THE GENERAL BOARD

United States Forces, European Theater

THE TACTICAL AIR FORCE IN THE EUROPEAN THEATER OF OPERATIONS

MISSION: Prepare Report and Recommendations on the Employment of a Tactical Air Force in the European Theater.

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APO 408

THE TACTICAL AIR FORCE IN THE EUROPEAN THEATER OF OPERATIONS

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FOREWORD

It is difficult to draw a line between the operations of a Strategical Air Force and a Tactical Air Force. "The gaining of air superiority is the first requirement for success of any major land operation." (Field Manual 100-20). Both Strategical and Tactical Air Forces are charged with gaining and maintaining air superiority. Also, both forces are charged with the disruption of hostile lines of communication. "Although normally employed against...other objectives... when the action is vital and decisive, the Strategic Air Force may be joined with the Tactical Air Force and assigned tactical air force objectives."

This report deals only with the Tactical Air Force in the European Theater, and with the cooperation developed between the Army Group and the Tactical Air Force; and the Army and the Tactical Air Command. Discussion of operations in which the Strategic Air Force joined in the attack of Tactical Air Force objectives may be found in a Board study, "Air Power in the European Theater of Operations." Further references as to details of organization and technique of operations may be found in a report by the Commanding General, Ninth Air Force, to the Commanding General, Army Air Forces, entitled "The Development of Organization and Operating Procedures of the Ninth Air Force in the European Theater of Operations."

Because of a hesitancy on the part of the War Department to publish a Field Manual or Training Circular, (this hesitancy probably caused by varied thought in the different theaters, and a desire for perfection) no publication could be used as a guide or reference during active operations in this theater. No manual existed except Field Manual 31-35 (rendered ineffective by Training Circulars 17 and 30) which had been obsolete for several years. The splendid cooperation between the Tactical Air Commands and the Armies was developed during operations.

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SECTION 1

INTRODUCTION

1. The purpose of this report is to outline briefly those elements of a Tactical Air Force which have resulted in sound and successful employment of a Tactical Air Force in the European Theater. Inasmuch as the Ninth U S Air Force was the only Tactical Air Force in the European Theater of Operations which contained all the component units essential to the proper conduct of tactical air operations in conjunction with large scale ground operations, methods employed in the Ninth Air Force will be the principal basis of this report. Detailed techniques of operations of combat units of a Tactical Air Force are fully covered in reports referred to herein. Close cooperation of air and ground forces, which is the most difficult phase of tactical air operations to achieve, will be stressed. For background, the principles of air operations and the organization of a typical Tactical Air Force will be described.

SECTION 2

PRINCIPLES OF OPERATION

2. General. a. The three principles--flexibility, concentration, and sustainment of effort--were applied to use the Tactical Air Forces effectively. In this operation, as in almost all operations, air action preceded the contact of Ground Forces. The entrance of the ground components was timed on air capabilities. Air success was so important that if delays occurred due to weather, or other causes, ground action on an Army or larger scale was postponed.[1,2]

b. The air-ground team cooperated in many other ways than joint air-ground cooperation on the battlefield or in the immediate battle area. The destruction of hostile air forces in the air and at rest, the retardation of the movement of hostile reserves, and the destruction of lines of communication were just as important a part of air-ground cooperation as were the attacks of enemy units on the battlefield within sight of our forces. Senior Commanders (Army and higher) appreciated this fact, but sometimes there was a tendency on the part of the lower commanders (Division and lower) to feel that "visual" cooperation, the air action that they could see, was all-important. If this were absent they felt that cooperation did not exist.[2]

3. Strategical Air Operations. a. Targets for the Strategic Air Force were the hostile air force, oil industry, airplane and engine industry, important establishments in the economic system of the hostile country, and lines of communication. The destruction of these objectives had a bearing on the ground battle and the cutting of lines of communication had a direct effect. The efforts of the Strategic Air Force and the Tactical Air Force were coordinated by Supreme Headquarters Allied Expeditionary Forces.[3]

b. In the Saint Lo breakthrough, in the Ardennes counteroffensive, and in several other operations, the effort of the Strategic Air Force was joined with that of the Tactical Air Force in air-ground cooperation. The effort was extremely effective. Operations of the Strategic Air Force which are covered in General Board Report entitled "Air Power in the European Theater of Operations" will not be stressed in this report.[3]

4. The Tactical Air Force. a. The role of the Tactical Air Force is to plan and conduct joint operations with ground forces. The cooperation in the theater was excellent at all levels--the Ninth Air Force (and under direct command of the Air Force, the 9th Air Division) with the 12th Army Group and

IX Tactical Air Command with First Army
XIX Tactical Air Command with Third Army
XXIX Tactical Air Command with Ninth Army
XII Tactical Air Command with Seventh Army

Daily conferences were held. The Air Commander was familiar with the ground situation and the ground commanders knew the air's capabilities. Together they decided what was best for the "team."[2]

b. The Strategic Air Forces "broke the back" of the German Air Force early in 1944. With attacks by Strategic Air Forces continued, and the added effort of the Tactical Air Forces applied, the German Air Force was never allowed to recover. Air superiority was gained, maintained and enjoyed. The three priorities specified in Field Manual 100-20 were carefully adhered to and proved to be sound. After air supremacy was attained, and in preparation for the invasion, the emphasis of air attack was shifted to lines of communication, coastal defenses and V-1 installations. Again the Strategic Air Force furnished effective assistance. Next came participation in the battle proper. The Tactical Air Force was particularly effective in preparing breakthroughs of our ground forces and in rapid advances. Reconnaissance and fighter bomber units furnished for the air and the ground commanders information on the forward, fast moving ground units. Striking force units knocked out some points of opposition and warned the combat teams and commands of others. Air to ground communications, thorough understanding, and well applied fire power often allowed the "team" to proceed at a rate greater than a peacetime march. Mutual trust and confidence was of a high order. Each Tactical Air Command thought its Army was the outstanding one and each Army was certain that it had the best Tactical Air Command.

SECTION 3

COMPOSITION AND CONTROL

5. Control. The Supreme Commander, Allied Expeditionary Forces, exercised command over all tactical air forces. The Deputy Supreme Commander exercised control for the Supreme Commander; he was assisted by an Air Staff. US Tactical Air Forces were under administrative control of the Commanding General, US Strategic Air Forces in Europe. The Ninth Air Force, the largest US Tactical Air Force, cooperated with the 12th Army Group, while the First Tactical Air Force (Provisional) cooperated with the 6th Army Group. The relationships between the headquarters of the air forces and the army groups was one of mutual cooperation. The advanced headquarters of the air and ground units were invariably located in close proximity to each other. The commanders of the army groups commanded their ground force units and the commanders of the air forces commanded and controlled their assigned or attached air force units.[2]

6. Organization. The Ninth Air Force consisted of the 9th Air Division (Medium Bombers), the IX, XIX, and XXIX Tactical Air Commands, the IX Air Force Service Command, the IX Engineer Command and the IX Air

Defense Command. These major components made up the team for effective tactical control, supply, maintenance, construction of airfields, technical facilities, security, and striking power of the air force. The First Tactical Air Force (Provisional) consisted of the XII Tactical Air Command, the U S 42nd Bomb Wing (Medium Bombers), the First French Air Force, and several ancillary units which were supplemented and assisted by service units of the Ninth Air Force.[2,4]

SECTION 4

ORGANIZATION AND CONTROL OF MAJOR COMPONENTS

7. Medium Bombardment Units. The 9th Air Division (Medium Bombers), which was originally the IX Bomber Command, assigned to the Ninth Air Force, was the only bombardment division in the U S Tactical Air Forces. It consisted of a Headquarters and Headquarters Squadron and three combat wings. two wings of medium bombers (four groups each) and one wing of light bombers (three groups). The 42nd Bombardment Wing (Medium) consisted of four medium bomb groups and was assigned to the First Tactical Air Force (Provisional). This smaller force operated and was controlled in much the same manner as the 9th Air Division. The latter operated directly under the Commanding General, Ninth Air Force, in cooperation with the 12th Army Group as a whole--as opposed to the allocation of a portion of the force (such as a wing) for cooperation with each army. Thus the Commanding General, Ninth Air Force, could, and very skillfully did, operate this force in varied roles, selecting the one most likely to have the best effect on the existing overall tactical situation. Control channels and facilities were provided and maintained so that any portion of the total air division force could be massed on critical objectives anywhere in the tactical air area.[2]

Typical medium and light bomber objectives were interdiction of battle areas by destruction of lines of communication, destruction of enemy strong points, destruction of enemy fuel and ammunition dumps, and saturation carpet bombing of enemy front line positions in preparation for advances of friendly forces. In several instances the destruction of enemy lines of communication by bombers caused road jams and permitted fighter bombers of the tactical air commands to destroy very large quantities of enemy material. This was particularly true during the German retreat after the unsuccessful Ardennes counteroffensive. This fact, that the work of bombers and tactical air commands complement each other, points to the desirability of always including medium bomber type units in a tactical air force. Further, the successful use of Ninth Tactical Air Force bombers to influence the overall tactical situation, as opposed to assigning medium bomber units to tactical air commands for cooperation with each army, indicates that a tactical bomber force should always operate as did the 9th Air Division, directly under the tactical air force commander.[2,3]

8. Tactical Air Commands. Each of the tactical air commands that cooperated with the armies consisted of a Headquarters and Headquarters Squadron, a varying number of fighter bomber groups, a reconnaissance group and several heterogeneous units for communications, air warning and control purposes. Constant experimentation and reorganization during the battle finally reduced these control units into an efficient organization which resembled the Tactical Control Group. Upon the recommendation of the Commanding General, Ninth Air Force, Tactical Control Groups were authorized for the Tactical Air Commands after V-E Day. The Tactical Control Group consisted of a tactical control squadron, two radar control squadrons, a communications squadron and a radio intelligence squadron.

A tactical air command was allocated to cooperate with each army. Fighter bomber groups were assigned to Tactical Air Commands in accordance with the existing tactical demands. The control of fighter bomber groups was exercised by the commander of the tactical air command. The air force commander issued broad directives for the execution of priority one, two and three type missions, indicating the area of responsibility of each

tactical air command and usually the size force to be employed. This was based on the tactical situation and the scale of intended effort by the armies as indicated by the army group commander. The commander of the tactical air command prepared his air plan by allocating the necessary force to missions as required by directives from the air force commander and his own local tactical air situation. Close cooperation missions resulted from joint planning by commanders of the tactical air command and the army. The methods and facilities employed to achieve close cooperation will be discussed in the next section of this report. Request for air effort beyond the resources of the tactical air command (medium and heavy bombers or fighter bombers from another tactical air command) were submitted to the tactical air force headquarters by the commander of the tactical air command.[2]

9. Air Force Service Command. An air force service command is organized and equipped to provide the supply, service and maintenance of all air force units. The IX Air Force Service Command was assigned to the Ninth Air Force in the United Kingdom prior to D-Day. The growth of this command kept pace with the increased needs of the air force. Its organization was changed as units were moved to the Continent. In July 1944, the Service Command had 14 air depot groups and 23 service groups assigned. Since a service command supporting a tactical air force must be able to provide service to units which are constantly moving and which have varied missions providing flexibility to the air force, the organization of such a service command must be specialized. Service groups in the Ninth Air Force were assigned to the air depot groups. This gave the Commanding General of the Service Command the necessary flexibility to enable him efficiently to provide supply and maintenance to tactical units in accordance with the overall plan of the air force commander.

With the activation of the First Tactical Air Force (Provisional), an air depot group and two service groups were transferred from the Ninth Air Force to the First Tactical Air Force (Provisional). The Headquarters of the IX Air Force Service Command furnished the necessary administrative facilities for First Tactical Air Force service units.[2,3]

10. Aviation Engineer Command. The IX Engineer Command was the only major command of aviation engineers in the Theater. Since the bulk of initial airfield construction on the Continent was to be for Ninth Air Force units, this command was assigned to the Ninth Air Force prior to D-Day. It consisted of a headquarters, four regiments of aviation engineers and three aviation engineer battalions under one commander who was directly responsible to the air force commander. The construction was accomplished in accordance with priorities established to carry out the air force plan of operations. In February 1945, when requirements for airdrome construction and maintenance for agencies and units other than the Ninth Air Force had grown to considerable proportions, the Engineer Command was transferred from the Ninth Air Force to Headquarters, U S Strategic Air Forces in Europe. This organization permitted allocation of airfield construction and maintenance units to be made in accordance with the overall requirements on the Continent.[2]

11. Air Defense Command. The IX Air Defense Command was activated on 30 March 1944 and assigned to the Ninth Air Force. The Commanding General, Ninth Air Force, was first charged with the responsibility of providing air defense for the initial landings and Ninth Air Force bases in the United Kingdom and thereafter to air force facilities and other vital installations in rear of the army areas. On D-Day the IX Air Defense Command consisted of a headquarters and two anti-aircraft artillery brigade headquarters with 11 attached anti-aircraft artillery battalions.[3] Immediately after D-Day, two night fighter squadrons and the 71st Fighter Wing were assigned to the command, while the majority of anti-aircraft artillery units was released from attachment in order that they might work directly with the armies while the lodgement area

consisted only of army areas. As the army areas were moved forward across France, into Belgium, Luxembourg and Germany, thus increasing the number of air force installations and air and ground vital areas in rear of the army areas, anti-aircraft artillery gun battalions and automatic weapons battalions were re-attached to the IX Air Defense Command. Its size grew to include seven anti-aircraft brigade headquarters, nine group headquarters, 16 gun battalions, 19 automatic weapons battalions and three searchlight battalions. As the requirements for overall defense against hostile aircraft decreased in the late summer of 1944, the night fighter squadrons and 71st Fighter Wing were reassigned to the tactical air commands.

In October, 1944 two brigades were assigned a special task, the defense of the port area of Antwerp against V-1 weapons. These brigades remained on this duty through V-E Day. One brigade was deployed in the rear area for the air defense of Communications Zone and Air Force Service Command vital installations. A brigade was assigned the task of defending the airdromes and installations of each of the major tactical commands of the Ninth Air Force, namely the 9th Air Division, IX, XIX, and XXIX Tactical Air Commands. As procedure for air warning and control of anti-aircraft fire developed, the anti-aircraft artillery brigades with each tactical air command were placed under the operational control of the Commanding Generals of the tactical air commands. The Commanding General of the IX Air Defense Command retained the responsibility of air defense of other air force installations and theater vital areas in the United States sector outside the areas of responsibility of the tactical air commands and armies. This method of control within the Ninth Air Force provided the most efficient air defense with the means available of areas for which the Commanding General, Ninth Air Force, was responsible.[2]

SECTION 5

ARMY - TACTICAL AIR COOPERATION

12. General. The close cooperation air mission with ground armies is the most difficult type of tactical air operation to execute properly. Various agencies, procedures and specialized equipment and personnel have been developed at different times since the conception of direct participation of aircraft in the battlefield. The soundest of these aids to army-air cooperation were tried and further developed in the European Theater. Although air-ground liaison and methods of control of tactical aircraft are discussed in other Board studies, some of the principal features of army-air cooperation merit brief description in this report.[2]

Cooperation started with the commanders themselves. Cooperating army group and air force commanders located their command posts in the same vicinity and required their staffs to work together; cooperating tactical air command and army commanders did the same. The methods and agencies utilized to obtain coordination are described below; they were simply instruments by means of which the plans of the commanders were implemented.[2]

13. Ground Liaison Officers. The army commander provided ground officers for duty as ground liaison officers (GLO) with the fighter group headquarters, and with tactical reconnaissance group and squadron headquarters. These officers came from combat units and had had combat experience. The principal duties of these officers were to:

a. Promote understanding of mutual problems, cooperative spirit and good feeling between ground and air forces;

b. Maintain an operations map showing disposition of friendly and enemy forces with the bomb line prominently displayed;

c. Inform the air units of the intentions and plans of the ground units;

d. Keep air units informed of the progress of the ground battle and changes in the location of units,

e. Inform the air units concerning both friendly and hostile ground organizations, tactics and equipment;

f. Assist in briefing air combat crews;

g. Assist in interrogating air combat crews and interpreting and forwarding the data reported;

h. Provide detailed information concerning requests for air photographs, and visual reconnaissance.[2]

14. Air-Ground Liaison Section. In Ninth Air Force headquarters and each of its tactical air commands there were ground force sub-sections of G-2 and G-3 of the army group or army staff; and at the tactical air commands an artillery liaison sub-section from the Army Artillery section. These were designated as G-2 (Air), G-3 (Air), and artillery air sub-sections. In some of the tactical air commands these various army sub-sections were grouped into an air-ground liaison section with the Army G-3 (Air) or the senior representative of the army commander. The functions and methods of operation of these air-ground liaison sub-sections at the air forces--army group level were similar to those of the sub-sections at tactical air command--army level. In the tactical air command the functions of these sub-sections were as follows:

a. The duties of the G-3 (Air) were to:

(1) Receive, analyze and process information from the G-3 (Air) at Corps and Division and from the Ground Liaison Officers (GLO) at the air force groups;

(2) Approve or disapprove for the army commander (at an air conference) air requests received by A-3 Combat Operations from the Corps and Division Commanders through the tactical air command officers;

(3) Furnish bomb line and bomb line changes to GLO's at air units;

(4) Study operational directives of army and tactical air command;

(5) Attend conferences of air and ground commanders and relay the information gained to GLO's at the air units;

(6) Maintain ground situation map in combat operations.

b. The duties of the G-2 (Air) were to:

(1) Consolidate the requests for visual and photographic reconnaissance missions originating with the Division and Corps G-2 (Air) and forwarded to him through army communication channels for approval. Upon receipt of these requests he indicated approval or disapproval, and presented them to A-3 Combat Operations for execution;

(2) Inform the G-2 (Air) of the Corps and Division of action taken upon these requests;

(3) Supply to A-3 Combat Operations (through A-2) the target information obtained from army sources;

(4) Inform army and subordinate army units of results of reconnaissance missions.

c. Artillery Liaison Officer - The Artillery Liaison Officer consolidated the requests from Corps and Army artillery units for night and day artillery adjustment (Arty/R missions). These requests reached him through army communication channels and were presented by him to the A-3 Combat Operations Officer.[2]

The 6th Army Group and Seventh Army did not place their G-2 or G-3 air sub-section in the First Tactical Air Force or XII Tactical Air Command Headquarters. Liaison between army group--tactical air force and army--tactical air command headquarters was maintained by placing liaison officers from G-2 or G-3 (Air) in the respective air headquarters.

15. Corps and Division G-3 (Air). The G-3 (Air) at Corps and Division headquarters was responsible for the preparation of requests for air missions in cooperation with his unit. He also was responsible for maintaining information on front line positions and bomb line changes. He furnished this information to army G-3 (Air) at tactical air command headquarters. He was responsible for liaison with the artillery fire direction center of his unit to insure the proper and timely marking of targets at the request of the tactical air command officer. He was responsible for providing counter flak fire when desired.[2]

16. Tactical Air Command Officers (TACO). Tactical air commanders selected air force officers to serve as tactical air command officers (TACO) with the Corps and Division commanders. These officers were pilots with sufficient rank and combat experience to discharge their duties properly. The principal duties of the Tactical Air Command Officers were to:

a. Advise the ground commander on all air matters such as the capabilities and limitations of aircraft, and the suitability of targets for air attack;

b. Inform the ground commander of the air situation in the area both friendly and hostile;

c. Indicate approval or disapproval on all requests for air cooperation and forward all requests to A-3 Combat Operations;

d. Act as the direct representative of the tactical air commander, and as such, to exercise operational supervision over air units passed to his control. He was responsible for the most effective employment of air units on suitable targets. If there were not suitable targets, he released the air units to the tactical air command,

e. Inform appropriate ground unit commander concerning action taken upon request for air cooperation, and about operations conducted by air units. He also informed the appropriate ground unit commander of the results of air action.[2]

17. Communications. The army group and tactical air force commanders pooled signal construction units and jointly maintained communications between their main and advanced headquarters, between the air force and ground force echelons of the headquarters, and to the headquarters of major subordinate air and ground units. It was the joint responsibility of the army commander and tactical air commander to maintain signal communications between their respective headquarters. Existing air force communications were made available to the ground liaison officers (GLO's) from the fields to the air-ground liaison section at tactical air command

headquarters. Likewise, existing ground force communications facilities were made available to tactical air command officers (TACO) from the division and corps to tactical air command headquarters.

Air and ground commanders were responsible jointly for technical instructions (Signal Operating Instructions) for the coordination of signal communications in joint operations. Signal instructions were simple of execution, based upon equipment available and consistent with prior training and experience of air and ground personnel.

Effective visual communication between air and ground was found impracticable. This was partly due to the use of high performance type fighter and bomber aircraft. Panels (except cerise identification), and drop and pick up messages were not practicable and were not used except with liaison aircraft. Colored smoke to mark friendly units or enemy targets and the use of cerise panels for friendly identification were effective.[2]

18. Liaison Aviation. All army air force liaison squadrons were assigned to the tactical air force. Liaison squadrons of the Ninth Air Force were attached for operational control to Headquarters, European Theater of Operations United States Army, Supreme Headquarters Allied Expeditionary Forces and 12th Army Group Headquarters. Of those squadrons attached to 12th Army Group the Commanding General further attached one to each army for general liaison, messenger and courier service. The army was given operational control of this squadron. The commander of the tactical air command assisted the squadron by furnishing technical information and by technical inspection. The army was charged with furnishing signal communications, suitable flight strips, additional guards when necessary, and messing and quartering facilities.[2]

SECTION 6

OPERATIONS OF THE TACTICAL AIR FORCE

19. General. All United States Army Air Forces operating in the European Theater of Operations adhered to the basic principle that air power can contribute most effectively to the overall success of military operations by first, gaining superiority over the enemy air; second, disrupting the enemy lines of communications; and third, by direct participation in the actual land battle.[3,6].

20. Air Superiority. While the Ninth Tactical Air Force participated in the campaign to attain air superiority over the German Air Force, its contribution was relatively small compared to that of the Allied Strategic Air Forces. On 16 July 1943, medium bombers, then assigned to the VIII Air Suppor t Command but to become a part of the Ninth Tactical Air Force in October 1943, began operations against the German Air Force by attacking those enemy air bases nearest the Channel and engaging hostile aircraft in the air whenever opposition was met. Such attacks remained first priority for the medium bombers until supplanted by V-1 launching sites in December 1943. As a result of this campaign, the German Air Force was driven inland from the coastal airdromes in Holland, Belgium and Northern France. In addition, the German Air Force lost many aircraft on the ground and in the air, and suffered considerable damage to other necessary equipment and installations. In May of 1944, a more intensive campaign against German Air Force facilities in Holland, Belgium and France was initiated with the intent of depriving the German Air Force of the use of all airfields within a radius of 100 miles of the area selected for invasion. This campaign was so successful that by the time of the invasion only five or six German Air Force fighter squadrons were still based in France, although the strength maintained in the West was roughly 1000 fighter aircraft.[3,6].

Immediately after invasion, additional German fighters were moved to France, but airfields had been so badly damaged that fighters were based at a considerable distance from the front and, unlike Allied fighters, could spend only a small time in the battle area. The German fighters fought with determination in the first few days after invasion, but ten days of battle reduced their number to an estimated total of 400 in the West, and these were for the most past stationed in Germany. From D + 15 onward, Allied air superiority was so great that the Luftwaffe was not a serious threat to Allied military operations.[3]

It must be emphasized that although tactical air forces contributed to the attainment of air superiority, strategic air force effort was more decisive. The huge toll of German fighters shot down in the air and destroyed on the ground by Allied fighters providing escort for strategic bombers was a large contribution. However, strategic attacks against the industries producing and sustaining the operation of the German Air Force, in particular five attacks (with attendant German fighter loss in the air) made by the Eighth Air Force against such targets deep in Germany, during February of 1944, were the decisive factors.

Once the Allies had unquestionably attained air superiority, no further air campaigns aimed solely at the German Air Force were required. Allied air superiority was maintained by the attrition inflicted on the Germans by Allied fighter bombers operating in the tactical areas, Allied long range fighters operating in the strategic areas and attacks on airdromes by medium and heavy bombers.[3]

On 1 January 1945, the German Air Force made its only mass attack of the war on Allied airdromes. This attack cost the Germans more than 200 aircraft and many experienced pilots, and thereafter German Air Force opposition again became negligible. By March and April, opposition in the air was so non-aggressive that Allied fighters and fighter bombers not only shot down increasingly large numbers of German Air Force fighters, but roamed almost at will over Germany seeking out and destroying innumerable aircraft on the ground. In effect, the German Air Forces had been destroyed.[3]

21. Disruption of Enemy Lines of Communication. Disruption of enemy lines of communication has been credited by German Commanders as one of the most important factors contributing to their defeat in the West. These commanders have testified that in many cases, maneuver in the battle area was so restricted that additional troops in the areas would have been a liability rather than an asset. In other cases, notably the Ardennes--Eifel campaign, and the battle for the Remagen bridgehead, disruption of enemy lines of communication prevented the movement of troops and supplies into the areas which would have made possible effective opposition to our forces.[3,6]

Heavy bombers of the Strategic Air Forces at times participated in attacks on enemy lines of communication. However, this phase of the air campaign was primarily the responsibility of the Tactical Air Forces. It was accomplished by attacks on bridges, at which the 9th Bombardment Division became remarkably proficient; attacks on rail and marshalling yards; attacks to cut rail lines in a number of places, making it difficult for repair crews to reach and repair all the cuts; and the devastating attacks made by fighter bombers on all German equipment moving on roads and railroads in the vicinity of the battle area during daylight. A further contribution was made by the fighters of the Eighth Air Force, who, beginning early in 1944, destroyed and damaged German rail and motor transport equipment as they returned from escorting the heavy bombers into Germany.[2,4]

The attack against German lines of communication never let up. There were several special plans drawn and executed to isolate particular areas for a specific purpose. The first such specific plan was designed to:

a. Impede the movement of German forces into Normandy;

b. Hinder the movement of German forces within Normandy, particularly in the battle area;

c. Impede the withdrawal of defeated German forces from Normandy.

This campaign was begun in May 1944, by attacks to destroy all bridges over the Seine River from Le Havre to Paris. The Loire River bridges were next cut to impede movement of troops from the south. Rail lines through the so-called Paris-Orleans Gap were cut and kept cut as part of the plan. When this was accomplished attacks were undertaken against rail lines within the area bounded by the Seine, Paris-Orleans Gap, Loire River. Finally, Allied tactical aircraft, particularly fighter bombers, harassed German movements within this area to such an extent that movement during the daytime was prohibitive. When the Germans were finally forced to withdraw during the daytime to prevent complete destruction of their Armies in Normandy, the resultant loss in equipment was so great that it was necessary for them to abandon their plan to establish a second defensive line North and East of Paris. Similar campaigns planned and executed were:

Isolation of the Ardennes during the German counteroffensive in December 1944;

Isolation of the Remagen Bridgehead;

Isolation of the Ruhr.

Interrogation of German high commanders after capture indicated all were completely successful.[3]

22. Direct Participation on the Battlefield. The percentage of air power (strategical and tactical) allotted to close cooperation missions was determined by the tactical situation.

The tactical air command's fighter bombers, whose primary mission was cooperation with a particular army, participated in this type mission to a larger extent than any other command. Specifically, 36 per cent of all fighter bomber sorties was close cooperation on the battlefield. Medium bombers of the Ninth Tactical Air Force, operating in cooperation with all armies, flew 20 per cent of their total sorties on priority three missions. Strategic Air Forces were made available for close cooperation in connection with special operations. During 1944, approximately eight per cent of the effort of the Eighth Air Force was tactically employed. As the war approached its end and the strategic objectives of the Eighth Air Force had been attained, most of its effort was tactically employed. The tremendous bomb weight which the heavy bombers applied when operating in a tactical role, resulted in great destruction of enemy material and had a stunning and demoralizing effect on enemy personnel. This materially aided the advance of our ground troops if the advance followed closely after the end of the bombing without permitting the enemy time to recover from its demoralizing effect.[5,3,6]

In preparation for the major breakthroughs at Saint Lo and Eschweiler, heavy bombers, medium bombers and fighter bombers all operated in close cooperation on the battlefield. The greatest concentration employed was at Saint Lo, and resulted in complete demoralization of the enemy. This type preparation for a breakthrough was new and the ground forces, not knowing what to expect, advanced slowly and cautiously. This permitted the enemy to recover to some extent from the demoralization caused by the bombing and to offer moderate resistance to the advance of our Ground Forces. However, a breakthrough was achieved and an advance was begun which did not end until our forces became so extended that they were forced to stop at the Siegfried Line.[3,6]

The Eschweiler attack was not as heavy as planned because of adverse weather conditions. However, it did achieve an initial disorganization of hostile defenses, caught some enemy troops at the time of their relief, and inflicted heavy losses on some enemy units. In spite of this, the advance of the Ground Forces was slow and against determined and costly resistance and it was two or three days before the enemy's defenses were pierced.

It must be realized that the advances made by our Ground Forces after these attacks did not represent the most efficient exploitation of the demoralization created in the enemy defenses by the bombing. This was because this kind of preparation was new, and neither the ground nor the air realized the extent to which the enemy defenses would be disrupted. Further, because of fear of inflicting unduly large casualties on our own troops, the bombing was farther in advance of our troops than is desirable. The accuracy of the bombing attained in the Eschweiler attack by the use of special aids to indicate the position of friendly front lines demonstrated that saturation bombing can be done sufficiently close to friendly front lines to enable our troops to make an immediate follow up. Further, experience has demonstrated that if ground troops advance immediately after this type of bombing, they will encounter disrupted enemy defenses and demoralized enemy personnel (described by a Senior Allied Commander after Saint Lo as "bomb-happy") incapable of offering effective organized resistance.

The massing bombers for saturation bombing attacks such as described above is extremely costly in terms of effect diverted from other targets. Therefore, the Supreme Commander must always very carefully examine his ability to pay this price and the desirability of making such payment. Two rules are here advocated. The first is that such attacks be made only after decision by the Supreme Commander. The second, that such decision be made only if "campaign winning" as opposed to "battle winning" results are expected.

Other instances when medium and, less frequently, heavy bombers gave direct support on the battlefield were on a smaller scale. Before the final assault on Cherbourg, medium bombers attacked both the permanent fortifications of the city and the field fortifications constructed around the city by the Germans. During the battle for the capture of Brest both medium and heavy bombers attacked the permanent and field fortifications of the city. The fortress island of Saint Malo was repeatedly bombed by mediums prior to its capitulation. The forts in the vicinity of Metz were also subject to medium and heavy bomber attacks in direct support of Third Army units. The Siegfried Line defenses of concrete pill boxes, concrete dragon's teeth and light field fortifications were also attacked by mediums on 2 October 1944. These bombings were effective against field fortifications but in general were ineffective against the heavily constructed forts at Cherbourg, Brest, Saint Malo and Metz. It is not considered that the one bombing of the Siegfried Line constituted a test of the medium bombers' ability to clear a path through such an obstruction. In accordance with the ground commanders desires, only five and one half groups of medium bombers were employed in this operation and they bombed individual and scattered strong points over a large area. It is believed that a concentrated carpet type bombing laid down by a force twice the size employed would have achieved the desired effect.[3,6]

Medium bombers assisted the Ground Forces in assaulting fortified areas notably in the assault of the Foret de Haye which was a well fortified and heavily wooded area west of Nancy. Fighter bombers were first used in an attempt to neutralize and destroy this enemy position but due to the density of the woods, the enemy had excellent concealment and fighter bomber sorties largely resulted in the report of no results observed.

On 10 September five groups of B-26's and two groups of A-20's attacked the forest with 100 pound and 500 pound General Purpose bombs and fragmentation bombs. The Ground Forces immediately made a considerable advance in contrast to prior failure to advance into the forest. On 12 September a second attack on the forest was delivered by slightly more than three groups of B-26's dropping fragmentation and 100 pound General Purpose bombs close in front of our ground troops. This attack produced decisive results. XII Corps troops went into the woods without opposition, and found many German troops dead and wounded and others too dazed to offer resistance. By 15 September, three days after the bombing, our troops had captured Nancy.[2]

Close cooperation on the battlefield by fighter bombers has so far been dealt with sketchily. This is because the use of fighter bombers in close cooperation on the battlefield was normal in contrast to the intermittant use of heavies and mediums in this manner to influence a particular ground action. Fighter bombers cooperated on the battlefield by attacking enemy strong points, by pinning down enemy movements, by attacking hostile batteries, tanks and motor vehicles, and by providing armored column cover for our own forces moving into battle or pursuing a retreating enemy. Fighter bombers were particularly effective at the time of the German counteroffensive in December 1944, and during the subsequent Battle of the Bulge.

At the beginning of the offensive on 17 and 18 December 1944, a German armored column was discovered moving west from Stavelot. Later interrogation of prisoners of war revealed that the mission of this column was to capture American stores in Liege and force a withdrawal of the entire left of the Allied line. Fighter bombers operating at very low altitudes and under conditions of extremely poor visibility made nine bombing and strafing attacks on this column, burning or putting out of action over 150 vehicles. The mission of the column was defeated by fighter bombers alone, and the initial force of the German attack was definitely blunted. During the successive days of the Bulge battle, fighter bombers rendered true close cooperation on the battlefield by beating down the enemy's bid for temporary air superiority in the area, and rendering the German Air Force generally ineffective except for a small nuisance value after their decisive defeat on 22 December which was the first day of good weather during the battle. An instance which might not be termed "true close cooperation" on the battlefield but which resulted in great destruction to German personnel and equipment and weakened the enemy's potential during subsequent campaigns, was accomplished by the combined efforts of the medium bombers and fighter bombers during the German retreat from the Ardennes on 21 and 22 January 1945. On the morning of 21 January, only the two bridges at Dasburg and Gemund were passable on roads leading out of the Ardennes. Early on this morning, a medium bombing attack, made by instruments through the overcast, against the bridge at Dasburg effectively blocked this bridge. Later in the day the fog and mist lifted to some extent and a retreating German column was discovered blocked on the road leading to the Dasburg bridge. The fighter bombers then attacked the "jammed up" columns--the destruction and casualties were the greatest achieved in any one day. A second column was discovered retreating along the road to the Gemund bridge. Fighter bombers attacked these columns in force with both bombs and machine gun fire. These attacks were repeated on 22 January. General Beyerlein, Commander of the Panzer Lehr Division, also retreating from the Ardennes, states on interrogation that he saw several hundred vehicles of all kinds and from many units wrecked and burned in the two columns leading to the two bridges.[2]

In assessing the Allied Air's close cooperation with Allied ground forces the German commanders generally felt that heavy carpet type bombing in the main line of resistance was the type air action most detrimental

to "German ability to defend a position." Ground controlled front line fighter bomber operations were considered by German commanders more significant in weakening their troop's morale than in actual destruction of guns or in killing men. This indicated that constant daily use of fighter bombers in the front line area, while detrimental to hostile morale, is not particularly effective in destroying artillery or producing casualties. The same commanders felt that fighter bombers were "crucially effective" in operating against forward supply lines. Frequently, although supplies and replacements were badly needed, no movement could be risked during daylight. Fighter bombers made movement into and within the main line of resistance prohibitively costly during daylight. In the few instances when, in desperation, such moves were attempted, the Germans suffered tremendous losses in material at the hands of the fighter bombers. This indicates that normally the effort of fighter bombers should be directed against targets beyond the range of artillery. At times fighter bombers may be used profitably to augment attack on targets within artillery range. Such objectives may be heavy columns on roads or enemy concentrations at critical points in fast moving situations. Fighter bomber attacks against these targets promise decisive results and should be employed to remove enemy resistance threatening the rapid advance of our troops and to complete the destruction of the enemy. In the European Campaign they were effectively and properly employed in this manner when providing cover to advancing armored columns.[2]

23. Reconnaissance. The primary mission of reconnaissance units in the Tactical Air Forces in the European Theater was to procure, by aerial visual and photographic means, information of value to the air and ground units at all echelons of command for the planning, execution and assessing of tactical operations against the enemy. The basic unit available for the accomplishment of this mission was the composite reconnaissance group consisting of two tactical reconnaissance squadrons and one photographic reconnaissance squadron. One such group was assigned to each tactical air command and late in the campaign, as it became available, one additional group was operated directly by the Ninth Air Force Headquarters. Reconnaissance missions produced results in one or more of the following forms:

a. Reports of Visual Observation. These reports by specially trained pilots were normally made during interrogation at the completion of a mission, but in cases of urgency pilots reported by air/ground radio during the mission. These pilots were also capable of adjusting artillery fire by visual observation of artillery bursts. Adjustments was accomplished by means of air/ground radio contact between the pilot observer and the artillery fire direction center.

b. Photographs. The reconnaissance aircraft were equipped with a variety of cameras ranging in focal lengths from six to forty inches in various oblique and vertical installations. Vertical views were available in scales ranging from 1/3,000 to 1/70,000 covering pin-points, strips, and extensive areas. The normal scale for intelligence photography was 1/10,000. Oblique views of numerous types from various altitudes proved of great value for artillery adjustment by liaison aircraft, and for briefing ground and air units for direct operations against the enemy. Oblique views were occasionally taken from very low altitudes for study of details indescernible in vertical cover.

c. Photographic Interpretation Reports. These reports were prepared by both air force and ground force interpreters. Details of interpretation are covered in other Board reports.[7]

24. Reproduction of Aerial Photographs. Army Regulations 300-15 state that the reproduction of aerial photographs for ground force use is the responsibility of the ground commander. This was not done in

this theater since the Army Engineers were not equipped to furnish quantity reproduction. The Air Forces performed this work. However, it is recommended that the Ground Forces be responsible for the quantity reproduction and distribution of Ground force requirements as prescribed in Army Regulations. The Air Commander will furnish duplicate negatives as required.

SECTION 7

CONCLUSIONS AND RECOMMENDATIONS

25. Conclusions. It is concluded that:

a. The general principles of employment of tactical air power as prescribed in Field Manual 100-20 were followed in the European Theater of Operations and were proved sound.

b. The functional organization of the Ninth Tactical Air Force and assigned major subordinate units, as developed during the campaign was proper and suitable for employment of a tactical air force.

c. The problem of air defense was not solved in the European Theater of Operations. Members of the Board do not favor the method used in the past campaign in the European Theater, i.e., that of charging the Army commanders with the responsibility for anti-aircraft artillery defense of their respective Army areas, and of charging the Tactical Air Force commander with the responsibility of air defense of all areas in rear of the Army areas (Army Group Rear Air Boundry). Coordination of the fighter aircraft and anti-aircraft artillery defense of the Army areas was the joint responsibility of the Army commander and the commander of the associated Tactical Air Command. The ground force members feel that divisions, corps and armies should be responsible for the anti-aircraft artillery protection of their own areas through the medium of organic anti-aircraft artillery units and that the anti-aircraft artillery protection of all installations in rear of army rear boundaries be a function of the commander of an anti-aircraft artillery command who is responsible directly to the Theater Supreme Commander. This commander would maintain close liaison with the Tactical Air Force Commander for fighter aircraft operations. The Air Force members of the Board feel that most effective anti-aircraft defense would be achieved by charging the responsibility of air defense of the whole area (including Army areas) to one individual, the Tactical Air Force commander, and placing all anti-aircraft artillery units under Air Force control except those automatic weapons units required for close defense of the Armies.

d. The centralization of command of all Aviation Engineer units under one Engineer Command, directly responsible to the Air Force Commander was the only method of control which could and did enable the construction, rehabilitation and maintenance of airfields to be performed in accordance with the overall requirements of the Air Force Commander in his area of responsibility.

e. The functional organization of the tactical air commands of the Ninth Air Force as developed during the campaign was proper and suitable for employment of tactical control units and air striking units.

f. The organization and control of the 9th Air Division as used by the Ninth Air Force gave the Tactical Air Force Commander the necessary flexibility of operations to enable him to employ any portion of the medium bomber force on critical objectives in any part of the tactical air area.

g. The employment of air power in carpet or saturation bombing directly in front of ground troops should be guided by the following rules:

(1) Such attacks should be made only after decision by the Supreme Commander;

(2) Decision to so employ heavy bombers should be made only if "campaign winning" as opposed to "battle winning" results are expected.

h. Success of Ground Forces in operations involving "carpet" or "saturation" bombing in close support is directly proportioned to speed with which the ground troops enter the area after the bombing.

i. There is a requirement for up-to-date field manuals and training circulars covering the methods and technique of operations of a tactical air force and all assigned units, including methods of achieving army-air cooperation, based on principles proved sound in the European Theater.

26. Recommendations. It is recommended that:

a. The general principles of employment of tactical air forces as prescribed in Field Manual 100-20 be continued in effect.

b. The organization of a tactical air force based on that employed by the Ninth Air Force in the European Theater be made standard. Though the number of striking force units may be changed to meet various situations, the sound framework of the organization should be continued.

c. The problem of fixing responsibility for air defense in a theater be further studied with a view to determining the most efficient means of achieving air defense in a theater of operations.

d. The principles of organization, command and control of Aviation Engineer units as practiced in the European Theater be made standard.

e. The organization of tactical air commands developed by the Ninth Air Force in the European Theater be made standard for tactical air operations.

f. The medium bomber units of a tactical air force be organized into an Air Division (medium Bomb) and that command and control of this force be exercised directly by the Tactical Air Force Commander through the commander of the Air Division.

g. Existing Field Manuals and Training Circulars covering operations of a tactical air force and all assigned units be revised to include principles proves sound and to exclude those proves unsound; and that where necessary new manuals be written to cover new principles evolved during this past war. Such revisions should include manuals and circulars covering methods of achieving Army-Air cooperation. Training Circular No. 17 (effective only until 20 April 1946), Training Circular No. 30 (effective only until 19 June 1946) and a proposed Field Manual "The Tactical Air Command and the Army--Air Ground Cooperation" (submitted through channels by Commanding General, Ninth Air Force) could be combined and consolidated into a Field Manual. Such action should be taken as soon as possible since after April and June of 1946, there will be no published guide or directive for Army-Air cooperation--a battle winning factor of the first importance.

Bibliography

1. Field Manual 100-20 - "Command and Employment of Air Power."

2. Report by Commanding General, Ninth Air Force - "Development of Organization and Operating Procedures of the Ninth Air Force in the European Theater of Operations."

3. United States Air Forces in Europe Report - "The Contribution of Air Power to the Defeat of Germany."

4. Air Staff, Supreme Headquarters Allied Expeditionary Forces - "Report on Allied Air Operations, 1 October 1944 - 9 May 1945."

5. Statistical Summary of Ninth Air Force Operations from 16 October 1943 - 8 May 1945.

6. 12th Army Group Air Effects Committed Report - "Effect of Air Power on Military Operations, Western Europe."

7. "Reconnaissance in the Ninth Air Force," dated 9 May 1945.