failed to finish refueling at Ramu in time to make the rendezvous. The mission went out with only the 15 P-38's to protect it.[43]

Japanese fighter strength in the Rangoon area apparently had been at a low ebb on 28 November but in the two intervening days they must have brought in heavy reinforcements from neighboring regions. When the bombers made their run from north to south in order to avoid heavy anti-aircraft fire it enabled the 60-odd enemy fighters already aloft to make head-on attacks out of the sun. The first assault was as devastating as it was surprising. Enemy aircraft were in firing distance before they were sighted, and they pressed their attacks with precision and determination, concentrating on the formation leaders. The 7th Group, forming the first wave, bore the brunt of the attack. On the first pass the group leader, his left wingman, and a squadron leader were knocked out. Three planes pulled up to close the gaps in the formation and soon afterward one of these three was lost. Three others tried to cover the

group leader who was losing speed and altitude and thus they did not complete the bomb run. The P-38's could give little direct assistance, as they had their hands full with other enemy fighters still above the bomber formation.[44]

When planes of the 308th Group arrived and were ready to begin their bomb run the attacks were repeated but by a slightly smaller number of aircraft. Sometimes enemy fighters came in three abreast, all concentrating on a single plane. At other times they approached in a string, each plane making a pass and pulling away to allow the next in line to come in. The lead plane of the 308th was shot down on the first pass, just before the bomb run, and the craft which took its place was badly hit during the run. Attacks persisted after the bombs were away, enemy pilots singling out cripples; but the P-51's finally arrived in time to offer some protection on the return, losing one ship in their short participation.[45]

Bombing results of the costly mission were largely unobserved because of the continuing fighter attacks during the bomb run, but the bombing pattern was believed good, with considerable damage accomplished. American losses, however, were appallingly high--six B-24's and one P-51 destroyed and five B-24's seriously damaged.[46]

The American phase of the operation came to a close on the afternoon of 4 December when AAF bombers ran successful mining missions to Rangoon and Moulmein without encountering resistance or suffering losses. The AAF missions on 25, 27, and 28 November and 1 December resulted in the loss of 12 B-24's, 8 P-51's, and 2 P-38's, while many other aircraft of various types were temporarily unusable because of damage sustained.[47]

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Meanwhile RAF missions were flown on the night of 28 November against Insein, and on the night of the 30th against Mingaladon and Zayatkwin airdromes and the Rangoon dock area. After the last bombing effort of the AAF on 1 December the RAF flew night missions on 2, 5, and 6 December, striking at Bassein, Heho airdrome, and Moulmein. Its forces on all these missions were relatively small and in all only 66 sorties were flown at the expense of three Wellingtons.[48]

The many factors involved make it almost impossible to reach an objective evaluation of these combined missions. Due to the limited time the 308th Group was available the plan could not be flexible, and when bad weather intervened, the alternatives were either to call the whole operation off or try to carry it out in the face of undesirable natural conditions. Once the element of surprise was taken away by an abortive flight, each succeeding mission was more risky. It must be remembered, however, that on all previous missions the B-24's had flown to Rangoon without escort, and perhaps had suffered their heaviest losses from flak and not from enemy fighters. Hence it was not unreasonable to expect that the small escort provided would be sufficient to minimize losses from hostile aircraft.

The operation was an expensive one from the standpoint of total number of planes lost, especially in a small air force where loss of every plane was felt. Reckoned on a percentage basis, on the other hand, the loss was less alarming. Eight P-51's lost in a series of some 60 sorties where interceptors were numerous and very determined, while serious, was not unreasonably high. But the percentage of loss among B-24's was even lower--12 in 205 sorties. Only on the mission of 1 December did heavy-bomber losses exceed 10 per cent of the participants.[49]

It cannot be claimed that the objectives of the operation were fully accomplished. Serious damage was done in the dock area but it was not so adequately covered as to paralyze the water front. Enemy aircraft losses were probably upwards of 50; but owing to arrival of reinforcements during the operation, Japanese air strength was greater at the finish than on the first day. Some damage was done to major enemy airfields in southern Burma. Communications targets such as Mahlwagon marshalling yards were not attacked.

On the credit side of the ledger were the great destruction at Insein and a very successful mining mission which affected Moulmein as well as Rangoon. Photo intelligence as well as ground intelligence coming in later indicated that in the face of limited successes elsewhere destruction at this point alone might have justified the whole undertaking. Several vital parts of the locomotive works were completely obliterated and many others were so badly battered as to be utterly useless. A Tenth Air Force photo intelligence report of 1 December stated:[50]

> The functional capacities of the Locomotive Work Shops have been seriously and effectively checked. The complete destruction of certain vital departments, ie: Foundry, Wheel and Wheel Cleaning Shops, Cycle Shed, as well as extensive damage to the Millwright, Electric, Boiler, Machine, Fitting, Erecting, Tender, Carpenter Shop and the Tool Room, makes it extremely doubtful whether this Works will be able to operate for a considerable time.

Less tangible results are not easy to assess, but the fact that RAF, Tenth Air Force, and Fourteenth Air Force units had participated in a jointly planned series of missions was a good omen for the theater. British effort was smaller than was anticipated; it was planned that

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their night missions would be flown by approximately 10 Liberators and 25 Wellingtons, but no more than 17 of their bombers were aloft at one time, and their total contribution was only 66 sorties. Their attacks, however, doubtless added greatly to the effectiveness of the whole operation. Cooperation between the 7th and 308th Groups stationed at the same Indian bases was above reproach.[51]

Several important operational lessons were learned which would be of value in planning for the future. Staging medium bombers from Chittagong and fighters from Ramu was entirely feasible, but it was believed that in subsequent operations the fighters should arrive at the staging fields the night before the mission, thus enabling them to refuel in ample time to make rendezvous with the bomber formations. Both P-38's and P-51's proved their value as escorts, but the P-51 with greater belly-tank load per engine was better for close support while the P-38 was superior as high-altitude top cover. Gunners on fighters and bombers were stale and needed additional training to sharpen their accuracy. And, perhaps most significant of all, it was obvious that fighter escorts would be required for all subsequent daylight missions to Rangoon.[52]

After this series of attacks Rangoon was left alone for a few weeks, but meanwhile the potentialities of another target greatly increased. Throughout the year intelligence agents had reported that the Japanese were expanding docking facilities at Bangkok and building a railway to connect the port with the Ye-Moulmein railway. In December it was reported that the new rail line had been completed. Thus Bangkok became increasingly important as a bombardment objective in the Burma campaign.

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A year before, B-24's of the India Air Task Force had flown to this port and dropped a few bombs, and in April another such mission had been attempted. This time most of the ships failed to reach the target, and those which succeeded in dropping bombs failed to do any appreciable damage.[53]

On the night of 19 December, 21 B-24J's of the 7th Group took off to bomb the newly constructed dock area. One failed to reach the target but shortly after midnight the remaining Liberators began to rain their bombs on the water front. Searchlights singled out some of the planes as they went over, following them through their bomb runs and blinding the crew members so that they could not assess the accuracy of their bombardment; but flak was ineffective and no interceptors appeared. For more than an hour the various flights dumped their bombs, most of which were believed to have fallen within the assigned target area. In all, 100 x 500-pound bombs were dropped, but mechanical failure of bomb racks caused 10 incendiary clusters to be withheld. Although no fires were reported, it was thought that substantial destruction had been wrought.[54]

On the night of 23 December a second attack was made on Bangkok, this time with the railway terminal as the aiming point. Twenty-one Liberators took off but two aborted. The remaining 19 scattered 110 x 500-pounders upon the target, of which 59 were incendiaries. Upon this occasion there was no doubt that the chosen objective was badly crippled. All squadrons sighted huge fires and one reported heavy explosions three minutes after the bomb run. Again flak was not effective and the only two enemy aircraft sighted failed to attack.[55]

These two Bangkok missions did much to raise morale of the 7th Group after its heavy losses at Rangoon. Two successful 14-hour night missions had been flown within a four-day span, with only three abortive sorties and without loss of a single ship. Obviously Bangkok was not as well defended as Rangoon, but success of these night flights indicated that the enemy would have to bring in night fighters or suffer many similar bombardments.

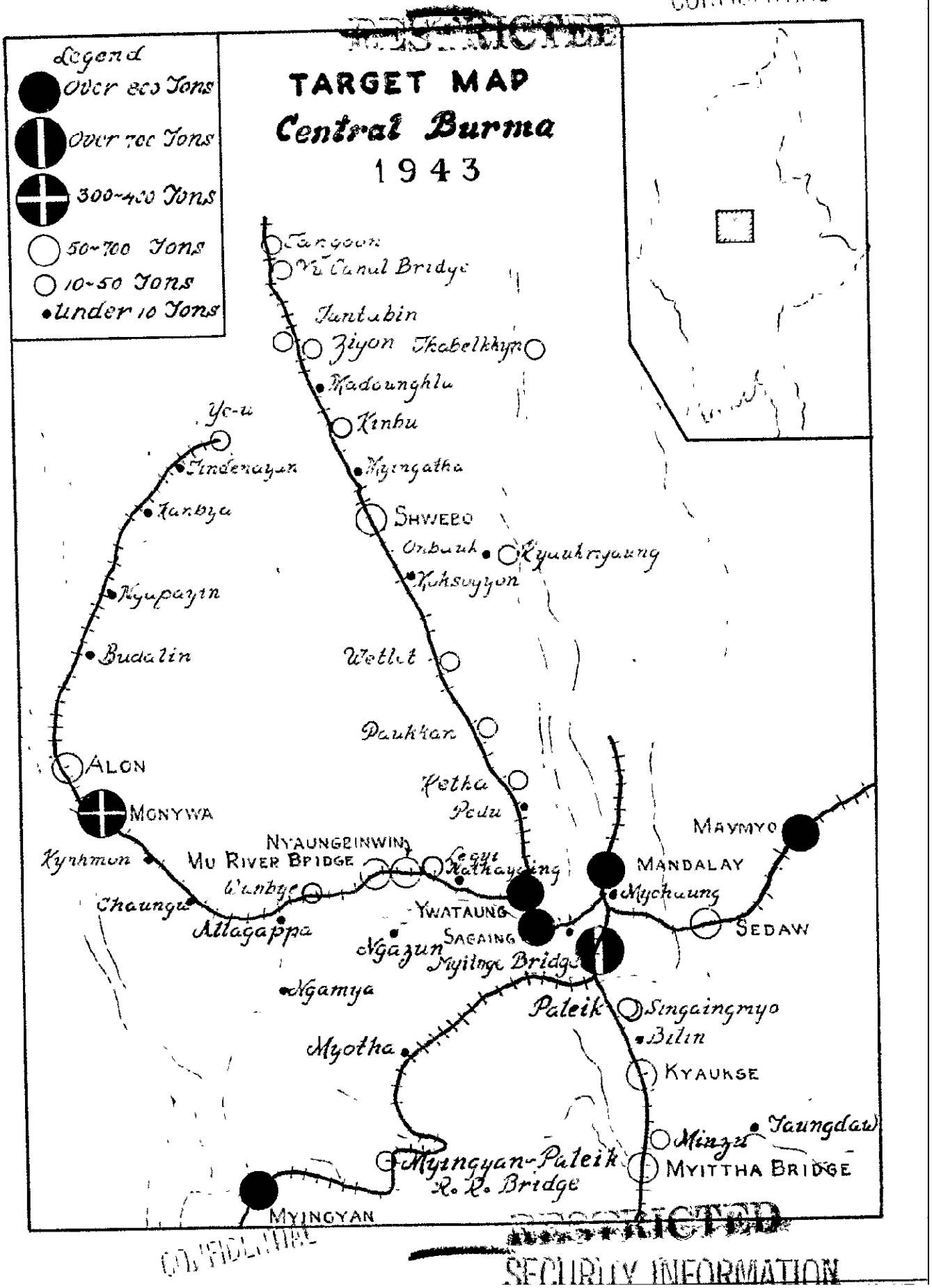
Chapter V

BOMBER OPERATIONS IN CENTRAL BURMA

While 7th Group heavy bombers in the south were engaging in the first phase of breaking Japanese communications, B-25's of the 22d, 490th, and 491st Squadrons of the 341st Group were carrying out the second phase of interdiction by breaking up internal communications farther north and doing counter-air-force work incidentally by striking enemy airdromes whenever they were occupied. Governed by limited range of their aircraft, these squadrons concentrated on the Mandalay region of central Burma, operating in the general area between Thazi and Myitkyina.[1]

Nature was kinder to the pilots of these mediums than to fighter pilots in Assam or to the heavy squadrons in the south, for even during the summer monsoon the dry area in middle Burma was not closed over by the mists and fogs so characteristic during that season on the southern coast and in northern Burma. Consequently their missions were less frequently abortive and they could adhere rather closely to operational plans. Nor did they encounter objectives so well defended by antiaircraft batteries and enemy interceptors as Rangoon, or so well concealed as those in the northern arena.[2]

Nevertheless the 341st Group had its share of operational problems. Objectives were widely scattered though lightly defended, and few were large enough to allow area bombing. As a result a very high degree of



precision was required on practically every mission. Furthermore, when an objective was of such proportions as to justify area attacks, the medium force was too small to saturate the target in a single mission.[3] Two consecutive missions to the same place frequently resulted in the same portion of the area being twice blanketed while other parts remained entirely untouched. Thus more precision targets were created.

Yet nothing contributed more to the operational difficulties or caused more headaches among medium crews engaged in transport interdiction than the necessity of paralyzing traffic by destruction of bridges. Try as they might, the percentage of hits on these narrow targets remained pitifully low. But if they were difficult to hit they were infinitely more difficult to destroy. Experimentation on methods of approach, altitude of bomb release, and bomb fuzing which continued throughout 1943 failed to produce a suitable method of attack until by sheer accident a pilot of the 490th Squadron found the answer on 1 January 1944. Until that time destruction of a bridge was more or less the result of luck.[4]

On top of the technical problem involved in pin-pointing these tiny targets, crews were confronted with several ingenious devices which the Japanese used to multiply the complexities of that type of operation. In some instances smoke pots were installed so that the target could be screened; if no natural barriers hindered minimum-altitude approach, heavy concentrations of antiaircraft were strategically placed; in some instances where bridges spanned deep gorges cables were strung across the gorges to stop approaches at or below bridge level. They shifted

flak positions frequently, and when short of antiaircrait guns, attempted to outguess the bombers by concentrating them at whatever objective they would be attacked next.[5]

Notwithstanding operational difficulties encountered in its execution, the plan for communications interdiction probably would have been completely successful if the medium-bomber force had been of sufficient strength to carry it out properly. Three types of internal transportation were of enough importance to justify consideration--river, rail, and motor. Moreover, the central dry region contained control points of northbound traffic over all three systems. Destruction of river craft by the British during their 1942 retreat, however, had been far more extensive than destruction of railways, locomotives, and rolling stock, and the volume of goods moving along waterways had dropped off considerably during Japanese occupation. Since RAF aircraft had gone to great lengths to destroy all types of river craft plying the Irrawaddy and Chindwin, attacks on river traffic by American bombers were infrequent.[6] When other targets were closed over, however, the mediums sometimes ran river sweeps, attacking tugs, barges, and ferry boats. Once during the summer they planted magnetic mines in the Irrawaddy from Mandalay to Pagan, but with questionable results. Motor transport in general also provided few targets appropriate for medium bombers. Consequently, efforts to interfere with motor traffic most often took the form of bombing motor pools, strategically located highway bridges, and cuts in highways where landslides might be caused. In a few instances motor convoys were bombed and strafed.[7]

Clearly the rail system from Rangoon to Mandalay and Myitkyina was the jugular vein of the Japanese armies in Burma. If rail movements could be stopped or even seriously impeded, Allied chances of eventually driving the enemy from Burma would be greatly enhanced. This was one of the principal aims of the medium squadrons in 1943.

The Burma rail net consisted of some 2,060 miles of meter-gauge, single-track lines, extending from Ye on the Malay Peninsula to Myitkyina on the upper Irrawaddy, and completely isolated from rail systems of neighboring countries. A line from Ye led through Thanbyuzyat, western terminal of the Bangkok-Moulmein railway being built by the Japanese, northward into Moulmein. Broken by ferries over the Salween River between Moulmein and Martaban and over the Sittang River farther north, this line extended to Pegu where it joined the Rangoon-Mandalay railway.[8]

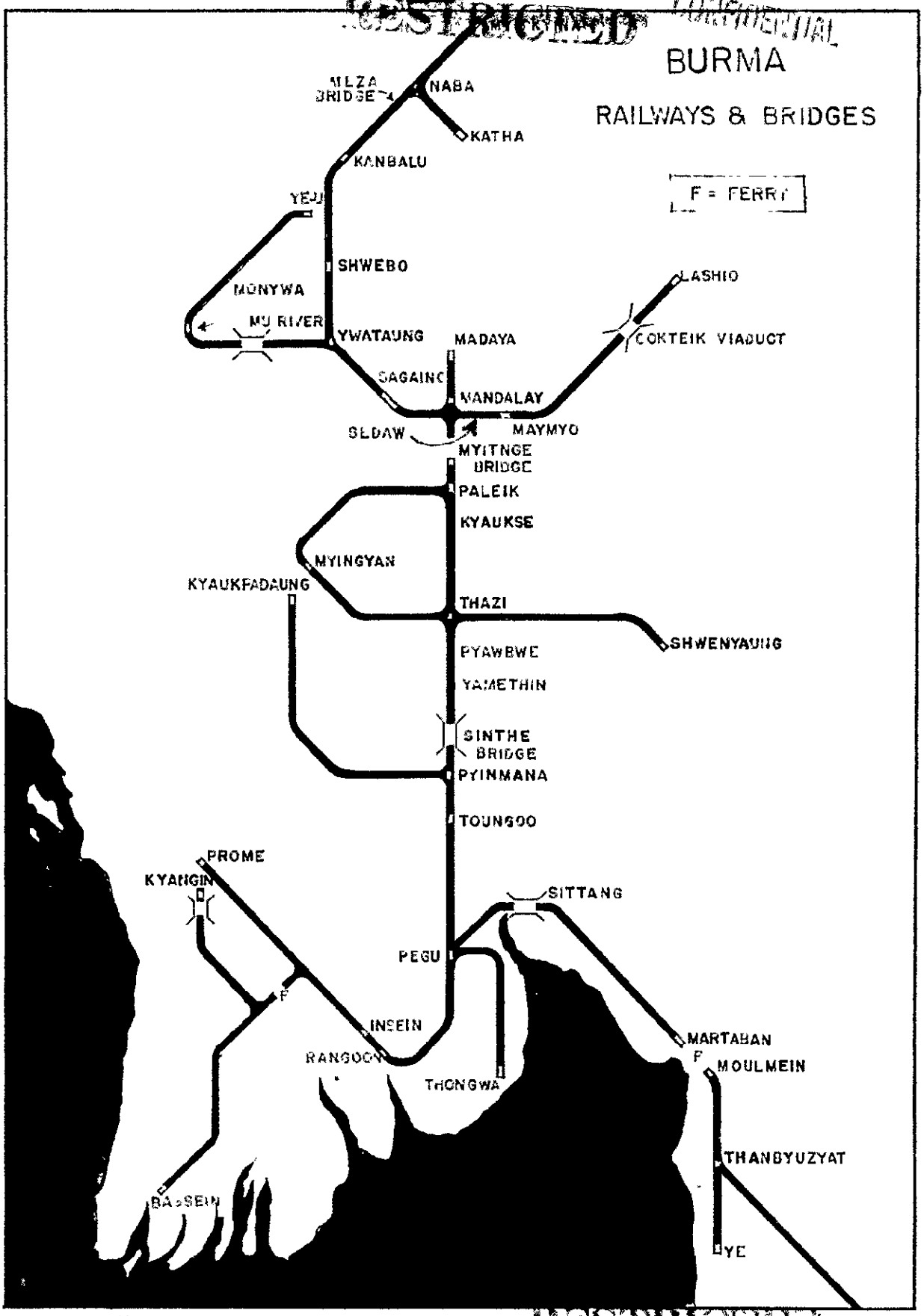
From Rangoon a branch line moved northwestward to Prome on the Irrawaddy. At Letpadan a spur, served by a ferry across the Irrawaddy at Henzada, extended to Bassein, and another short branch passed into Kyangin. The line of chief importance, however, was that stretching north from Rangoon to Pegu, where it was joined by the line from Ye and Moulmein, thence northward along the Sittang Valley toward Mandalay. This backbone of the entire rail net of the country continued from Mandalay and followed the upper Irrawaddy Valley to the extreme northern terminal at Myitkyina.

Lateral spurs branched off the Rangoon-Mandalay-Myitkyina line to serve various parts of the central basin. North of Pegu, at Pyinmana,

a track ran northwestward almost to the Irrawaddy, stopping at Kyaukpadaung, not far from the oil fields of Chauk and Yenangyaung. Farther to the north on the main line was Thazi, most important junction between Pegu and Mandalay. Here one spur extended east to Shenyaung near the Shan capital of Taunggyi, giving a rail outlet to the Shan States region and connecting with trails from Thailand. Westward from Thazi a branch through Meiktila reached Myingyan on the Irrawaddy and then rejoined the main line at Paleik, thus in effect providing an alternate connection between Thazi and Paleik. At the latter point all northbound traffic converged on the single line into Mandalay.[9] On this short run was located Myitnge bridge, destined to become one of the most famous targets in the theater.

At Myohaung yards in Mandalay all rolling stock was rerouted for ultimate destinations. One line of vital importance moved out northeast to Lashio where supplies for the Japanese army on the Salween front were processed and transshipped by motor conveyances. Along this branch were three excellent targets--Sedaw reversing station where the road circled, crossed over, then tunnelled through the hills to lower ground beyond; railyards at the industrial town of Maymyo; and Gokteik viaduct over which the railway crossed an enormous gorge.[10]

A short track also ran from Mandalay northward to Madaya, a small mining town, but the heaviest traffic flowed west and north toward Yeu and Myitkyina. Just out of Mandalay this line crossed the Irrawaddy via ferry, by-passing the disabled Ava bridge, entered Sagaing and passed thence a short distance into Ywataung. Here the line divided, one branch winding west over the Mu River to Monywa on the Chindwin and northward to



Yeu. The main line continued from Ywataung north through Shwebo to Naba where a short spur joined it to Katha on the Irrawaddy. Beyond Naba the line passed through Mogaung on a river of the same name, thence to Myitkyina on the Irrawaddy. Thus Sagaing and Ywataung were critical points for the entire system north of Mandalay.[11]

Frequently touching chief waterways, the Sittang, Irrawaddy, and Chindwin rivers, and winding throughout the central basin, the railway system provided a great variety of widely dispersed targets. But many were out of range of the mediums. In the south Thanbyuzyat, Letpadan, Henzada, Prome, Toungoo, and Pyinmana had to be left to the heavy bombers. In extreme northern Burma railway targets were left to fighters operating from Assam bases.[12] In the operational circumference of B-25's Thazi, Meiktila, Myingyan, Paleik, and Myitnge bridge were likely targets south of Mandalay. Mandalay itself, of course, was the most vital spot of all central Burma. Sedaw, Maymyo, and Gokteik on the Lashio railway already have been mentioned. Mu River bridge and Monywa on the Yeu branch, and Shwebo, Naba, Mogaung, and Myitkyina on the main line were worthy targets, as was Katha, a rail terminal and river port.[13]

Had a large force of the proper type of aircraft been available, interference with rail transportation in middle Burma would have been a minor undertaking, but the Tenth Air Force had neither sufficient strength nor the various types of aircraft needed for the operation. Instead, three undermanned B-25 squadrons were given the major role in crippling as greatly as possible this sprawling network, and before the end of the year this force was to be reduced to a single squadron. In order to save all possible lost motion the 341st Group had to plan carefully.

Blowing up bridges, ripping out trackage, burning stations, blocking tunnel entrances, destroying workshops and roundhouses, and causing landslides in deep cuts gave promise of favorable returns, and all were tried with varying degrees of success. But the Japanese became amazingly adept at making repairs and unsnarling traffic. Hence it was ultimately recognized that these methods were achieving little in the way of permanent damage, and that only by destroying locomotives and rolling stock could progressive and cumulative dividends be realized. This was no small undertaking. Approximately 113 locomotives and 9,602 rail cars of all types were available to the enemy. They were practically irreplaceable, however, and although it would take months to make appreciable inroads into the supply, the mediums accepted this part of their assignment with alacrity.[14]

So-called marshalling yards in Burma frequently were merely storage areas for idle locomotives and rolling stock. It was here then that chances of wiping out railway equipment were best. Juxtaposition of rail yards and warehouses gave frequent opportunities for double destruction; and if yards were clear of rolling stock the storage areas were excellent alternate targets. At a few points docks adjoined switching yards, again making better the chances for material destruction. On rare occasions bomb damage to bridges caused congestion of traffic and made normally poor targets profitable ones.

Consequently, although the Mitchells of the 341st Group bombed bridges, barracks, and other enemy installations, their heaviest and most rewarding effort was against rail centers and storage areas. Guided by day-to-day information provided by reconnaissance pilots and intelligence agents in Japanese-held territory, they attacked wherever

concentrations of rolling stock were reported.[15] Striking as near to the source of supply as range permitted, they bombed Thazi no less than 22 times from late March to 1 October, the missions totaling 179 sorties. Against Kayaukse, Myingyan, Pyawbwe, and Meiktila, also south of Mandalay, they flew more than 175 sorties during the year. Over a dozen missions of approximately 100 sorties attacked Mandalay itself, but as antiaircraft there was perhaps the heaviest in central Burma, it was believed more desirable to strike other objectives in the immediate vicinity. On the Lashio road Sedaw reversing station and Maymyo were attacked seven and 15 times respectively.[16]

Beyond Mandalay the Mitchells gave Sagaing and Ywataung rail yards the most severe treatment of all. Some 240 planes in 23 missions showered their explosives on the tracks over which were moving heavy shipments to the northern battle area. Farther up, Monywa on the Yeu branch suffered five attacks, while on the main line Kanbalu, Naba, and Shwebo were hit hard and often. Dozens of other points along the tracks also were blasted, some as alternates when assigned targets were closed over.[17]

Interspersed with these heavier attacks the Mitchells occasionally strafed trains, cranes, other repair equipment, and repair crews. When newer model B-25's equipped with 75-mm. guns appeared late in the year they were sometimes used to knock out strategically located antiaircraft emplacements. Any locomotive caught outside defended areas was subjected to strafings.[18]

For many months the Japanese proved a worthy foe in the transportation contest; repairs were prompt and thorough. But as attacks became more frequent and devastating, reconstruction lagged. Burned-out rolling

stock, wrecked locomotives, and bomb-pitted sidings remained untouched for long periods while workers made feverish efforts to keep main lines open. As the tide slowly turned against him the enemy became more wary and depended more heavily upon guile. Camouflage and dispersal became his guiding principles. Locomotives were disguised as box cars and placed in the middle of trains; cars onsidings were uncoupled and well spaced; revetments were constructed to protect locomotives when not in use; massing rolling stock was avoided whenever possible; trains rarely made runs during daylight hours.[19]

Against these precautions medium-bomber missions became less fruitful, but efficiency of the railways also diminished. Accumulated combat mission and photo-reconnaissance reports telling of explosions, riddled locomotives, burned warehouses, and wrecked rolling stock indicated that heavy damage was being done; now enemy reaction showed that they were beginning to feel the pinch.

The effect of the imminent transfer of two medium squadrons to China late in the year was partially offset when Liberators of the 7th Group began to run a few saturation missions to central Burma. The arrival of the 459th Fighter Squadron equipped with P-38 Lightnings was encouraging, and when they were based at Kurmitola to operate with the 490th Squadron the outlook was still brighter, but removal of the 22d and 491st Squadrons caused a letdown during November and December.[20]

Meanwhile the bridge phase of the plan to break enemy communications had failed to keep pace with destruction of rail centers. Recognizing the fact that the program of destroying locomotives and rolling stock would not affect operations of the ground forces in northern Burma for

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some months, the 341st as a more immediate measure adopted the policy of trying to keep certain vital railroad bridges unserviceable, thereby at least delaying delivery of materiel to the north. Although there were in Burma nearly 100 bridges of a length of 200 feet or more, selection of those to be attacked was made comparatively easy by circumstance.[21] Pazundaung and Sinthe were out of range, and Sittang, also out of range, was still not completely rebuilt. Ava also was still in a state of disrepair. In the Myitkyina area several important bridges were within range of fighter-bombers from Assam, where the crews had developed their own effective methods for bridge destruction.[22]

Myitnge, Gokteik, Mu, Meza, and Myittha railway bridges were the logical targets which, if destroyed, would cause maximum embarrassment to enemy rail movements. These, with the Shweli highway bridge on the road from Bhamo into China, became the chief targets for the Mitchells in 1943.[23] Indeed, if all could have been knocked out simultaneously, the volume of supplies moved to northern Burma and to the Salween front would have been reduced materially, but destroying one at a time would create only a major inconvenience.

From the outset the B-25 pilots in their bridge attacks encountered almost insurmountable obstacles which only long experience through trial and error finally removed. Primarily the difficulty lay in their inability to score direct hits on these small targets from ordinary altitudes. Near misses did comparatively little harm to sturdily built structures; and even when bombardiers laid their missiles directly upon the targets, resultant damage was sometimes so scant that repair crews

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could reopen the bridge to traffic in a few hours.[24] The entire bridge program in 1943 then was a process of experimenting, studying results, and attempting to develop suitable tactics. Not until 1944 did the long, arduous task produce results commensurate with the effort exerted.

The story of the bridge campaign in Burma during 1943 closely parallels the story of attacks on one bridge--Myitnge. Located just south of Mandalay this four-span, truss-type, steel structure bore all rail traffic from the south into that city. The demoralizing effect its destruction would have was obvious; and aside from Rangoon, it became the most bombed target in Burma. On 10 January the bridge was reported "destroyed," but later reconnaissance showed that while damaged and unserviceable it was far from irreparable, and in early February B-25's and B-24's colloborated in a series of missions designed to place it beyond repair. On 4 February six mediums from a height of 6,000 to 6,500 feet and seven heavies from 14,500 feet accomplished nothing more than slight damage to the south approach. The following day six more B-25 sorties at 12,000 feet failed to smash the bridge. Heavy bombers on 6 and 12 February had no better luck, on the latter occasion claiming 23 hits in the target area but doing the structure no harm. The attacks continued on 14, 15, and 23 February, and on the latter date B-24's battered the roadbed and tracks on the south approach.[25]

From 8 to 18 March the 341st Group ran six missions of 53 sorties, releasing bombs at altitudes varying from 11,000 to 16,000 feet without doing visible damage to the bridge. On 19 March, however, eight B-25's scored at least four direct hits, rendering it unserviceable. This, however, did not deter the bombers in their efforts to destroy the

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structure completely. Heavies of the 7th Group attacked in full strength on 24 March but made no hits. The same day two B-17's, idle in India since the preceding summer, were pressed into service. Flying over the target at 50 feet, they dropped four 1,000-pounders without effect.[26]

Throughout April, May, and June the attacks continued, mediums scoring four hits on 17 April and two on 15 June. On 3 July the southernmost of the four spans was knocked from the concrete piers into the riverbed, but regular attacks continued until 23 August when B-25's knocked out one of the two center spans and heavily damaged two other spans. No further attacks were carried out until 1 December when B-25's of the 490th were diverted from the Rangoon raids to attack the newly repaired structure. Two direct hits seriously damaged the northernmost span and again the bridge was made unusable. Two more attacks in December indicated, however, that regardless of its temporary uselessness the bridge remained high on the target priority list. Yet on 1 January 1944 the bridge was fully repaired.[27]

This 1943 Myitnge campaign left the basic problems of bridge destruction still unsolved. Successful B-25 missions had been accomplished from altitudes ranging from 6,200 feet to 13,500 feet, with varying formations, aiming points, and angles of approach; but unsuccessful missions still far outnumbered the successful, clearly indicating that the best possible attack technique had not yet been discovered.[28]

Cumulative statistics on this target indicate the failure of bridge bombardment from medium and high altitudes. In 39 missions of 337 sorties B-24's and B-25's dropped 1,219 bombs (542.8 tons), registering 18 hits on the bridge—an accuracy score of little more than 1.5 per cent. The

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record of the B-25's, however, was far better than that of the B-24's, for the latter scored only one hit in 81 sorties while B-25's made 17 hits in 254 sorties.[29]

Antiaircraft was regularly encountered over Myitnge but was relatively ineffective. Two B-24's were shot down and two others damaged, but no B-25's were lost and only eight were damaged. Enemy aircraft encountered on three occasions did no damage to any of the bombers. On the other hand the constant showering of explosives had not wrought any permanent damage to the target. All piers were still intact at the end of the year, and as long as they stood, repairs were relatively simple. Hence the only material value of the campaign lay in the fact that for approximately eight months of the year use of the bridge was denied the Japanese.[30]

Gokteik viaduct, frequently referred to as the engineering marvel of Burma, was probably the second most important bridge target of the Tenth Air Force. Built by American engineers from 1900 to 1901, this structure across a gorge 2,260 feet wide was mounted upon latticed steel piers rising 320 feet from a natural bridge which spanned a small stream 550 feet below. Thus the over-all height of the bridge platform from the bottom of the gorge was 870 feet. On the north side the railway entered a tunnel only a short distance from the end of the bridge.[31] Reconstruction of this span or unblocking the tunnel entrance would present major engineering problems which might induce the Japanese to abandon the rail line stretching beyond. This line was doubly important, for besides carrying supplies from Mandalay to Lashio for the Salween army, on the return it hauled from Bawdwin mines and Namtu smelters lead and zinc, critical items in Japanese war economy.[32]

Upon reported destruction of Myitnge bridge early in 1943, American strategists made plans for dealing out similar treatment to Gokteik. Because of the problem of reconstruction after the war the British at first were reluctant to grant permission to bomb this objective; but when it was pointed out that the enemy undoubtedly would destroy it before they withdrew from Burma, they finally consented.[33] On 20 February mediums failed to score. Four B-25 missions of 42 sorties and one B-24 mission of 14 sorties during March were equally ineffectual.[34]

After a letup of more than a month, 18 Mitchells on 30 April claimed minor damage at the north end. No attacks took place during the summer months, but on 7, 8, and 10 September the mediums again ran missions against the viaduct. On 7 September three hits at the base and two or three near misses on one pier did minor damage but left the viaduct and approaches intact. Five hits at the base on the 8th and direct hits on approaches on the 10th further damaged the structure but still did not make it unusable. Loss of two squadrons to the Fourteenth so curtailed activities of the mediums during the remaining months of 1943 that no further attacks were made on Gokteik. Like Myitnge, this structure was intact at the end of the year.[35]

On the Mandalay-Myitkyina line the Meza railway bridge, just south of Naba, was another important target over which Japanese reinforcements poured into northern Burma. This 700-foot, three-span, truss-type bridge with five short approach spans at each end, was mounted on concrete and brick masonry abutments. It was attacked less frequently but more successfully than either Myitnge or Gokteik. The first 1943 attack was by nine B-25's on 13 June when one hit did minor damage. No further assaults were made until October when it was subjected to

five separate attacks. On 10 October seven B-24's in javelin formation at 8,000 feet made five hits with 1,000-pounders, destroying three eastern approach spans and dropping one end of a main span into the river. While repairs were still in progress Mitchells attacked on 20, 23, and 31 October, straddling but missing the bridge on two occasions, yet doing serious damage to approaches. The bridge was unserviceable, and no subsequent attacks took place during the remainder of the year.[36]

On 12 December, Myittha bridge, not attacked heretofore, was given a saturation bombardment by 28 Mitchells and 13 Liberators. This four-span, 240-foot structure had been adjudged by Intelligence as one of the most important targets in Burma because of the volume of Japanese goods then flowing northward through that area. Five hits were claimed for the day, but later photo reconnaissance brought the sad news that the only damage was to the approach spans. Flak damaged one B-24 on this mission, but enemy interceptors encountered did the bombers no harm.[37]

The only highway bridge of enough importance to attract the attention of bombers during 1943 was Shweli, 250-foot suspension-type structure 70 feet high, on the motor road leading from Bhamo into China. Shweli presented peculiar difficulties to the bombers, since direct hits on the platform would do no more than slight damage, and the cables were so securely anchored in huge concrete blocks as to make it almost impossible to dislodge them. The towers over which the cables were strung were the most vulnerable parts, but making direct hits upon them was more than the bombardiers could accomplish. Attacks by heavy bombers on 31 April and 4 July, and by mediums on 24 June were completely

unsuccessful. On 19 July B-25's damaged approaches, and on 1 August, in the last attack of the year eight B-25's hit the eastern approach, slightly damaging the cable anchorages and pylons but leaving the bridge serviceable.[38]

On the Yeu branch railway a bridge of four 100-foot steel-girder, deck-type spans crossed the Mu River between Ywataung and Monywa. This was the one important bridge which was exclusively a B-25 target. On 7 April the mediums scored two direct hits and on 9 July registered two more, each attack temporarily knocking the bridge out. On 29 July two more flights attacked. The first reported heavy damage to the two eastern spans; the second reported the bridge "destroyed," with the east span dropped and submerged in the river. By 22 September, however, the structure was again in use and raids on that date and on 22 October failed to do any damage. These ended the 1943 assault on this particular target.[39]

A survey of attacks made on the six major bridge targets in central Burma during the year shows how expensive the operation was, and also how ineffective. Against these bridges, Myitnge, Gokteik, Shweli, Meza, Mu, and Myittha, 696 sorties were run from 4 February through 31 December. During these missions 2,398 bombs ranging from 300 pounds to a ton, but mostly 500- and 1,000-pounders, were dropped. They totaled almost 1,100 tons and represented approximately 17 per cent of the bomb tonnage which fell on Burma during the period. Of the 2,398 bombs only 34 struck bridges, making accuracy less than 1.5 per cent. Actually, of the 1,100 tons of bombs only 17 tons were effectively placed, and with the exception of Myitnge, none of the bridges was rendered useless for extended periods.

Meanwhile fighter-bombers from Assam had developed a dive-bombing technique which enabled them to amass an accuracy record of 7 percent on similar targets.[40]

Although the record of the mediums was by no means good it was much better than that of the heaviest whose accuracy was less than 1 per cent. Damage assessment also indicates that the B-25 attacks were more effective.[41] But as the end of the year approached, morale among pilots and crews of the Mitchells was at a low ebb. Damage to bridges was being repaired rapidly or by-passes were being built, and they had been unable actually to destroy a single bridge. The 490th Squadron's crews, left with the major responsibility for destruction of bridge targets after the transfer to China of the 22d and 491st Squadrons, began to look with dread upon this part of their assignment. Understanding their frame of mind, the squadron commander, Lt. Col. Robert D. McCarten, called his men together to discuss the problem and stated: "We're going to learn how to knock out bridges if it's the last thing we do." After that for hours each day the 490th practiced by aiming dummy bombs at targets marked out on a near-by rice paddy. When they were not actually flying missions or running practice flights, they were studying the structures they were scheduled to attack, trying to determine vulnerable spots where hits would do the most serious damage. They worked on angles of approach, bomb fuzing, and methods of bomb release, and then tried their theories in combat missions.[42]

Having read of the success of skip bombing in the Southwest Pacific, they tried it against bridges, hoping to knock out foundations. They found, however, that the bombs generally either ricocheted off their

course, skipped clear over the target, or slid under to explode on the other side. They tried dive bombing in imitation of the technique developed by Colonel Barr, but found that the B-25 was not built for the necessary steep dive and quick pull out. Attacks from treetop level did not give enough time for bombs to become vertical before hitting; they hit on their sides and skidded off, frequently failing to explode. To make them become vertical more quickly the men tried spikes in the noses of the bombs, air brakes on their fins, and even parachutes. These variations helped but were obviously not the final answer.[43]

Combat experience had shown conclusively that upon these narrow targets the percentage of hits to be expected from medium and high altitudes was entirely too small. It was estimated that on a bridge 15 feet wide and 800 feet long only one hit out of 750 bombs could reasonably be expected, and if the bridge were only 200 feet long the probability of hits was reduced to one out of 2,850. This obviously pointed toward minimum-altitude attacks, making the key problem that of righting the bombs before they struck.[44]

Most of the bridges were so constructed that only a direct hit with a properly fuzed general-purpose bomb could inflict appreciable damage. If the delay in detonation was too long, the missile would pass through the superstructure to explode harmlessly in the water beneath. In case of Gokteik and other high bridges, the height above river or valley floor further reduced the effectiveness of improperly fuzed direct hits unless they chanced to explode in close proximity to a pier. Instantaneously fuzed bombs could be used from medium or high altitudes, but the most vulnerable parts of the structure could not be effectively hit.[45]

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Since minimum-altitude attacks seemed to offer the best solution, properly delayed fuzes and protection against ground fire were problems to be investigated. Danger to low-flying planes made it mandatory that detonation be delayed until the craft could clear the aiming point safely. Surprise, if it could be attained, would be an important factor in lessening hazard from ground fire. Since surprise was not always possible, however, strafing of antiaircraft positions in the last moments before the bombers came over the target was a suitable alternative. Late in the year the 459th Fighter Squadron, equipped with P-38's, was stationed at Kurmitola with the 490th to fly missions with it. The problem of strafing was worked out satisfactorily, some P-38's flying top cover while others attended to the AA positions. When B-25's with 75-mm. cannons arrived they were used frequently to blast particularly troublesome gun emplacements.[46]

The most important problem, finding proper method of bomb release, finally was solved by sheer accident. On 1 January 1944 the target for the 490th was the Mu River bridge, last attacked in October. Roaring in at treetop level, Maj. Robert A. Erdin, pilot of the lead Mitchell, saw a large tree looming up before him. He gunned upward to avoid hitting it and by the time he had returned to the predetermined attack level he was already on the target. Cursing the tree that spoiled the approach, he dumped his bombs. Looking back to see how badly they had missed, the crew saw two of the spans topple into the river. The shallow dive just before bomb release at low altitude had sent the bombs earthward at an angle which prevented them from skipping or failing to go off on impact.[47]

Further tests proved this to be exactly the technique the 490th had sought so long. Refinements were added and men learned to aim through the machine-gun reflector sight. Moreover it was found that even near misses from this type of release did considerably more damage than bombs released from higher altitudes. To prove that they had at last learned the art of bridge destruction, the 490th returned to Myittha bridge on 23 January. In company with the Liberators of the 7th Group on 12 December they had literally blown away the soil for hundreds of feet about the bridge with more than 70 tons of bombs, but without doing appreciable damage to the bridge itself. This time, however, they wiped out the humiliation of their previous failure by destroying the bridge superstructure and knocking out two all-important piers while using only six tons of explosives.[48]

But this bombing technique for "bridge work" which was later to earn for the 490th many commendations as well as the title "Dental School," came too late to alter the rather dismal story of bridge attacks in 1943. Many tons of fuel and explosives had been expended with meager returns, but experiences in continuation of the campaign in 1944 would reveal whether or not these many apparently fruitless missions had been entirely in vain.

In summary, the transportation interdiction program in central Burma had not succeeded by the end of 1943. Goods and equipment still moved into northern Burma, although on a reduced scale; the Burma railway system was still usable. On the other hand the campaign was not a complete failure. Some locomotives and rolling stock had been destroyed, warehouses full of goods burned, railway yards damaged, and certain key

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OPERATIONAL SUMMARY FOR 1943

MONTH	SORTIES	BOMB TONNAGE	ROUNDS OF AM EXPD				HOURS FLOWN	OUR LOSSES		ENEMY AIRCRAFT LOSS		
			50-Cal	30-Cal	75-mm	20-mm		A/C	C/CR	DESD	PROB	DMGD
JAN	95	5	16,700	---	--	--	206	--	--	--	--	--
FEB	519	143	66,375	40	--	--	1,194	--	1	9	15	4
MAR	1,070	770	186,120	345	--	--	3,848	3	29	10	4	13
APR	1,093	758	86,884	--	--	--	4,321	1	--	--	1	3
MAY	1,195	1,105	139,015	1,715	--	--	5,986	4	22	8	10	10
JUN	550	469	34,750	1,375	--	--	3,323	--	--	--	--	--
JUL	940	792	98,810	3,330	--	--	4,431	2	17	--	--	--
AUG	730	721	96,035	9,085	--	--	4,336	5	7	2	1	--
SEP	1,067	988	135,905	9,895	--	--	6,723	27	19	4	8	6
OCT	2,000	1,363	270,343	12,250	--	--	10,311	46	57	18	10	26
NOV	2,635	987	570,740	5,255	30	58	11,894	67	95	28	31	31
DEC	2,805	961	437,863	5,315	38	1,572	12,559	35	57	28	17	53
TOTAL	14,699	9,062	2,139,540	48,605	68	1,630	69,432	190	304	107	97	146

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bridges closed for varying periods. But the real measure of success achieved was scarcely discernible to the flyers. Upset train schedules, delays caused by damage to bridges and trackage, loss of supplies, and the necessity of employing so much equipment and so many laborers in repair work, all affected the enemy war effort. Repaired bridges could not longer bear normal loads, and rebuilt locomotives and rolling stock were not up to standard. Possibly, if considered as a campaign of attrition, it could be called successful, for the enemy was at least beginning to feel the effects of regular bombings. But as preparation for an all-out ground attack to reconquer Burma it was a failure.

In the main, lack of success could be attributed to the small scale on which the project was carried out and to the absence of long-range fighters or fighter-bombers to supplement the work of the mediums. Heavy bombers of the 7th Group added some weight to the effort, but their strikes against bridges were largely wasted, and other B-24 missions to central Burma were too infrequent to have much effect. In the latter weeks of the campaign, reduction of the medium-bomber force to a single squadron was a serious blow.

Plans for the bridge phase of rail interdiction might be criticized on the basis that attacks were not concentrated. For instance, destruction of several bridges on a relatively short stretch of railway and bombing out of trackage in between would have multiplied the difficulties of repair posed by knocking out at long intervals several widely dispersed bridges. Knocking out a single bridge merely led to substitution of some sort of ferry or to the building of a by-pass while the bridge

was under repair.[49] Yet in view of the difficulties of hitting even the larger bridges, this criticism becomes less valid. Ultimate assessment seems to indicate that it was simply a case of too great an undertaking for the force employed.

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GLOSSARY

AAABC	Assam American Air Base Command
AACS	Army Airways Communications System
AAFRH	Army Air Forces Reference History
AC/S	Assistant Chief of Staff
AFGIB	Air Force General Intelligence Bulletin
CATF	China Air Task Force
CBI	China-Burma-India
COS	Combined Chiefs of Staff
CNAC	China National Airways Commission
EAC	Eastern Air Command
IATF	India Air Task Force
IBS	India-Burma Sector
ICWAC	India-China Wing of Air Transport Command
SEAC	Southeast Asia Command

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NOTES

Chapter I

1. See AAF Historical Studies: No. 12, Tenth Air Force, 1942.
2. CCS 38, 11 Feb. 1942.
3. Ibid.
4. AAFRH-4. See also Tenth Air Force, 1942; History Eastern Air Command, 1942-1944, p. 17.
5. AAFRH-4, p. 28.
6. Ibid.
7. Ibid.
8. Memo, Haynes to Arnold, 10th AF Evaluations, Dec. 1942-Dec. 1943.
9. Ibid.
10. Ibid.
11. Ibid.
12. John L. Christian, Modern Burma, p. 6; Impact, Nov. 1943, pp. 8-9.
13. Air Forces General Information Bulletin (AFGIB), #10 (March 1943), p. 8.
14. Christian, Modern Burma.
15. George S. Banta and Cleveland W. Stauffer, The Climate of Burma, pp. 1-2.
16. Ibid. See also AFGIB, March 1943, pp. 8-10.
17. AFGIB, #11 (April-May 1943), p. 5.

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Chapter II

1. Figures obtained from Statistical Control, Headquarters, AAF.

2. Memo of Agreement between General Arnold and Air Chief Marshal Portal, 21 June 1942.

3. Memo for Handy from Stratemeyer, 24 March 1943; CM-IN-13843, 26 March 1943, Stilwell to Arnold, unnumbered.

4. Figures from Statistical Control.

5. Ibid.

6. See Tenth Air Force, 1942.

7. Prospects for full-scale use of the port of Calcutta probably influenced the War Department to change the port of embarkation for India from the Atlantic to the Pacific coast of the United States. On 1 May 1943 the shift was made from Charleston to San Francisco, with Los Angeles as subport. CM-OUT-4303, 10 April 1943, Somervell to Wheeler, #2479.

8. Memo for Roosevelt from Marshall, 25 Nov. 1942; memo for Marshall from Roosevelt, 25 Nov. 1942; memo for Roosevelt from Marshall, 21 Feb. 1943; ltr., Chiang Kai-shek to Roosevelt, 7 Feb. 1943.

9. Ibid.

10. For further details of events leading to the activation see AAFRH-4.

11. See AAFRH-9, Chap. IX.

12. AAFRH-4, pp. 10-14.

13. For example, during August the 25th Fighter Squadron had flights at Sookerating, Sadiya, and Jorhat; and the 26th Fighter Squadron was dispersed at Dinjan, Mokalbari, and Lilibari. Weekly Status and Operations Report, Aug. 1943.

14. History, American Air Base Command No. 1; Historical Data, Chronology of the Evolution of the 5320th Air Defense Wing (Prov.).

15. Radg., Bissell to Stilwell, 14 June 1943; radg., Bissell to Haynes, 14 June 1943; radg., Haynes to Bissell, 16 June 1943. See also Historical Data, Chronology of the Evolution of the 5320th Air Defense Wing (Prov.).

16. Ibid.; directive regarding responsibilities in Assam area, Stilwell to Bissell, 13 July 1943; directive, Bissell to Haynes, 12 June 1943.

17. Historical Data, Chronology of the Evolution of the 5320th Air Defense Wing (Prov.).

18. Ibid.; ltr., Bissell to Haynes, 17 June 1943.

19. History of the United States Army Air Forces, India-Burma Sector, China-Burma-India Theater, [cited as History USAAF IBS CBI] p. 11.

20. Ibid., p. 13.

21. Ibid., p. 12. The subject of appointing a senior air officer to the theater had been raised by General Stilwell some time before. It was not felt at the time, however, that it would be wise to place anyone else over General Chennault in China. Later when General Stilwell asked for a second in command and an air adviser, General Stratemeyer was considered for both positions. General Stilwell wanted General Stratemeyer as air adviser but thought he needed another man for second in command. CM-OUT-2373, 27 March 1943, Marshall to Stilwell, unnumbered; CM-OUT-8778, 21 June 1943, Arnold to Stilwell, #2851; CM-IN-14682, 23 June 1943, Stilwell to Arnold, #Ammisca 571; CM-IN-14719, 23 June 1943, Stilwell to Marshall, unnumbered; CM-OUT-10613, 25 June 1943, Marshall to Stilwell, #2882; CM-IN-16328, 26 June 1943, Stilwell to Marshall, #591.

22. General Stratemeyer felt somewhat cramped because of the presence of several air organizations over which he had no operational control, and asked the War Department to give him command of the India-China Wing of ATC. This was not favorably considered. Ltr., Stratemeyer to Brig. Gen. Byron E. Gates, 9 Nov. 1943.

23. GO #21, Rear Echelon USAF, 20 Aug. 1943; CM-IN-16358, 21 Aug. 1943, Stilwell to Marshall, unnumbered.

24. Ibid.

25. Memo for CG, Rear Echelon, USAF CBI, from Col. Charles B. Stone III, C/S AAF IBS CBI 3 Sep. 1943; ltr., Arnold to Stratemeyer, 28 Aug. 1943; CCS, #111th Meeting, 18 Aug. 1943.

26. History USAAF IBS CBI.

27. GO #1, Hq AAF IBS CBI, 23 Aug. 1943.

28. History USAAF IBS CBI.

29. TAG to CG AAF IBS CBI, 28 Sep. 1944; CM-OUT-10038, 25 Nov. 1943, Arnold to Stratemeyer, #3823.

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30. General Stilwell expressed regret at losing General Bissell, whom he considered "loyal and efficient, good soldier, and a man of high character." He added: "Regrettable that he must go for the reasons involved." General Marshall assured him that General Bissell would be given a good assignment in Washington. CM-OUT-7186, 17 July 1943, Marshall to Stilwell, #3024; CM-OUT-7951, 20 July 1943, Marshall to Stilwell, #3034; CM-IN-16520, 23 July 1943, Stilwell to Marshall, # Ammdel AG 1026.

31. At Quadrant the new theater was defined geographically as follows: The eastern boundary was to run from the point where Burma, Indo-China, and Thailand meet, southward along the eastern boundary of Thailand and Malaya to Singapore. From Singapore it extended southward to the north coast of Sumatra, thence around the east coast of Sumatra (excluding Sundra Strait) to a point on the Sumatran coast at longitude 104 degrees east. Thence it extended south to latitude 8 degrees south--thence southeastwardly toward Onslow, Australia, and, on reaching longitude 110 degrees east, due south along that meridian. The northern boundary, beginning at the junction of Burma, Indo-China, and Thailand followed the northern and western boundary of Burma to the coast, thence along the coast of India and Persia to meridian 60 degrees east. From there it went southward along the meridian to Albatross Island, thence southeastward to exclude Rodriguez Island, and thence due southward. CCS 308/3, 21 Aug. 1943.

32. Ltr., Arnold to Stratemeyer, 28 Aug. 1943.

33. Ltr., Arnold to Stilwell, 28 Aug. 1943.

34. CM-IN-20727, 30 Sep. 1943, Stilwell to Arnold, #775.

35. Ltr., Arnold to Chennault, 28 Aug. 1943.

36. Memo for CG Rear Echelon USAF CBI, from Col. Charles B. Stone III, C/S AAF IBS CBI, 3 Sep. 1943.

37. Ibid.

38. Copy of plan in History USAAF IBS CBI.

39. Memo for Air Commander, SEAC from Stratemeyer, 26 Oct. 1943.

40. Copy of record of the meeting in History USAAF IBS CBI.

41. Memo for Wedemeyer from Stratemeyer, 30 Oct. 1943.

42. Copy of memo in History USAAF IBS CBI.

43. CCS, 111th Meeting, 18 Aug. 1943.

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44. CM-IN-15125, 25 Oct. 1943, Somervell to Marshall, #2810 KM 2683.

45. Ltr., Stratemeyer to Arnold, 29 Nov. 1943.

46. Memo for Arnold from Kuter, 1 Dec. 1943.

47. Ltr., Arnold to Mountbatten, 3 Dec. 1943.

48. History USAAF IBS CBI.

49. Historical Data, Chronology of the Evolution of the 5320th Air Defense Wing (Prov.), note 18.

50. Memo for Stratemeyer from Stone, 13 Dec. 1943.

51. GO #1, Hq EAC, 15 Dec. 1943.

52. Ibid.

53. Ibid.

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Chapter III

1. AAFRH-4.
2. History 51st Fighter Group; History of 80th Fighter Group.
3. Tenth Air Force, 1942, p. 23.
4. Form 34's, passim. Accounts of operations in this and following chapters are based on Daily Intelligence Summaries, Daily Tactical Reports, Form 34's, and unit histories. Where accounts vary, Form 34 has been accepted as the most authoritative source.
5. Air Dropping in Northern Burma, pp. 1-3; Air Transport Operations on the Burma Front, pp. 7-8; Report on KC-8 Incident; address by General Davidson, 11 April 1945, p. 2. All in AFSHO files.
6. Ibid., pp. 2-3.
7. Report on KC-8 Incident, in AFSHO files.
8. Tenth Air Force, 1942, p. 77.
9. Address by General Davidson, 11 April 1945, p. 4; see also S-2 Information Bulletins, 7 Sep. 1942-31 Sep. 1943; Form 34's for 25th and 26th Squadrons of 51st Group give complete record of patrols for first months of 1943.
10. S-2 Information Bulletins, 7 Sep. 1942-31 Sep. 1943.
11. Daily Tactical Reports; S-2 Information Bulletins; Form 34.
12. AAFRH-4, p. 28.
13. Report on Fort Hertz by Lt. Col. Emile Z. Berman, 20 July 1943, in AFSHO files.
14. Ibid.
15. Ibid.
16. Ibid.
17. Report on KC-8 Incident.

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18. S-2 Information Bulletins; Form 34.

19. S-2 Information Bulletins; Air Force, Oct. 1943, pp. 5, 55; GO #43, Hq 10th AF, 23 May 1943.

20. S-2 Information Bulletins; Form 34; Aerial Operations File; Daily Tactical Report. All in AFSHO files.

21. Impact, Nov. 1943, p. 12.

22. S-2 Information Bulletins.

23. History Tenth Air Force Headquarters, 1 Jan. 1943-31 May 1943.

24. Form 34; S-2 Information Bulletins; Daily Tactical Report; Aerial Operations File.

25. History Tenth Air Force, Sep. 1943; History USAAF IBS CBI.

26. History 80th Fighter Group; History 51st Fighter Group; Form 34.

27. Ibid.

28. Ibid.

29. Ibid.

30. "OPTI Section (Plans) Projects AF Units, Rangoon Operation" in AFSHO files; Form 34.

31. Daily Tactical Report; Form 34.

32. Report by Lt. Col. Samuel T. Moore, former executive officer, TCC EAC.

33. Form 34.

34. Verbal information from Historical Division, ATC.

35. The 311th Fighter-Bomber Group which was assigned ground cooperation operations had to withdraw aircraft to enlarge the patrols carried out by the 80th Group. Form 34.

36. Aerial Operations File.

37. Form 34.

38. Aerial Operations File.

39. Ibid.

40. Air Attacks on Bridges, with Special Reference to Operations in Burma, Air Forces Manual #32; Form 34.

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41. Intelligence Summaries.

42. S-2 Information Bulletins.

43. Form 34.

44. Ibid.

45. Aerial Operations File.

46. Ibid.

47. Ibid.

48. Ibid.

49. Ibid.

50. Ibid.

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1. Memo for General Bissell from Col. Harold B. Wright, A-2, 10th AF, 20 March 1943, in Aerial Operations File.

2. Administrative History of the AAF in India and the Eastern Air Command, Southeast Asia, 12 Feb. 1942-31 May 1945.

3. Ibid.

4. Later in 1943 when the Japanese began serious work on the oil fields at Chauk and Yenangyaung a series of bombing missions were run against those targets.

5. Lt. (j.g.) Julius S. Impellizeri, USNR mine planter specialist, was obtained from the Middle East during the autumn of 1942, and was attached to Tenth Air Force Headquarters.

6. "First Night Mission to Mine Rangoon River," prepared by Maj. Geoffrey H. Norman, A-2 IATF. See also Project: Law. Both in AFSHO files.

7. See sources in n. 6.

8. Ibid.

9. Ibid.

10. Ibid.

11. Ibid.; Form 34.

12. Memo for General Bissell from Col. Harold B. Wright, A-2 10th AF, 20 March 1943.

13. Report #4, AAF CBI Evaluation Board, 15 Dec. 1944.

14. Ibid.

15. Form 34; Intelligence Summaries; Daily Tactical Report.

16. Form 34; Report #4, AAF CBI Evaluation Board, 15 Dec. 1944.

17. Form 34; memo for CG 10th AF from A-3 Operations, 13 March 1943.

18. Form 34.

19. Ibid.

20. Ibid.; Air Attacks on Bridges.

21. See sources in n. 20; Impact, July 1943, pp. 46-47.

22. Report #4, AAF CBI Evaluation Board, 15 Dec. 1944.

23. Ibid.

24. Ibid.; Form 34.

25. The B-24's with front turret were a distinct disappointment in early operations, and over Rangoon on 1 December they suffered heavy losses from frontal attacks. Inexperience in handling the new turrets was given as a possible explanation of the losses.

26. Daily Tactical Report; Intelligence Summary; Form 34.

27. Ibid.

28. "OPTI Section (Plans) Projects AF Units, Rangoon Operations" [OPTI], in AFSHO files. This file contains complete record of planning, execution, and evaluation of the series of missions. Also see report on operation prepared by Capt. Samuel S. Whitt, Assistant A-2 10th AF.

29. Ibid.

30. Ibid.

31. Ibid.

32. Ibid.

33. Ibid.; Form 34.

34. OPTI; Form 34; History of 530th Fighter Bomber Squadron.

35. See sources in n. 34.

36. Ibid.

37. Ibid.

38. Ibid.

39. Ibid.

40. Ibid.; Impact, Feb. 1944, pp. 12-13.

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41. Form 34; OPTI. The crew was rescued by some of Col. Carl Eifler's men who made a 900-mile sea voyage in a launch to effect the rescue.

42. Form 34; OPTI.

43. Ibid.

44. Ibid.

45. Ibid.; Form 34.

46. See sources in n. 45.

47. Ibid.

48. Ibid.

49. Ibid.

50. 10th Air Force Evaluation, Dec. 1942-1943.

51. OPTI.

52. Ibid.

53. Form 34.

54. Ibid.

55. Ibid.

[redacted]

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1. These squadrons were based at Chakulia and Ondal until a base was prepared at Kurmitola. In May the 490th Squadron moved to Kurmitola and could operate from that point without using a staging field. The 22d and 491st Squadrons, however, continued to operate from Chakulia with forward staging areas.

2. Banta and Stauffer, Climate of Burma. See also Chap. I, this study.

3. The 341st Group had never operated together at full strength, as the 11th Squadron was in China when the group was activated. The three squadrons in India generally were below normal strength.

4. Air Attacks on Bridges. Prior to March 1943 the mediums had only two Norden bomb sights and the D-8 sights being used were considered valueless. Ltr., Haynes to Bissell, 31 March 1943.

5. Informational Intelligence Summary, 30 Aug. 1943, p. 10.

6. There was little coordination between RAF and AAF at this time and the American squadrons seemed to turn to river targets only when other targets were closed in. Form 34.

7. Ibid.

8. Report to Committee of Operations Analysts by Subcommittee on Far Eastern Railways, 28 Dec. 1943.

9. Air Objective Folders of Tenth Air Force; memo for General Bissell from Col. Jasper N. Bell, A-3 Operations, 10th AF, 22 April 1943.

10. Ibid.

11. Ibid.

12. See Chap. III.

13. 10th AF Estimate of the Situation, 30 Jan. 1943.

14. Report to Committee of Operations Analysts by Subcommittee on Far Eastern Railways, 28 Dec. 1943.

15. Native agents under command of an American, Col. Carl Eifler, frequently joined Japanese native labor crews and were thus able to provide much valuable intelligence. Regular reports on rolling stock movement aided immeasurably in the campaign against rail transportation.

16. Form 34.

17. Ibid.

18. Ibid.

19. "Employment of Heavy Bombers in the Far East," in EAC Bomber Operations.

20. The two squadrons did not move to China till late December, but they were alerted for the move some weeks earlier and ran practically no combat missions thereafter. Form 34.

21. "Index to Burma Bridges," prepared by 10th AF.

22. See Chap. III.

23. Air Attacks on Bridges.

24. Ibid.

25. Ibid.; Form 34; memo for CG 10th AF from A-3 Operations, 13 March 1943.

26. Air Attacks on Bridges; Form 34. The B-17's were being repaired in preparation for moving them to another theater as they were considered of no use in CBI because of limited range.

27. Air Attacks on Bridges; Form 34.

28. Ibid.

29. Ibid.; Impact, July 1943, pp. 46-49; ibid., Nov. 1943, pp. 10-11.

30. Air Attacks on Bridges; Form 34.

31. John Leroy Christian, Modern Burma, p. 129; Report to Committee of Operations Analysts by Subcommittee on Far Eastern Railways, 28 Dec. 1943.

32. Ibid.

33. Radg., Bissell to Stilwell, 15 Feb. 1943, Aquila F503A; radg., Stilwell to Bissell, 15 Feb. 1943, Ammram 20; memo for Bissell from Air Hq India, 14 Feb. 1943.

34. Form 34; Air Attacks on Bridges.

35. Ibid.; Impact, July 1943, pp. 46-47.

36. Form 34; Air Attacks on Bridges.

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37. Ibid.

38. Ibid.

39. Ibid.

40. Ibid.

41. Ibid.

42. Yank, 10 Feb. 1945, pp. 4-6; History 490th Squadron; Impact, March 1944, pp. 28-29.

43. Ibid.

44. Air Attacks on Bridges.

45. Ibid.

46. Ibid.

47. Yank, 10 Feb. 1945, pp. 4-6; History 490th Squadron; Impact, March 1944, pp. 28-29; Report on Bridge Busting, prepared by 490th Squadron.

48. Air Attacks on Bridges; Form 34.

49. Later reports by the Evaluation Board called attention to this weakness in planning.

[redacted]

BIBLIOGRAPHICAL NOTE

The sources upon which this study has been based are indicated in the notes. Materials have been drawn largely from reports and message files in AFSHO, Classified Files, the Intelligence library, and other files of the several AAF Headquarters' offices.

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