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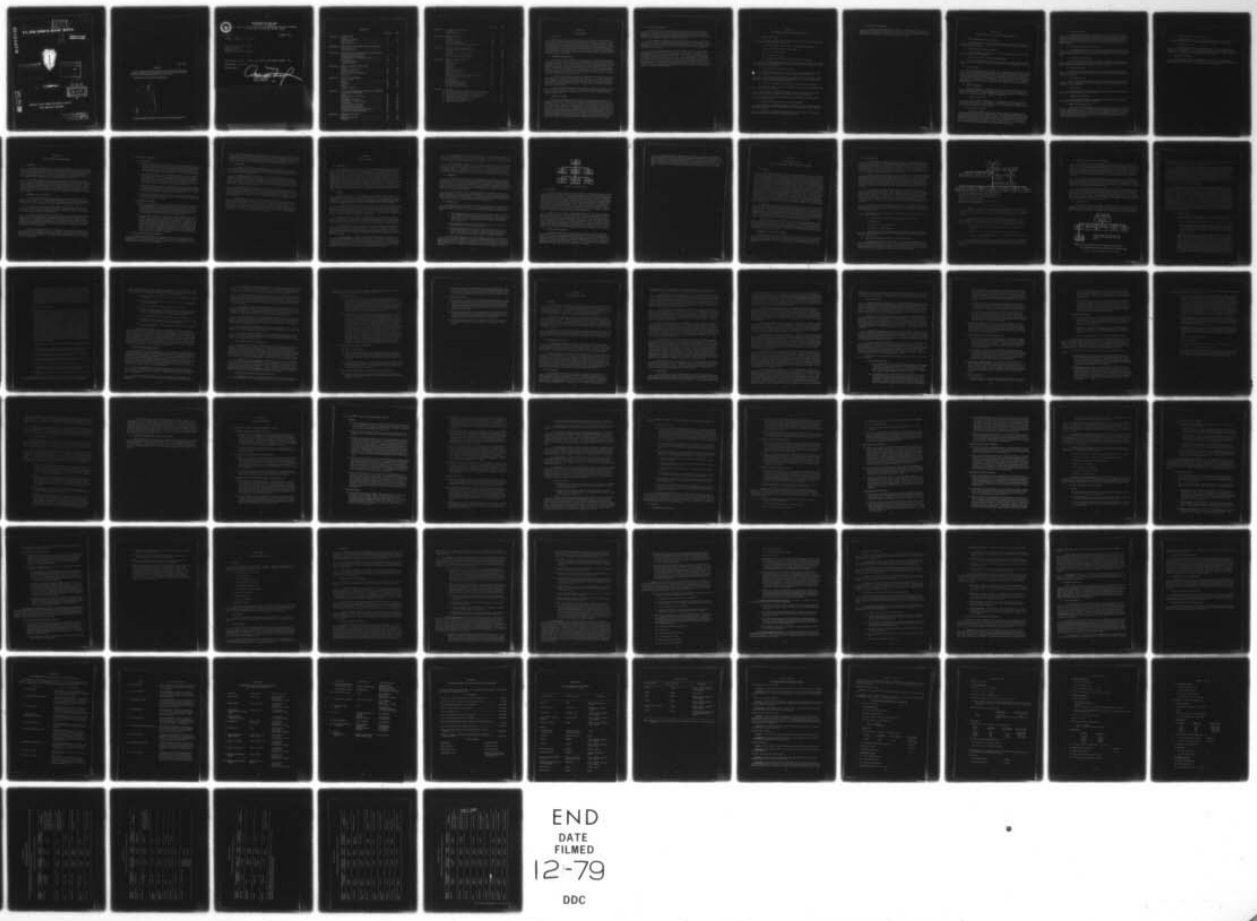

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US AIR FORCE BASIC DATA.

~~LYMAN H. CLARK~~
~~MAJOR, U. S. ARMY~~

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UNITED STATES ARMY INFANTRY SCHOOL
FORT BENNING, GEORGIA

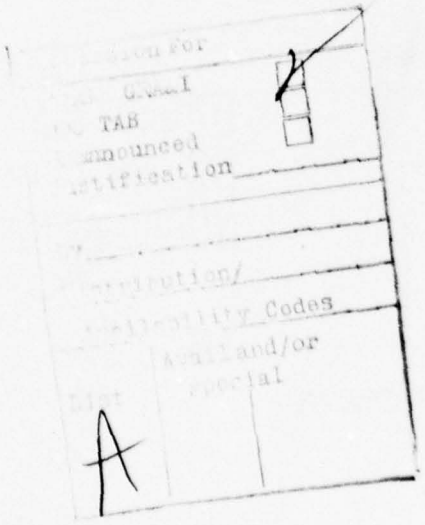
038 600

1 January 1958

FOREWORD

This text is approved for resident instruction at the United States Army Infantry School. It reflects the published doctrine of the Department of the Air Force as closely as possible, but does not necessarily represent Department of the Army doctrine.

BY DIRECTION OF THE ASSISTANT COMMANDANT:



This manual supersedes United States Air Force Basic Data manual dated June 1957.

DEPARTMENT OF THE ARMY
ARI FIELD UNIT, BENNING
U. S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES
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FOR THE CHIEF:

ALEXANDER NICOLINI
Major, Infantry
R&D Coordinator

CONTENTS

CHAPTER 1

INTRODUCTION

1. GENERAL:

Modern implements of war, as well as economic and political interests, make it necessary that military strategy of major powers be global. Moreover, the nature of certain implements of war provide for attack directly against the vital heartland of a nation, while others may be used to best advantage in homeland defense or in peripheral action. Heartland, defense of homeland, and peripheral actions are all designed primarily to immobilize the enemy's military potential as well as deployed military forces by the progressive destruction and neutralization of the means and facilities required to sustain combat. Being integral parts of the same global strategy, all these actions are interrelated and mutually interdependent in terms of the effects they produce.

2. AIRPOWER AND STRATEGY:

a. Until recent years, international armed conflict was characterized by military actions which occurred on the periphery of a hostile nation in attempting to remove the threat emanating from within. In order to destroy the enemy's ability or will to resist, it was necessary first to overcome the enemy forces-in-being. These forces, plus natural barriers and prepared fortifications, presented formidable obstacles to an invading force. In these conflicts, decisions were slow and wars were usually protracted. At times, blockade and strangulation of vital trade routes of maritime nations brought about decision with limited armed conflict but the struggle was prolonged. This strategy was dictated by the nature of the forces with which military operations were conducted.

b. With the emergence of airpower as an implement of war strategy by necessity began to change. This evolution started in World War I where there were limited attempts to employ airpower in a strategic role by utilizing the unique ability of air forces to penetrate enemy defenses to pass over and beyond surface barriers, and to attack directly the vital elements which sustained the hostile war machine. After World War I, the concept continued to develop slowly but steadily.

c. By the beginning of World War II, technological advances had vastly improved airpower as an implement of war. Although the employment of airpower in this war was tied largely to objectives associated with surface action, it nevertheless outlined the pattern of strategy for future wars.

3. TYPES OF ACTIONS:

There are two broad aspects of air operations; heartland and peripheral actions. In the United States Air Force today we have the Strategic Air Command and the Tactical Air Command. Their names are derived simply from the type of targets that normally will be primary responsibility - strategic or heartland targets, and tactical or peripheral type targets. To consider one in isolation of the other disregards their interdependence. Accordingly, the capacity of air forces to attack the entire spectrum of a nation's strength demands that air employment be considered as an entity. Heartland actions involve attacks against the vital elements of a nation's war sustaining resources, including the enemy's long-range air force. Peripheral actions include the tasks of reducing the enemy's air and surface efforts and are not necessarily limited to specific geographic areas. When required, and to the extent of their capabilities, tactical air forces may join directly in the attack on the enemy heartland.

4. PLAN OF EMPLOYMENT:

a. Air forces, by virtue of their ability to strike directly at the core of a nation's strength, can effectively reduce its will to fight while simultaneously beginning actions to neutralize the supporting aspects of power that radiate to the periphery. This interrelationship between air actions directed against a nation's war sustaining resources and its deployed military forces establishes the pattern for employing air forces.

b. The conclusive effects obtained by attacks on the heartland targets, which represent the greatest threats, require the priority commitment of air forces to this task. Concurrently, air forces will be committed in peripheral actions designed to neutralize the deployed enemy military forces. In these actions air forces will have a priority task of gaining and maintaining control of the air.

c. There is a cumulative effect on the enemy's ability to wage war when heartland and peripheral actions are undertaken simultaneously. The impact of successful air action directed against the heartland is immediately felt by the nation itself. Its impact on the deployed forces engaged in peripheral action, however, may be delayed because of the momentum inherent in those forces in the form of reserves. Air forces engaged in peripheral action will, nevertheless, tend to set up additional stress and strains by depleting logistics of deployed forces. Concurrently, surface action further aggravates this condition by forcing high rates of consumption. Furthermore, as heartland penetrations have effect, the enemy may be forced to the last resort of employing its remaining air forces defensively, thereby reducing its ability to sustain peripheral operations.

CHAPTER 2

FUNCTIONS OF THE UNITED STATES AIR FORCE

5. PRIMARY FUNCTIONS:

a. To organize, train and equip Air Force forces for the conduct of prompt and sustained combat operations in the air. Specifically:

(1) To be responsible for defense of the United States against air attack.

(2) To gain and maintain general air supremacy.

(3) To defeat enemy air forces.

(4) To control vital air areas.

(5) To establish local air superiority except as otherwise assigned.

b. To formulate joint doctrines and procedures in coordination with the other services for the defense of the United States against air attack and to provide the Air Force units, facilities and equipment required therefor.

c. To be responsible for strategic air warfare.

d. To organize and equip Air Force forces for joint amphibious and airborne operations, in coordination with the other services, and to provide for their training.

e. To furnish close combat and logistical air support to the Army to include airlift, support and resupply of airborne operations aerial photography, tactical reconnaissance, and interdiction of enemy land power and communications.

f. To provide air transport for the Armed Forces except as otherwise assigned.

g. To provide Air Force forces for land-based air defense coordinating with the other services in matters of joint concern.

h. To develop, in coordination with the other services doctrines, procedures and equipment for air defense from land areas including the continental United States.

i. To provide an organization capable of furnishing adequate timely and reliable intelligence for the Air Force.

j. To furnish aerial photography for cartographic purposes.

k. To develop, in coordination with the other services, tactics, technique and equipment of interest to the Air Force for amphibious operations and not provided for in other sections of the agreement.

l. To develop, in coordination with the other services, doctrines, procedures and equipment employed by Air Force forces in airborne operations.

6. COLLATERAL FUNCTIONS:

a. The forces developed and trained to perform the primary functions set forth above shall be employed to support and supplement the other services in carrying out their primary functions where and whenever such participation will result in increased effectiveness and will contribute to the accomplishment of the over-all military objectives.

CHAPTER 3

ORGANIZATION OF THE UNITED STATES AIR FORCE

7. THE DEPARTMENT OF THE AIR FORCE:

Is defined by law as the executive element of the Air Force Establishment at the seat of government. It consists of the Office of the Secretary of the Air Force and an Air Staff headed by the Chief of Staff.

8. THE SECRETARY OF THE AIR FORCE:

Is charged with the responsibility and is vested with the authority for conducting all affairs of the Air Force Establishment.

9. THE CHIEF OF STAFF, UNITED STATES AIR FORCE:

Is directly responsible to the Secretary of the Air Force for the efficiency of the Air Force, for its state of preparation for military operations, for operational plans and their execution.

10. THE AIR STAFF:

Renders professional aid and assistance to the Secretary and the Chief of Staff. In the Air Staff, the Deputy Chiefs of Staff represent the Chief of Staff within their functional areas and may act for him on any matters falling within the scope of their responsibilities. Under the Deputy Chiefs of Staff are the Directorates and in keeping with the concept of functional teamwork, the Directors are expected and encouraged to work with each other and to keep his Deputy Chief informed. Air Staff decisions are made at the lowest level having access to sufficient information; this is usually the Office of a Director. Below the Director level is the Division or Branch level.

11. MAJOR COMMANDS:

Under the Headquarters, United States Air Force there are twelve major commands. These commands constitute the operating elements of the Air Force. Of these only three (Strategic Air Command, Tactical Air Command, Air Defense Command), are combat elements of the Air Force and also are the only commands required by law.

a. Strategic Air Command.

This is the long-range striking force. It is prepared to carry out offensive missions anywhere in the world. It contains bomber, reconnaissance, logistical support and fighter type aircraft. The unique feature of Strategic Air Command is that operational control of its forces rests with the Joint Chiefs of Staff.

b. Tactical Air Command.

Tactical Air Command trains Air Force units to operate in conjunction with, or independently of, land naval and/or amphibious forces. When Tactical Air Command units go overseas they then become part of the Theater Air Forces to be utilized by the overseas theater commander in the successful prosecution of his mission. Tactical Air Command consists of a Headquarters (also includes existing elements of the Tactical Bomber Force), the Ninth Air Force and Eighteenth Air Force (composed of fighters, fighter-bombers, and reconnaissance type aircraft), and the Nineteenth Air Force (to employ special task forces).

c. Air Defense Command.

The Air Defense Command is charged with the air defense of the United States. It has interceptor and all-weather fighter type aircraft with the necessary radar and communications net for warning and aircraft control. It is organized with a Headquarters at Ent Air Force Base, Colorado controlling three air defense forces (Western Air Defense Force, Central Air Defense Force, Eastern Air Defense Force) that are further subdivided into Air Defense Divisions.

d. Air Research and Development Command.

This Command is charged with, (1) insuring that the research necessary to keep the Air Force technologically ahead of all other air forces in the world is carried out; and (2) the continuing development of approved air force type items to keep pace with the Air Force's needs.

e. Air Proving Ground Command.

This Command picks up where the Air Research and Development Command leaves off and develops operational techniques by conducting tests under simulated combat conditions to determine the operational suitability of Air Force equipment.

f. Air Materiel Command.

After Air Proving Ground Command has tested and approved the equipment Air Materiel Command enters the picture and procures stores, issues, and maintains all materiel used by the Air Force.

g. Air Training Command.

Air Training Command provides the training of individuals in the skills required by the Air Force. Its training activities are divided into three areas; flying training, crew training, and technical training.

h. Air University.

The Air University provides professional military education to prepare officers for staff and command positions in air force units.

i. Continental Air Command.

Carries out the Air Force's responsibilities for reserve forces, in domestic emergencies, and mobilization of civilian components.

j. Military Air Transport Service.

This is an Air Force Command under the operational control of the Joint Chiefs of Staff and containing both Air Force and Navy personnel and equipment. It provides air transportation, both personnel and cargo, for all agencies of the Department of Defense. In addition it provides the following services: Airways and Air Communications Service; Air Weather Service, Air Rescue Service, Flight Service, Air Resupply and Communications Service, and Air Photographic and Charting Service.

k. United States Air Force Security Service.

Although labeled a service it is in reality a command. It is responsible for communications intelligence and for communications security activities of the Air Force.

l. Headquarters Command.

Located at Bolling Air Force Base, Maryland, it provides aircraft for flying personnel in the Washington D. C. area, administers units which are operationally under the Headquarters, United States Air Force and/or which cannot be logically assigned to other commands, e. g., air attache and air mission units throughout the world.

12. OVERSEAS COMMANDS:

United States Air Forces in Europe (USAFE), Caribbean Air Command (CAIRC), Pacific Air Forces, and the Alaskan Air Command (ALAC) are the four overseas commands and constitute the components of the overseas Unified or Theater Commands.

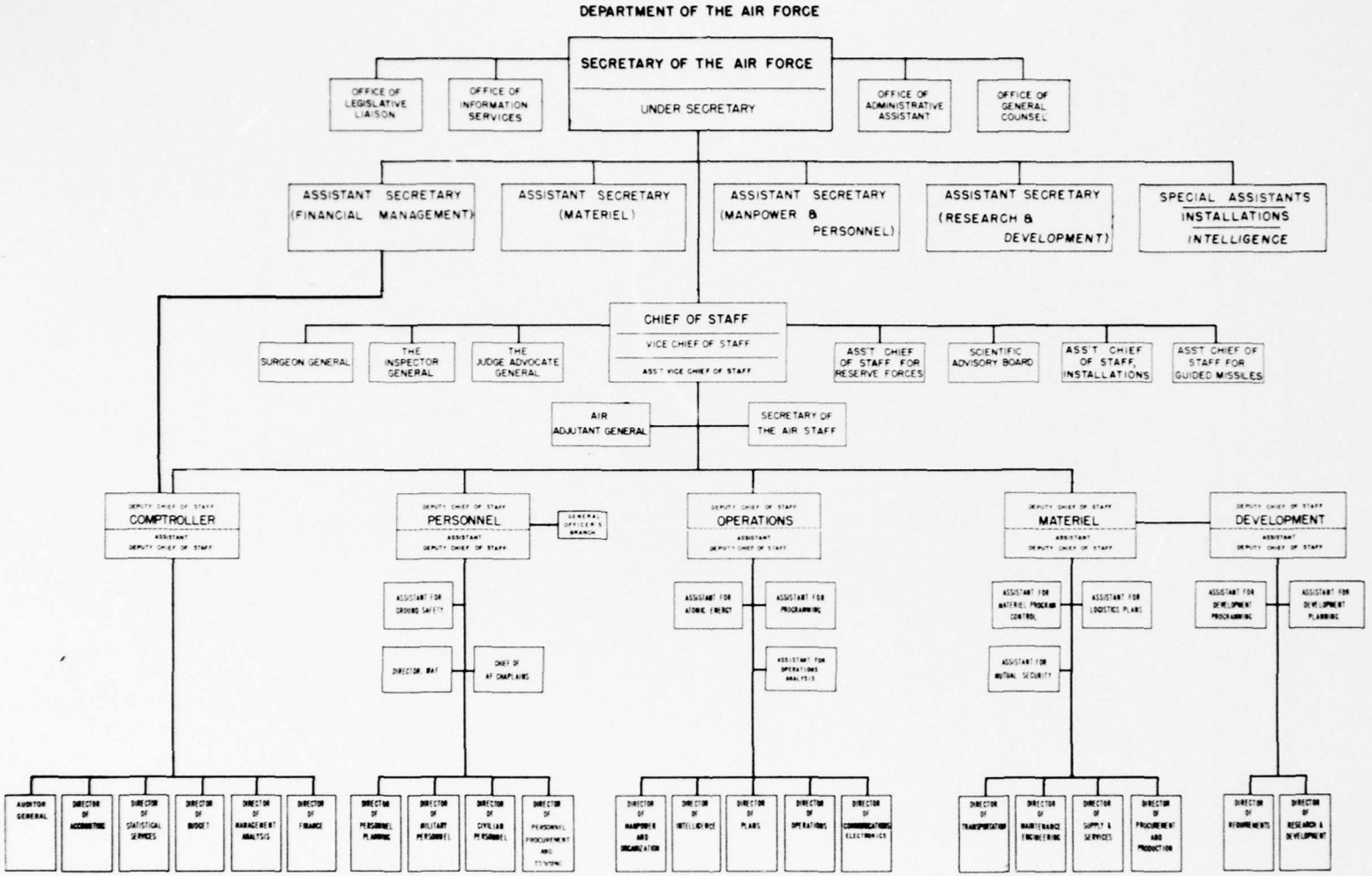

Figure 1. Department of the Air Force.

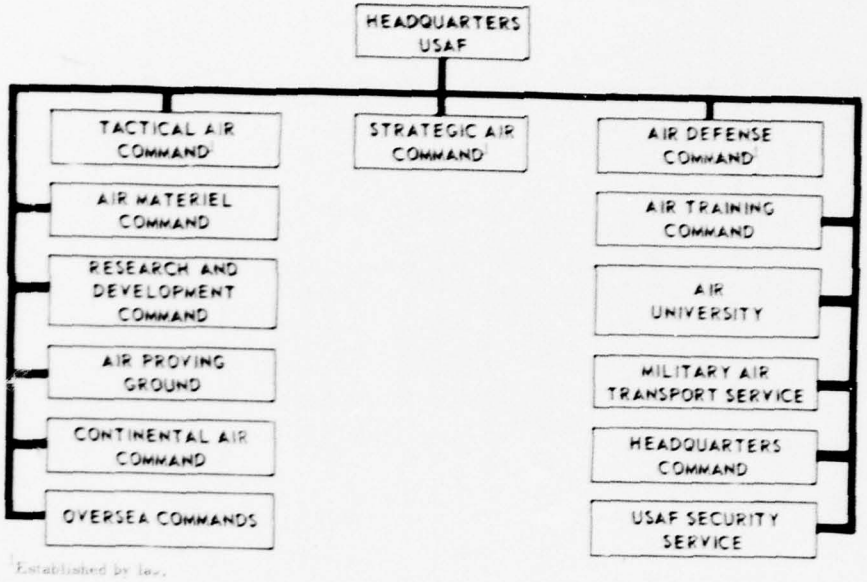

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Figure 2. Major commands, USAF.

CHAPTER 4

THEATER (AREA) OF OPERATIONS

13. GENERAL:

a. A theater (area) of operations is a base for the furtherance of the action dictated by strategy. On this basis, geographical areas are designated as theaters (areas) of operations and forces are allocated the theaters according to the role that each is to play in the achievement of over-all military objectives. The area force may be composed of national or international forces. They may be army, navy, or air forces, individually, or in appropriate combinations. All are integrated and coordinated to perform the theater's strategic function.

b. When more than one area of operations exists, they are interrelated in terms of global strategy. Their operations are a series of coordinated actions that fulfill their assigned roles. The nature of these operations is determined by the objectives which they are to achieve. Area operations are concentrated against those elements of the enemy's military forces which constitute the greatest menace to the successful accomplishment of the area mission. The most important objective of area operations is to neutralize enemy forces which challenge the security of areas that are of military, political, economic, or psychological importance to the over-all war strategy.

14. COMMAND AND AREA FORCES:

a. Area forces are organized and employed in accordance with the tenet of mutual support. Each component force is dependent upon the others for the accomplishment of certain functions. Each component force concentrates on those tasks it is best able to accomplish and depends upon other forces to produce concurrent effects on their mediums of action.

b. No one component is capable, within itself, of achieving the area mission. It is air, ground, and sea forces in concert which provide the fundamental means and working relationship for accomplishing the mission assigned the area. The area mission is the sum of the interrelated missions of the three component forces.

c. Area operations are conducted as a unified action in which all forces are employed in the furtherance of a single objective. To obtain an integrated effort, the command system adopted for area operations provides for singleness of direction, decentralization of control, rapidity of action, and flexibility of employment. The principle of unified command is the basis upon which the command system for area operations is predicated. This system of command provides for a single unified commander who is the directing and controlling authority for the actions of all forces within the area.

d. The area commander is provided a combined-joint or joint staff to assist and advise him in the over-all employment of the forces assigned. Under the area commander are the three component force commanders. These commanders are responsible for the command and employment of their respective forces in accordance with the directives and guidance furnished by the area commander.

15. COMMAND RELATIONS:

a. Area Commander.

(1) The area commander is appointed to exercise unified command of all forces assigned to an area of operations. The extent of responsibility possessed by an area commander is determined by the assigned mission, nature of the forces, and the role of the area in the global strategy. The appointing authority provides strategic guidance to area commanders for the conduct of their operations.

(2) The unified commander is not simultaneously commander of one of the major component forces. He exercises command of his forces through component force commanders. The area commander defines the tasks and indicates priority for the employment of the various forces by the respective component commanders. By virtue of his position, the area commander is a multiservice officer, and therefore owes allegiance to no one particular service.

(3) The principal advisers of the area commander are the component commanders. These individuals comprise the consultatory body for area operations, and they provide expert knowledge and assistance in selecting the objectives and setting forth the general scheme of employment of the area forces.

(4) For matters incapable of mutual resolution by the component commanders, the area commander is the final authority. The area commander is responsible for the success or failure of operations.

b. Component Commanders.

(1) Air, ground, and sea forces are coequal and interdependent. Each of the component commanders functions as an independent agent of the area commander. Each is responsible for the detailed operations of his respective forces to include tactics, techniques, and procedures promulgated by that service. Unity of action of these commanders is achieved by unified command vested in the area commander, and by common doctrine and mutual support.

(2) Area operations require close coordination between the component force commanders. This coordination is achieved by the exchange of liaison officers, location of headquarters in close proximity to each other, free exchange of operational plans, and frequent staff visits and conferences. Coordination of the efforts of the component commanders begins with the area headquarters, and permeates all echelons of the operating agencies. Each component commander has an individual responsibility to assume the initiative in coordinating the activities of his forces with other forces when matters of mutual interest and concern are involved. Coordination is multilateral action and mutually shared by each of the three component commanders.

16. SPECIAL COMMAND ARRANGEMENTS:

a. The area command structure is sufficiently flexible to conduct all types of area operations without creating specialized task and joint forces. The area commander, however, has authority to create a joint task force for the accomplishment of a limited objective and entailing actions of limited duration and magnitude.

b. When a joint task force is established, it is organized in accordance with the principle of unified command, and designated elements of area forces are assigned. These elements assigned are placed under the operational control of their respective component commanders within the joint task force. Command relationships between component forces and the joint force commander are the same as those prevailing in the area command structure.

17. OPERATIONS:

a. General. Operations within an area take place in the mediums of land, sea, and air. Although operations in any of these three mediums can be relatively independent and can achieve certain independent resuts, generally they are mutually interdependent, highly coordinated, and produce interrelated effects.

b. Land Operations. Land operations are carried out on the land surface and are conducted primarily against the enemy's land forces. The mission of the area will determine the type and magnitude of land operations and the objectives of those operations. They are vulnerable to air action, and, therefore, are dependent upon air operations to create and maintain favorable air situations for their full employment. For sustained land operations, ascendancy must be gained over the opposing air force.

c. Sea Operations. Sea operations are conducted on or under the surface of the sea. These operations, in conjunction with air operations, are designed to secure and maintain sea lanes of communication, and to deny the use of the sea to the enemy. Although characterized by a degree of mobility, naval actions are highly vulnerable to disruption by air attack. For continuous operations at sea, control of the air is a fundamental prerequisite if prohibitive losses are to be averted.

d. Air Operations. Air operations are conducted in the medium of space above the earth's surface. These actions may be conducted against all enemy forces which operate in any of the mediums: land, sea, or air. Because they operate above the surface of the earth, air forces are able to conduct reconnaissance and strikes over large areas far beyond the zone of surface action. Air operations are limited by the energy and design of the air vehicles engaging in the action. Air operations too are vulnerable to enemy air action. Thus, gaining and maintaining control of the air is a prerequisite of the first order.

CHAPTER 5

AREA AIR FORCES

18. GENERAL:

Area air forces, like all air forces, have certain inherent characteristics which make them unique as implements of war. The principal reason air forces differ so markedly from other forces is that they operate above the earth's surface at high speeds and over great distances. Thus, they may be dispersed for security and then quickly concentrated for surprise attacks against targets remote from their bases. Air forces are able to penetrate enemy defenses during daylight, darkness, and in inclement weather, and they are able to attack directly targets of their choosing. In these attacks, they are capable of delivering any known type of firepower upon any known objective. Because of their characteristics, the nature of the weapons, and the manner in which they are deployed, air forces are sensitive to control and respond quickly to the rapidly changing situation in which they operate. Air forces, correctly used, promote a high order of economy of force. Their flexibility provides a means for quickly countering unexpected threats and for exploiting fleeting opportunities for advantage in the battle situation.

19. MISSION:

The mission of area air forces is to perform certain combat and support functions implicit in the mission of the area. This includes three basic combat functions and several supporting functions. In general terms the mission is to execute, either independently or jointly, sustained air operations aimed at the destruction or neutralization of the enemy military forces, resources, and communications. The primary tasks or functions involved are as follows:

a. Counterair. Sustained area operations, on land, sea, or air, are not feasible without sufficient control of the air. The bases, vehicles, personnel, and lines of communication of the area are all subject to hostile air action and area forces on the surface cannot adequately protect themselves from air attack. Once the enemy air effort has been reduced, his surface action is restricted or becomes so costly as to be prohibitive. At the same time, friendly forces are able to conduct operations without effective interference.

b. Interdiction. Great quantities of supplies and personnel are required to sustain deployed military forces. Materiel must be transported to the battle area from distant sources and it is vulnerable to destruction while in transit or stockpiled. Interdiction is aimed at denying the deployed enemy force adequate logistical support, thus limiting his combat capability.

c. Air Defense. The complete neutralization of the enemy's air force is seldom possible; therefore, an air defense system for the area is necessary. An effective air defense system compels the attacker to rely heavily on tactics of maneuver and deception which divert part of the attacking force to noneffective operations, and which tend to minimize the effects of the attack. In order to achieve effective results, the enemy is forces to expend a greater portion of his resources.

d. Close Air Support. Within the immediate zone of engagement of surface forces, situations may develop where the capabilities of air forces can be utilized to advantage. When weapons organic to the surface forces cannot deliver the necessary firepower to destroy or neutralize a target, then aircraft should be used to assist the surface forces. Assistance and support should be mutual because surface forces can, by maneuver and tactics, create situations favorable to the application of air weapons against the opposing surface forces.

e. Reconnaissance. Reliable and timely intelligence of enemy dispositions and movement is vital to the area plan and to the conduct of operations. Tactical air reconnaissance is a major source of this information because it is able to observe enemy movement and disposition far beyond the scope of surface reconnaissance. (Chap 10.)

f. Air Transport. Normally, an area is extensive, and action may occur at any place within the area. The shifting emphasis of battle frequently requires swift movement of personnel, supplies, and the evacuation of sick and wounded. Area air forces provide the means by which these functions are accomplished. These functions are complementary in nature, and accomplished by the same component of the area air forces maximizes economy and rapidity of action. This same component also provides the airlift for the conduct of airborne operations.

20. COMMAND:

a. All air forces assigned to an area are placed under the command of a single area air commander. The area air commander is responsible for the conduct of all air operations essential to the area mission and for the establishment of subordinate air commands required for the discharge of his assigned responsibilities. Area air forces may consist of air units from any service or any participating nation. When such units are made available to the area commander, their service or national integrity is maintained and they are employed as a unit to the extent permitted by the tactical situation.

b. Air forces within an area of operations should be maintained as an entity. Their fullest exploitation is achieved through centralized direction. Area air forces are employed as a single integrated unit, and elements thereof are not placed under the command of other area forces. If a joint task force is established, the air elements assigned are placed under the operational control of the air component commander of the joint task force.

21. ORGANIZATION:

a. Depending upon the size and mission of the area, subordinate air organizations are established and forces allocated accordingly. Combat and support forces are organized into functional subordinate commands. An area air force has the following major subordinate commands:

(1) An air defense force which provides area air defense and coordinates air defense activities of adjacent US and allied defense systems. The commander of the air defense force will normally function as the joint area air defense commander and will exercise control of the air defense resources provided the area commander.

(2) An area airlift force which provides airlift for all the services in the area of operations. It is an intratheater transport force.

(3) Tactical air forces (TAF) which execute the combat mission of the area air force. There may be one or more TAF, depending on the geographical area and the size of the air force available. TAF are groupings of offensive airpower, and combined they comprise the combat air potential of the area.

b. For specialized operations, or in time of emergency, the area air commander may be given operational control of strategic air units not normally assigned the area. For such circumstances, the area air commander is responsible for the selection of targets, assignment of tasks, designation of forces, and the plan of employment. SAC forces allocated to the operational control of the area air commander are employed as a unit, and the integrity of the force is preserved.

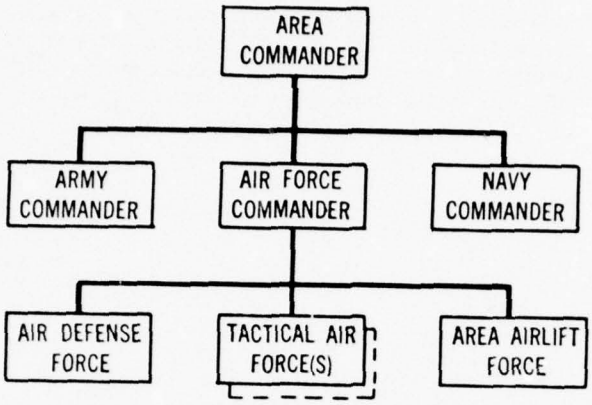


Figure 3. Area organization.

22. CONTROL:

a. Over-all control of area air forces is vested in the area air commander. In order to exercise this control, the area air commander establishes subordinate air organization and delegates authority accordingly. The degree to which this authority is delegated will depend upon the particular phase to which counterair operations have progressed. During the decisive counterair phase, maximum control is retained by the area air commander since the preponderance of area air forces are engaged in this action and centralized direction is essential for integrating the effort of all participating air forces. When a dominant position is gained and the air war moves into the exploitation phase, greater authority is delegated to subordinate air commanders to apply the allocated forces in accordance with the tactical situation. Irrespective of the phase of the air war, control is maintained by the area air commander in terms of objectives, assignment of tasks, and general scheme of employment.

b. Area air forces require a highly developed control and communications system. This system begins at area air force level and extends into the lowest operational air echelon. By means of this system, the air commander can shift, redeploy, and concentrate area air forces to meet the most pressing requirements. The system is a continuous chain operated by the air commander and is capable of controlling all types of air actions. It is sufficiently flexible to shift the control of the forces of one command to another without disrupting current operations. Through this control system, air operations can be rapidly switched from one objective to another with the effort always concentrated on the critical objective. It is the control system which provides the tool for the exploitation of the inherent flexibility of area air forces.

23. INTEGRATION OF EFFORT:

a. Strategic planning at area level provides for maximum use of the capabilities of each of the services. The area commander specifies the mission of each of the component forces. The component commanders translate the missions into coordinated plans which then become parts of the area campaign plan. Successful employment of the services within an area stems from early and concurrent planning, together with close liaison betweeen appropriate headquarters engaged in operations within the same area. The area plan, then, comprises the integrated plans of the area army, navy, and air force commanders.

b. Integration of effort is fundamental to the success of area operations. Integration ensures that air, ground, and navy actions are harmonized to provide efficient and effective results. Concerted effort of all forces engaged provides for the exploitation of advantageous conditions created by any of the participating forces. A considerable amount of the effort of an area air force is operationally committed in coordination and cooperation with the army. To be effective, the interdiction and close support missions in particular require very close coordination.

CHAPTER 6

TACTICAL AIR FORCES AND TACTICAL AIR CONTROL AND OPERATIONS SYSTEMS

24. GENERAL:

a. Since the close of World War II, far-reaching technological advancements in the development of air weapons systems have vastly increased the impact of airpower in the conduct of military operations. Thus the roles and missions, or basic combat functions, of TAF in the oversea area have assumed a new significance. World War II saw the development of TAF and their related tactical air control system that was used throughout the better years of the war and in Korea. The capabilities and the employment of the TAF's were developed to enable the TAF commander to perform his assigned missions. Today, advancements in weapons systems have dictated a reevaluation in the concept for the employment of TAF's in an oversea area. During World War II, in given oversea theaters, tactical air commands were composed of two or more TAF. With today's advance weapons systems and their related control structures, 1 TAF now performs the same missions which formerly required 2 or more TAF. For this reason and for dispersment dictated by atomic considerations, one can normally expect in the future to find one TAF conducting operations in a given oversea area. As a result, one may find the tactical air command, overseas, as it was known in the past, disappearing with the TAF coming directly under the area or theater air commander. Throughout this chapter the term "area" or "area commander" will be used in the place of theater or theater commander, etc. The term "area" is being used more and more to denote a broader or more encompassing scope of operations.

b. Herewith is contained the new concept for the employment and control of a TAF in the oversea area. The joint operations center (JOC) concept for the employment of the air effort is no longer applicable. With new weapons systems and weapons of mass destruction, the JOC and tactical air control became outmoded. The Tactical Air Command is in the process of implementing the new concept; equipment has been prototype tested and has proven satisfactory. The concept will be implemented by units in the Tactical Air Command to the extent technically feasible, using present tactical control group and communications group, personnel, and equipment. As new equipment becomes available, it will be phased into the system.

c. This new system provides the TAF commander with the essential elements necessary to perform the "air superiority" tasks in a nuclear era. This system also provides the necessary coordinating elements for joint operations by providing close integration of air operations with the movement of ground forces. Although these procedures vary somewhat from those outlined in the present Joint Training Directive, they are still well within the parameters of time proven, tactical air, doctrine.

25. MISSION OF TACTICAL AIR FORCES:

The mission of the TAF is to conduct offensive and defensive air operations separately or in conjunction with surface forces, and to provide aerial reconnaissance for its own needs and those of its associated surface force. The TAF is usually associated with an army group and is the lowest echelon of the tactical air arm that plans and conducts air campaigns in joint operations.

26. ORGANIZATION:

a. Unified command is vested in the area commander. The area commander allocates forces to be employed in the campaign and establishes over-all directives and priorities of operations for the guidance of commanders of his component forces. The size and type of these forces are determined by the area mission, the nature of the area, availability of forces, the opposing threat, and the area's role in over-all strategy. Air forces are assigned to an area of operations to perform certain combat and support functions. Operational control and direction of these forces are vested in the area air commander.

b. In order to exercise control of area air forces, the area air commander establishes subordinate air organizations and he delegates authority accordingly. The degree of authority to be delegated will depend upon the particular phase to which air operations have progressed. During the decisive phase, maximum control commensurate with the basic operational principles for employment of TAF's is retained by the area air commander, since the preponderance of area air forces are engaged in this action. Centralized direction is essential for integrating the efforts of all participating forces when TAF are given responsibility for certain land areas.

c. To employ area air forces properly, a highly developed and systemized control and communications system is essential. This system begins at area air component level and extends into the operation of the lowest echelon. This system facilitates the air commander's ability to shift, redispose, or concentrate area air forces to meet the most pressing requirements. The system is linked with all tactical air units and activities, is operated by the air commander, and is capable of controlling all types of air actions for which the area air commander is responsible. This agency provides for exploitation of the inherent flexibility of area air forces.

d. The TAF has no fixed organization or composition. It is tailored to meet specific requirements. The organization or composition will be governed by enemy aerial and surface activity, size of the area of operations, and the significance of its mission and the mission of the associated army group.

e. Regardless of size or composition, a TAF requires four elements in order to perform its mission. These are:

(1) A headquarters with facilities and personnel for joint planning.

(2) Combat units.

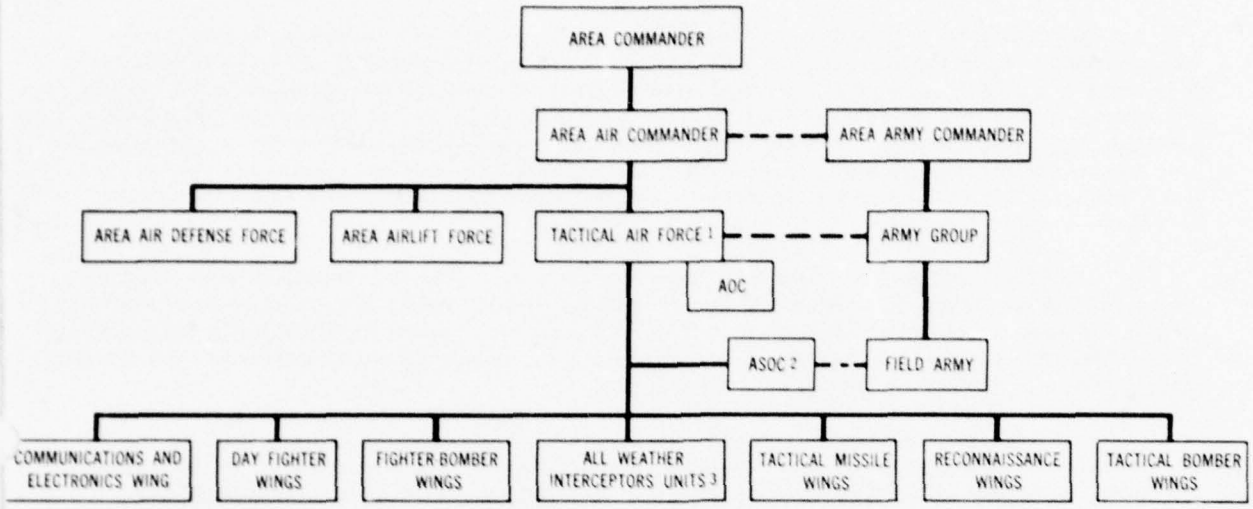
(3) Tactical air reconnaissance units.

(4) A tactical air control system.

f. Normally, there are no intermediate headquarters between the TAF and the combat wings. Combat operations instructions flow directly to the wings through communications facilities organic to the TAF.

27. PRINCIPLES OF ORGANIZATION OF A TACTICAL AIR FORCE:

a. Centralized Control. Centralized control provides maximum exploitation of the mobile and flexible character of TAF's. This control can be achieved only when the organization and command structure permit the application of the preponderance of the air effort upon the selected portion of the enemy force at hand. Centralized control allows the air commander to direct air forces at his disposal to meet the tactical situation as it changes.



1 The number of TAF assigned to an area varies according to size and mission of area. Availability of forces, normally being equal to the number of army groups assigned to the area.

2 The number of ASOC normally coincides with the number of field armies in an area.

3 Will be made available from area air defense force.

This chart represents a possible area air organization. Variations of this structure can be expected to meet the individual area requirements.

Figure 4. Tactical air force.

b. Mobility. The tactical aircraft is completely mobile within its operational radius of action and is not normally based at great distances from the objective. Time over target, and depth of penetration must, however, be commensurate with expected results. This requires an organization and facilities which are mobile and able to move rapidly without interrupting operations.

c. Flexibility. In order that tactical air may be profitably expended on a variety of targets--both in the air and on the ground, or concentrated on a single objective--the air-ground equipment of the tactical air organization must provide for a maximum adaptability to changing conditions. Tactical air usually takes advantage of its flexibility in three ways:

(1) Striking rapidly at a variety of targets under many conditions with varying intensity.

(2) Shifting operational control quickly to meet changing requirements.

(3) Organizing for the particular situation, i.e., terrain, objective(s), friendly forces, and enemy forces.

d. Integration of Effort. Integration of effort is necessary for the respective efforts of ground, sea, and air forces to achieve maximum effectiveness in battle. The integration of planning and execution is achieved through joint staff at area level and coordination at operational levels.

28. HEADQUARTERS, TACTICAL AIR FORCE:

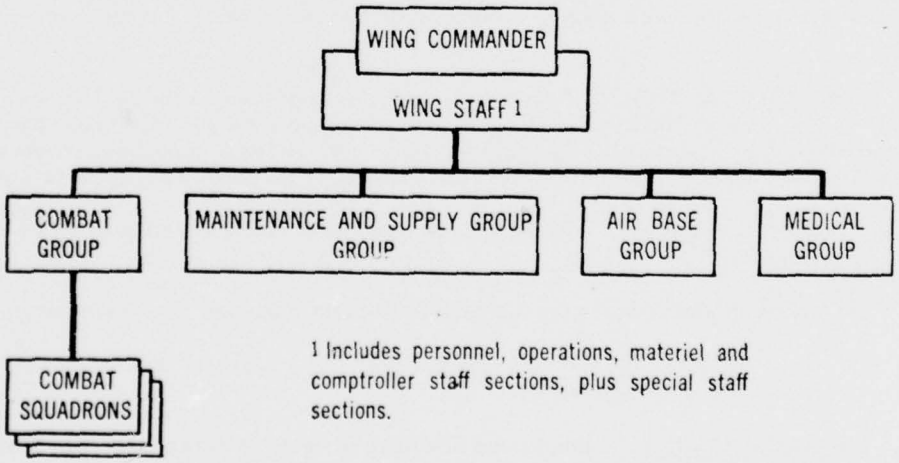
a. The TAF commander is responsible for his independent mission, and is jointly responsible with the army group commander for the air-ground campaign in the area assigned. The army group maintains an operational headquarters which is usually situated in the rear or communications areas and changes location frequently during a war of movement. The TAF headquarters must likewise maintain a headquarters adjacent to that of the army group to facilitate the necessary joint planning and coordination. The TAF commander achieves the necessary mobility plus added security by establishing an advanced headquarters and a rear headquarters.

b. The rear headquarters is responsible for administration, technical services, and those routine matters not immediately concerned with combat operations. The chief of staff or deputy for administration is usually commandant of rear headquarters. Mobility is not a pressing problem for the rear headquarters and it moves only when communications with the advanced headquarters or the combat wings become extended.

c. The advanced headquarters is responsible for planning and controlling the combat air operations. Because of the immediate responsibilities for combat operations at this level, the advanced headquarters has need for effective mobility, and alternate control facilities. There can be no lapse in control and supervision when the headquarters moves. To satisfy this need, the advanced headquarters may require duplicate sets of equipment to enable it to split into a forward echelon and rear echelon. One echelon can then effect a move or suffer an attack without interrupting operational planning or control.

29. COMBAT UNITS:

a. The TAF is predominantly a force of fighter bombers. It normally has from 4 to 7 fighter-bomber wings assigned, but may have any number from 2 to 12 wings, depending upon the needs of the area of operations. In addition to the fighter bombers, the TAF will have assigned to it tactical bomber wings, day fighter wings, all-weather interceptor wings, tactical



NOTES: 1. A reconnaissance wing includes a reconnaissance technical squadron.

2. This chart applies to fighter-bomber, reconnaissance, or tactical bomber wings.

Figure 5. Normal organization for tactical wings.

missile wings, and reconnaissance wings. The numbers of these wings again will be dependent upon the particular requirements of the area of operations.

b. The combat wings of the TAF are flexible, self-contained organizations, adaptable to widely varying conditions of area air forces. They are composed of four main groups that are mutually dependent and designed to operate under the direction of a single commander. Independent combat squadron operations are possible by attaching the required personnel and equipment from the supporting units to the separate combat squadron. Fixed tables of organization provide the personnel necessary to carry the normal workload of the wing. Additional augmentation of all units except the combat group is authorized to meet the particular requirements of each wing. Under certain conditions a second combat group may be assigned to an existing combat wing. The organization is then known as a "wing reinforced."

30. TACTICAL AIR OPERATIONS SYSTEM:

a. General. The tactical air force commander has the facility to control and/or coordinate all air operations conducted in his area of responsibility (fig 6). He must also be capable of effecting the necessary coordination with ground and sea forces operating in, or adjacent to, his area of operations. This facility and capability is provided by the establishment of an air operations center and air support operations centers, which are supported by a tactical air control system. The deputy for operations is responsible to the tactical air force commander for the conduct of over-all operations of the TAF. More specifically, the deputy for operations exercises staff supervision of combat operations of the assigned units. He establishes operational plans to support the command missions; evaluates operations and requirements to support the command missions; evaluates doctrine, and plans for employment as formulated by higher headquarters; and advises the TAF commander on operational status of organization and manpower utilization within the command. The deputy for operations appoints a chief of combat operations who is responsible for the operation of the air operations center. The chief of combat operations is responsible for planning and directing the execution of the tactical operations of the command.

b. Air Operations Center.

(1) General. TAF combat operations plans are implemented by the air operations center (AOC). The air operations center is composed of two sections:

(a) The combat operations section which operates the combat operations room.

(b) The combat planning section where immediate air planning is conducted. The air operations center is supervised by the chief of combat operations, who is responsible for the operations of both these sections. He also supervises the functions of the sector control centers and the air support operations centers.

(2) Combat operations section. TAF combat operations will be directly supervised by the chief of combat operations, or a duly appointed assistant, one of whom will be on duty in the combat operations section at all times. In the combat operations section an efficient communications system, together with a visual presentation of the air-ground situation, provides the chief of combat operations with current operational information. Status boards which continuously reflect aircraft status, conditions of alert, weather, ordnance, and base-in and base-out status are located in the combat operations section. Only essential operating personnel are placed within the combat operations section. All supporting agencies are grouped homogeneously and placed under the combat planning section. Multicircuit communications systems and high resolution

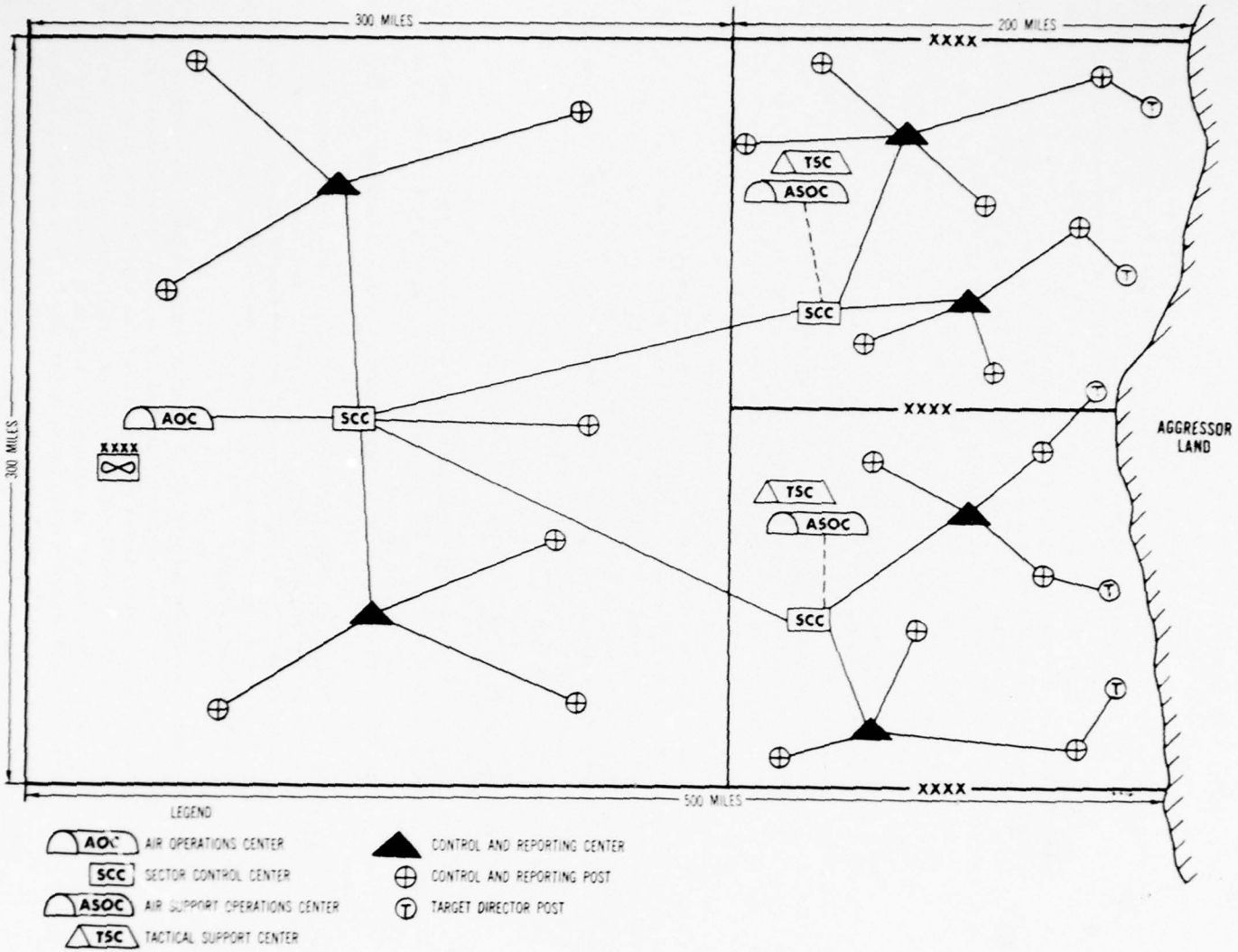


Figure 6. TACOS Deployment.

color closed circuit television will provide instant contact with respective departments. All information necessary for the operations personnel to perform their functions will be displayed by means of an efficient communications system and automatic presentation of the air-ground situation on a television console in front of each duty officer. The chief of combat operations may select and project on the viewing screen any of the available data within the system. The ground situation and grids necessary to formulate decisions will be automatically displayed through the mediums of closed circuit television from the army group headquarters, or the combat planning room. Status boards will be operated automatically by the operations section at tactical units through status collection agency. Status boards will reflect, continuously, current aircraft status, conditions of alert, weather, ordnance, and base-in, and base-out status.

(3) Combat planning section.

(a) General. The combat planning section is the agency which assists the chief of combat operations in developing the many details of the air plan. The combat planning section performs these functions independently of, or--as the situation requires--in conjunction with, the air support operations centers located in each field army area. This section is assisted in the performance of its functions by the following agencies, units, and/or personnel:

1. The air intelligence directorate whose primary emphasis is on target detection, development, and priorities.

2. Skilled photo interpretors, who assist the air targets selection officer in his efforts.

3. A weather officer, who analyzes and forecasts weather and maintains a status of current and forecast weather conditions.

4. A topographical computation unit, which makes geographical computation as required for electrical or radar bombing purposes.

5. Analyses specialists, including special weapons specialists, who establish force requirements and recommend the most suitable weapon and yield for each target and mission to be accomplished.

6. Computers, who assist in the decision-making process.

(4) Planning conferences. Preparation of plans for the employment of available air effort in counterair, interdiction, and close air support is the responsibility of the chief of combat operations. This will be a continuous function necessitating many informal conferences. Where appropriate, the army representative will brief at these conferences on both enemy and friendly ground situations in the immediate battle area--including known and probable intentions. When he presents the army's requirements for air support, he will also establish target priorities, and if possible, furnish annotated target photography to the chief of combat operations for his preliminary examination. The allocation of the available air effort by the chief of combat operations for the primary tasks of counterair, interdiction, and close air support will be based upon intelligence information available concerning enemy air, order of battle, and the ground situation. After making a preliminary determination

as to the proportionate allocations, the chief of combat operations considers specific preplanned targets in each category. The conferences are finalized by the announcement of the chief of combat operations of the tentative air plan for the next operational period. This plan includes the forces to be committed for all TAF air operations. It will specify targets to be attacked, and, in some cases, the type of aircraft to be employed against each target. The responsibility for the execution of air plans as outlined rests with the air operations center. Its execution is continuous in nature; however, the daily cycle must stop and start once in each 24-hour period for reporting and recording purposes.

c. Air Support Operations Center.

(1) General. The air support operations center (ASOC) is an Air Force facility located in each field army area for final control and coordination of joint air-ground operations. The air support operations center operates in the same general location as the army tactical support center (TSC) and maintains very close relations therewith. The air support operations center is organized to provide the coordination necessary to ensure full integration of close air support and reconnaissance in all phases of air-ground operations. Personnel assigned to the air support operations center are held to the minimum necessary to perform the immediate functions of coordination of service activities and will include the following: director; chief duty officers; intelligence officers; reconnaissance duty officers; weather officers; and personnel to operate small transportation, administrative, and communications sections. Sufficient operations, intelligence, and support personnel are employed to operate the facility on a 24-hour basis. For proper coordination with the field army, this agency must be extremely mobile. It must be able to move each time the field army headquarters moves with little or no interruption of operations. The operations of the air support operations center will be monitored by the air operations center. The functions of the air support operations center include the following:

(a) Maintaining and disseminating current information pertaining to air operations.

(b) Formulating and implementing plans for employing the air effort made available by the air operations center for support of the field army.

(c) Coordinating the employment of close air support and tactical air reconnaissance missions operating in the field army area.

(d) Exchanging and disseminating information and intelligence concerning both the enemy and friendly air and ground situations.

(e) Accumulating and disseminating weather information.

(f) Supervising the activities of the air liaison officers and forward air controllers in the air support operation's area of responsibility.

(g) Maintaining communications contact with the tactical air control system at all times.

d. Air Liaison Officers. Air liaison officers will be assigned to each major Army command below field army level. These officers are experienced pilots, familiar with

operational procedures and the capabilities and limitations of the tactical air effort. They represent the TAF commander and are directly responsible to the director of the air support operations center. Duties and responsibilities of the air liaison officers are:

(1) To advise the army unit commander and staff on matters pertaining to tactical air operations.

(2) To maintain current and adequate records of the status and requirements of these control elements.

(3) To keep current on the status of the tactical ground situation.

(4) To study and make recommendations to the director, air support operations center, as to the employment of air effort for the maximum effectiveness toward the accomplishment of the joint Army-Air Force mission.

(5) To coordinate preplanned air strike requests and results with the G3 air.

(6) To brief the army unit commander on current tactical air activities and supervise the forward air controllers in his area of responsibility.

(7) To control directly the functions and activities of the forward air controllers assigned to his sector.

e. Forward Air Controllers. Forward air controllers are combat-experienced fighter-bomber pilots who are in charge of air control teams (ACT). An air control team consists of a forward air controller (from Air Force), a radio operator, and a maintenance man (provided by the Army). This team is especially organized to direct and control close air support in the immediate vicinity of forward ground combat elements. The team is equipped with a jeep or mobile vehicle containing air-to-ground communications to vector aircraft to targets and point-to-point communications with the division air lisison officers. The number of such teams assigned to the frontline organizations will be in accordance with the tactical situation. (Normally 4 per division or 1 per combat group.) The assignment of forward air controllers will be made by the director, air support operations center.

31. TACTICAL AIR CONTROL SYSTEM:

a. The tactical air control system provides the air commanders with the organization and equipment required for centrally controlling all air operations. It provides the means of monitoring, filtering, and controlling the air movement of all aircraft, both friendly and enemy, in the TAF area of responsibility. The tactical air control system and its components do not have combat command responsibilities, except as specifically designated by the air commander. It is primarily the means through which the decisions of the air commander are transmitted to the combat echelons while in flight. The new tactical air control system is programed for the time period 1958-1963 and will provide the means of effective aircraft and missile guidance and control required during this time frame.

b. The air operations center is the focal point for the aircraft control and warning for the entire area. All offensive and defensive air operations are centrally directed from this point. In essence, the air operations center now incorporates what was known in the past as the air control center.

c. The radar equipment of the tactical air control system will be deployed into 3 principal control areas which may cover an area with a 300 mile wide front and 500 miles in depth (fig 6).

d. The forward area will be subdivided into areas or sectors approximately 150 miles on the front and 200 miles in depth, leaving the one area in the rear about 300 miles square. The two forward areas are much smaller than the rear area because it is expected that most combat action will take place out in front of and within the first 200-mile depth.

e. Within each of the two forward sectors is established a sector control center (SCC). These SCC are subordinate echelons within the tactical air control system. Each of these centers will have the capability to assume the functions of the air operations center in an emergency. The SCC is also the focal point for radar coverage of the control and reporting centers (CRC), and it is from these points that the control and warning information is fed back to the air operations center.

f. The CRC is a subordinate facility of the sector control center from which control and air warning operations are conducted. The primary control radar will be located at the CRC's and this facility is also the focal point for the control and reporting post operating within its sector. The CRC's will be equipped with the high traffic capacity control radar, the AN/MPS-20, around which the new tactical air control system has been built.

g. The early warning control and reporting posts (CRP) are used primarily to extend the radar coverage of the CRC's. The radar at the CRP's is a high-powered, relatively lightweight radar which is used to provide extremely long-range early warning. They will have a limited control capability, but they will be placed up close to the frontlines to give maximum early warning over enemy territory.

h. To cover the blank spots of the CRC's, there will be gap-filler radar. These will be used to extend the radar coverage below the radar horizon of the MPS-20. Once again, the gap-filler radar will have limited control capability.

i. The last component of the tactical air control system is the target director post (TDP). This installation will contain MSQ, shoran, and shanicle guidance equipment. The TDP's are subordinate installations to the SCC's and will function to guide aircraft and missiles against ground targets by electronic means.

32. ARMY GROUP/TACTICAL AIR FORCES:

a. General. In accordance with directions received from respective component force commanders, the commanders of the army group/TAF prepare closely integrated plans to ensure maximum effectiveness from available forces. Operations must be planned with full cognizance and appreciation of the over-all mission of the two forces; the capabilities, and limitations of each; and a thorough understanding of how to obtain the best results from coordination, and integration of the air-ground effort. The army group/TAF echelon accomplishes the majority of the interservice planning and coordination. At this level, rapid exchange of information, discussion of problems of mutual interest, and formulation of plans are necessary (fig 3).

b. Requests for Tactical Air Support. The tactical air force commander through the air operations center will make available to each air support operations center a designated amount of air effort to be employed on offensive and reconnaissance air support within a field army area over a given period. The amount of air effort available will be consistent with the priorities of the other TAF assigned missions--counterair and interdiction. The air operations center will apportion this air effort between the air support operations centers for support of the field armies in accordance with priorities established by army group.

33. FIELD ARMY/AIR SUPPORT OPERATIONS CENTER:

a. Preplanning. Tactical air support is most effective when missions are planned as far in advance as possible. Preplanning ensures adequate time to determine tactics, force

requirements, and appropriate ordnance. The field army coordinates with the air support operations center to determine target suitability for air support.

b. Immediate Requests.

(1) It is not possible to preplan for all air missions which will be required each day; therefore, plans must be made for immediate mission requests. Immediate mission requests generate as specific targets develop during an operation. Operational experience over a period of time may provide a planning factor for determining the approximate number of immediate requests to expect. Requests may be fulfilled either by ground alert aircraft which have been made available to the air support operations center for this purpose or by diverting preplanned missions from less important targets.

(2) Immediate air support requests originating at lower echelons are processed through Army channels to the field army tactical support center. If organic support is inadequate and the targets are considered appropriate for tactical air support, the requests are passed to the air support operations center for accomplishment. The air support operations center verifies the appropriateness of the target, approves or disapproves the request, and if air effort is available, the mission is laid-on. If the mission requested is beyond the capability of the air support operations center, the request is forwarded to the air operations center. The air operations center, in coordination with and/or approval of the army group, will make available aircraft from reserve or by diverting aircraft from another air support operations center, or will disapprove the request. If the request is disapproved, the air operations center will notify the air support operations center, which in turn will notify the tactical support center. The tactical support center is responsible for notifying the lower echelons. If the request is approved, the air operations center makes the air effort available to the air support operations center. The air support operations center then coordinates the movement of the aircraft through the appropriate Air Force communications and control facilities.

34. COORDINATION OF ATOMIC OPERATIONS:

a. Allocation of Atomic Weapons.

(1) Within the allocation and employment limitations established by area operations commander, available atomic weapons will be suballocated to the commander of each unit who has organic or attached delivery forces. Authority to employ these weapons, within established policies, will be delegated concurrently.

(2) To supplement the Army forces atomic fire capability, appropriate air-delivery type atomic weapons may be used for support of Army forces. Allocation policies established by the area commander will provide commanders a basis from which operations may be planned.

b. Employment and Coordination of Air-Delivered Atomic Fire Support.

(1) At field army level, the tactical support center (TSC) will develop requirements for targets to be destroyed by air-delivered weapons, based on requests from subordinate units.

(2) Army requirements for air strikes will be referred to the associate air support operations center by the TSC. The TSC will designate the target, results desired, location of nearest friendly troops to target, time of delivery, and other instructions necessary for coordination and gaining the greatest results.

c. Interservice Coordination.

(1) Air Force delivery of atomic strikes within the combat zone will be at request of the Army forces concerned, or if initiated by the Air Force will be coordinated prior to delivery with the field army headquarters involved through the air support operations center and TSC agencies. Coordination will involve identification of the target, results predicted, proposed weapon yield, type of burst, and time of delivery.

(2) Air Force delivery of atomic strikes beyond the combat zone will be coordinated with surface forces at army group/TAF level. This will include a listing of installations or areas which are considered essential to the success of projected operations and should not be subject to atomic attack.

(3) Army-delivered weapons: The army commander will issue a warning to arrive at the air operations center not later than 15 minutes prior to time on target.

CHAPTER 7

OFFENSIVE AIR TASKS

35. GENERAL:

a. The versatility of airpower has led some to attribute a misleading importance to the individual tasks of a TAF. They assign undue qualitative superiority to one or more of the related parts of air operations. They believe, for instance, that tactical airpower is more important than strategic, or vice versa; or that close support is more vital to tactical air operations than the winning of air superiority. The relative importance of these functions, of course, varies, depending upon the military situation to which they are applied.

b. The offensive mission of TAF 's forces contain three essential tasks--control of the air, interdiction, and close support. These tasks are carried on simultaneously with no rigid barriers separating them. These tasks have at times been referred to as "phases of tactical air operations" or "priorities of tactical air operations." These terms are improper since they imply a certain procedure or fixed precedence of operations. Performance of any one of these tasks at any given time may be the dominant and paramount concern of area air forces in a a particular campaign.

c. Area or area air forces as a first priority accomplish those tasks which afford the greatest opportunity of producing conclusive results in terms of the area mission as whole. The emphasis will shift from one task to another according to the degree of success achieved. The proper emphasis can be determined only after cognizance is taken of several fundamental factors.

36. EMPLOYMENT OF FORCES:

a. Timely offensive employment in mass against well-chosen objectives is fundamental to the full exploitation of the combat potential of area air forces. The flexibility of area air forces permits the widest exploitation of the principle of surprise. Surprise, coupled with the striking power of weapons of mass destruction, may be decisive at any stage in the course of the conflict. These elements, may, in fact, be decisive at the very outset of hostilities.

b. A condition of ascendancy over the enemy's deployed air force is the aim of area air forces. From this condition of ascendancy, area operations can be conducted without major interference from the enemy's air force. Because of the influence of enemy air action on area operations, area air forces are employed to obtain an area-wide condition of air superiority. Localized air superiority does not provide the necessary security for area operations on a sustaining basis. Localized initiative may be relinquished or action avoided altogether to further the development of a situation which is more fundamental and far-reaching in its effects. Area air forces are not committed piecemeal to localized actions which are limited in effect and magnitude and which lessen or destroy their capacity to achieve decisive results.

37. COUNTERAIR:

a. The gaining and maintaining of air superiority is of primary importance. No other type mission, either in the air or on the ground, can be totally successful until the enemy's effectiveness in the air is deterred. The characteristics of airpower apply to friend and foe alike and, if properly employed, enemy air forces may destroy our force unless we destroy his first. Air superiority is a synonym for control of the air, but is limited to that degree of combat effectiveness over an opposing air force in a purely military situation.

Control of the air in a broad sense does not necessarily imply the existence of physical conflict but may be exploited in peacetime as an existing, though passive, deterrent to war.

b. Control of the air in war is the freedom to carry on essential military air, land, and sea operations against the enemy without prohibitive loss of effectiveness due to enemy air action. It is that degree of capability of one air force over another which permits the conduct of air operations by the former without effective interference by the opposing force. It is a relative condition and will exist in varying degrees of control which do not afford identical advantages to all types of forces. These varying degrees will have different meaning in terms of security and advantages for different forces. The commanders concerned in each instance must analyze the opportunities which are afforded.

c. It is seldom practicable or possible to eliminate completely the entire enemy air threat to an area of operations. A resourceful enemy may be able to shift reserves and equipments, call upon emergency means of production, improvise, etc. Through such effort, the enemy can preserve segments of his force and prolong resistance. The effects of such efforts may frequently alter the degree of air superiority held by the friendly air forces. Control of the air is a continuing responsibility throughout the conflict, and once attained, it must never be jeopardized through lack of effort.

d. During World War II, "local air superiority" could be attained in a localized area and maintained for relatively long periods. In view of the advances in speed and range of modern aircraft, local air superiority in future operations is questionable. Enemy air units defeated in one area may be reinforced overnight, or long-range aircraft from distant bases may challenge the local condition of control. Perhaps under most unusual circumstances local air superiority could be maintained for a very limited period, but it would be extremely temporary in nature, and depend to a large degree on the enemy's will to challenge it. With the advent of atomic and thermonuclear weapons, the successful attack of a single enemy aircraft could result in unacceptable destruction.

e. Control of the air can be established and maintained only by offensive air operations and is not achieved by means of an "air umbrella" over friendly troops and installations. This might be compared to stopping an artillery shell after it has been fired. A determined offensive air strike has never been turned back because of the defensive actions of the enemy. The battle must be carried to the enemy in operations against all elements of his airpower, including aircraft on the ground and in the air, airbases, and the supporting structure which contributes to his strength. The destruction of aircraft and airbase complexes will have immediate and telling effects on the air battle and will provide a degree of air security for the area. However, aircraft factories, assembly plants, fuel and related industries are heavy concentrations of enemy air potential, and unless these sustaining capabilities are destroyed or neutralized, the air battle is to become a war of attrition. The operations of the SAC against enemy industry substantially contributes to the attainment of control of the air.

f. Planning the counterair campaign must be on an area-wide scale. It involves all the offensive air potential of the area and conclusive results can be obtained only by concentration of effort and singleness of purpose. Therefore, planning and control of the counterair battle is retained at area level. The area commander defines the broad strategy which, in turn, is developed into the detailed plans at area and TAF level.

38. INTERDICTION:

a. The free and rapid flow of materiel from the rear areas to the battlefield is vital to the success of any military campaign. Major surface or air actions require an almost limitless complex of weapons, fuel, ammunition, food, personnel, etc., which must be moved over lines of communication from distant sources into the battle area. Denying the enemy the ability

to provide these supplies and reinforcements for his forces, as well as preventing their movement, has long been a strategy of war. Interdiction is the direct application of air firepower for purpose of neutralizing, destroying or harassing enemy surface forces, resources or lines of communication. Air forces engage in interdiction activities throughout the combat zone and into enemy territory to the limit of their range. Ground targets, however, will be attacked in the combat zone only if specifically requested by the surface forces; or after coordination with the surface force commander to integrate the Air Force interdiction program with the fire plan of the surface forces, and to ensure friendly troop safety.

b. Next to counterair operations, interdiction is the most remunerative task of theater or area air forces. Maintenance and supply facilities and lines of communication are excellent air targets. Troops and supplies in transit are considerably more vulnerable to interdiction and destruction than when deployed in the immediate battle area. The late General Hoyt S. Vandenberg has said: "The same bomb that knocks out 1 mortar on the battlefield can knock out of a convoy 10 mortars 50 miles beyond the front. Five hundred miles farther back, that same bomb can blow up a railroad engine or bridge, preventing the arrival of 100 mortars in the battle area."

c. Interdiction generally does not produce an immediate effect on the enemy forces in the battlefield. The effects of such attacks are cumulative. When the enemy is denied needed supplies and reinforcements, he may sustain himself for a time from accumulated stocks, especially if there is a minimum of combat. But if engaged in strenuous battle, supplies will be rapidly consumed, and when his forward reserves are depleted and his forces have limited movement, the combat effectiveness of his forces is greatly reduced.

d. Effective interdiction entails the execution of a carefully conceived, comprehensive plan designed to isolate an area and to stop effective support from reaching the area of conflict. Since the whole of the enemy's transportation and logistical structure is involved, the number of possible targets approaches astronomical figures. To achieve the objective in interdiction, it is necessary to attack systematically the significant elements of the enemy's logistical system. Thus, in order to isolate the critical elements and areas, current intelligence data are essential. Likewise, concentration of effort on critical routes and facilities is of prime importance. Concerted attacks swamp repair facilities, deplete stocks of materiel, and place a greater burden on the enemy's defenses.

e. Next to counterair, interdiction produces the greatest dividends within the capability of available forces in terms of the area mission. Like counterair, interdiction involves the use of all area air forces and is of area-wide significance. Therefore, broad planning of the interdiction campaign is accomplished at area level. The area air commander establishes the general scheme of employment and system of targets, prescribes priorities, anticipated results, and defines general areas of responsibility. The TAF is responsible for planning the actions to accomplish the tasks. Through planning at TAF, the area air commander's general plan is further developed; specific tasks are delineated and assigned. At TAF level, planning involves the short-range conduct of operations for the implementation of the assigned portion of the broader area air interdiction task.

f. Although interdiction is primarily an air force responsibility, the ground commander has a direct interest in the interdiction plan and it must be fully coordinated and integrated with his plan of action. Through coordination, the interdiction plan can specifically support the ground campaign by isolating and weakening certain enemy forces, areas, and objectives of immediate concern to the ground commander, and avoid hampering the ground action by destroying enemy bridges, roads, or other facilities for which the ground commander has future plans. Also, the ground action will create lucrative targets by forcing the enemy to move, mass, or otherwise expose himself, and the air forces can strike these transitory targets immediately. Finally, integrated offensive actions of both army and air forces impose the

highest rate of attrition on enemy materiel, while at the same time maximum strain is imposed on the enemy's logistical system. Continued pressure by the ground forces, causing rapid consumption of enemy materiel, is an important requisite of a successful interdiction program.

39. CLOSE AIR SUPPORT:

a. Close air support is the application of air firepower within the combat zone at the request of the field army commander against enemy targets capable of interfering with current operations of friendly forces. Close air support delivered on targets in vicinity of friendly forces must be integrated with the fire and movement of surface forces to ensure troop safety and maximum efficiency in expenditure of effort. Normally, close air support should not be employed within the means, and capabilities of organic ground weapons unless the added firepower delivered by aircraft will produce decisive results.

b. The majority of close support strikes are accomplished by fighter-bombers of the TAF against targets that are usually small and widely dispersed, such as enemy troop emplacements, vehicles, and defiladed positions. The fighter-bomber can carry a wide variety of armament loads and has the maneuverability, accuracy, and flexibility required to attack these targets. The bomber is seldom used in close air support operations except in situations of critical importance or of great significance to the area mission. The decision to divert the bombers from their normal role would rest with area air commander or possibly the area commander.

c. The effects of close support are immediate and of tremendous importance to the troops being supported. However, these operations are limited in scope and objective and they involve the use of expensive equipment against much less expensive enemy equipment. National economy dictates that there will never be sufficient "air" available to satisfy all that is desired. Therefore, prudence and discretion must be exercised in the selection of close-support targets and the expenditure of the available air effort.

d. Close air support is most effective in a fluid situation and first priority should be given those units that are moving and in contact with the enemy. Units advancing need the added firepower to exploit their opportunities and help sustain their advance; units in retrograde need the protection and delaying action of close air support. Further, the enemy ground units, also moving, expose very lucrative targets that can be effectively attacked by the fighter-bombers. In a static situation, there is less need for air support, and the dug-in, prepared, and camouflaged enemy positions present less lucrative targets.

e. Some of the most profitable methods of employment of airpower in close air support are as follows:

(1) Breakthrough operations.

(a) A breakthrough when the enemy position has become softened and untenable is one of the most appropriate situations for the employment of air effort in conjunction with ground force action. In a situation such as this the enemy forces have the choice of being overrun or captured, or abandoning their position and being subjected to constant air attack.

(b) A breakthrough usually is initiated by application of both air and ground forces against specific sections of enemy-held positions. Greater concentrations of firepower result from the simultaneous use of air and artillery effort. Concurrent use of both air and ground weapons, when properly coordinated, increases the weight of munitions fired at the enemy. This will also decrease the loss of friendly aircraft by the suppressing

effect of friendly fire on enemy positions. Through the use of weapons of mass destruction and concentrated conventional weapons attack, air effort is able to provide the maximum assistance for breaching hostile positions. Once the breakthrough is under way, the "air" can assist by attacking targets, such as strong defensive positions, concentrations of enemy troops, and other centers of resistance which may delay exploitation by the ground forces.

(c) Air effort assigned to the operation must be concentrated in sufficient strength to produce the desired results. Until friendly ground forces are in command of the situation, air action continues so that the enemy forces are prohibited from regrouping and initiating effective counteroffensives.

(d) In a fluid situation, enemy threats may occur in a number of different localities. In addition, enemy air activity may present a threat to the success of the operation. For these reasons, emphasis must be placed upon the need for centralized control. A high degree of control throughout the entire area control and direction system is necessary so that air effort may be shifted to counter an adverse situation.

(2) Exploitation operations. Ground force tactics in the exploitation operations usually consist of the rapid advance of armored columns. Air effort is employed with minimum delay against enemy resistance capable of slowing the advance of these columns. During these operations, a forward air controller accompanies advancing columns to facilitate and direct air strikes. He is the representative of the TAF commander.

(3) Hostile offensive or counteroffensive operations.

(a) A hostile offensive or counteroffensive may be attempted with or without control of the air being held by the hostile forces. In those cases where the enemy does have control of the air, friendly air effort must be allotted appropriately to counterair operations. Under conditions of friendly air control, maximum air effort is employed against both interdiction and close air support targets.

(b) The massing of advancing forces forms excellent targets for the use of air weapons of mass destruction and saturation bombing of specific areas where hostile forces are concentrated. The requirement for air operations in a situation of this type, and on targets which are in close proximity to friendly forces, reemphasizes the need for close coordination and maximum effective operation of the control and directing system.

(4) Attacks against selected targets. Ground forces are provided with the required organic weapons normally considered necessary for the conduct of the surface campaign. These weapons should be used for the neutralization and destruction of the majority of targets. However, there will be certain targets of such a nature that they can be more effectively and economically neutralized by air attack than by surface action. The use of air effort is applied as required.

(5) Airborne operations.

(a) Airborne operations are characterized by isolation and a lack of sufficient organic fire support. They must depend upon air for basic fire support,

so close air support operations take on even greater significance then in ordinary land mass operations. Air control facilities are likely to be overextended because of the distance of the objective areas from existing control facilities. Likewise, an air request net and an air warning system may be lacking.

(b) To offset these inherent deficiencies, control of the close air support aircraft may be delegated to an air coordinator who will act as an airborne air operations center during the initial stage of the operation. Also, air alert over the objective area is usually justified to minimize the delay between the requirement for air support and the actual strike. Farsighted and thorough planning is necessary to ensure timely close air support in sufficient strength and with appropriate ordnance.

(6) Amphibious operations.

(a) During the initial stage of an amphibious operation, close air support is of paramount importance because the forces are exposed and adequate fire support is lacking. Close air support continues to be a primary source of firepower against the enemy until the ground force's organic supporting arms can be brought into action.

(b) Close support of amphibious operations may be provided by the Navy, Marines, or Air Force, or all three Services jointly. The activities of all three will be closely coordinated to meet the particular needs of the operation.

(c) As in airborne operations, control of the air is essential to success.

f. Planning close air support, because of the local significance of the operation, requires close coordination and integration of plans required. Targets that develop as a result of the land battle have immediate influence on the action in progress, are often transitory in nature, and require immediate air action. Thus, close air support planning is short-ranged and often impromptu. The ground commander selects the targets and assigns priorities; the air commander assigns the air effort within the capabilities of the forces available.

g. Close air support missions may be classed in two types--preplanned and immediate.

(1) Preplanned missions are those for which the target has been selected sufficiently in advance to allow complete planning and preparation prior to execution. They are generally scheduled as a result of decisions reached in daily planning conferences. Preplanned missions are more effective and economical because sufficient time is allowed to obtain target information, permit thorough target study, and effect proper weapon selection.

(2) Immediate missions are those flown to meet specific requests which arise during the course of battle and cannot be planned in advance. This type mission is basically uneconomical because of its impromptu planning and the fact that the munitions carried may not be suitable or adequate for the target. However, these missions are essential to the air-ground campaign and the inherent deficiencies are overcome somewhat by a general area briefing of the aircrews and arming the alert aircraft with weapons best suited for the type targets most likely to be encountered.

h. The air effort for immediate close air support is normally maintained in two states of readiness--air alert and on-ground alert.

(1) Air alert is the least economical because it expends the air effort even though a target may not develop within the time the aircraft are in the target area. This is particularly true with jet aircraft. For this reason, air alert will not be used except for special operations or emergencies. Should a great number of immediate targets be expected to develop and should the additional delay for ground alert aircraft to respond to the request be too great, then air alert may be justified for a limited period. Diversion from primary targets may be a better practice. Either extremity of an average army front is within a few minutes' flying time of modern aircraft. Air alert may at times be committed to support a corps with the corps air liaison officer specifying targets to be attacked. This indicates prior planning and is an extension of control normally effected through air operations center or air support operations center.

(2) On-ground alert, aircraft are maintained at the airbase ready to respond to immediate requests for air support as the targets develop. The pilots are prebriefed on the general situation and area of action, and the aircraft are armed with weapons best suited for the anticipated targets. If no targets develop, the aircraft remain on the ground.

(3) Column cover is a form of air alert committed to assist a vehicular column. The aircraft are in direct communication with the division air liaison officer or forward air controller in the column and can respond quickly to his request. Although column cover is preplanned, targets developed are immediate in nature.

Column cover provides three functions:

(a) Close air support.

(b) Visual reconnaissance of the flanks and in advance of the column.

(c) Limited protection against enemy air attack.

In this respect it must be remembered that column cover aircraft, in order to reconnoiter, must be at a relatively low altitude and moderate airspeed. Add the encumbrance of bombs, rockets, and drop tanks and the column cover aircraft are not in a position to counter effectively an enemy air attack.

CHAPTER 8

TARGET SELECTION

40. GENERAL:

a. The most difficult task associated with the employment of area air forces concerns the selection of targets and target systems. This is a task requiring detailed data, accurate intelligence, and thorough analysis. If any one of these elements is lacking, the air effort may be expended without producing the necessary results. There are generally insufficient forces to conduct extensive operations in all air tasks or to sustain action against numerous target systems at one time. Therefore, it is essential that the selection of targets and allocation of effort be in terms of the needs of the area and be consistent with the economy of force principle.

b. There are many factors that must be considered before target selection is effected. Of primary importance is the target's essentiality to the enemy's combat effort. The breadth of this factor requires an examination of the entire spectrum of targets which are most essential to the enemy's combat activities. Other pertinent factors that have general application are--

(1) Vulnerability. The target must be susceptible to destruction or neutralization within the capabilities of available weapons and available forces.

(2) Identifiability. The target must be identifiable from the air, with consideration to the type aircraft employed, weather, and illumination. In the absence of readily identifiable features, the target may be marked by smoke or other means in order to provide the pilot an aiming point.

(3) Economy. The destruction of neutralization of the target must be in consonance with the effort expended. Included must be an evaluation of the probable losses of personnel and equipment weighed against anticipated results.

(4) Time. The time required to bring about the desired results must be within the capabilities of the available force. The recuperability of the target system, depth, cushion, and reserves or substitute equipment available to the enemy must all be considered.

c. Target selection is a responsibility of all levels of command in area air forces. The area commander establishes general target priorities according to his appraisal as to what actions potentially assure the highest degree of success. Within this frame of reference, target systems are established and individual targets identified. Primarily, target selection is accomplished at TAF level and above and requires the highest professional and technical skill available to the commander. The combat wings do not have sufficient data or technical advice to engage in extensive target selection.

41. COUNTERAIR TARGETS:

a. The first consideration in the selection of targets for offensive counterair operations is to identify those parts of the enemy air forces which post the greatest threat to the area mission. The enemy's air structure consists of aircraft and missile airbases and operating personnel. Depending upon circumstances, any one of these might be the most profitable to attack.

b. Attacks on airbases may result in the nutralization of all the elements of the air structure, or they might find the aircraft dispersed in the air or deployed to other bases, and the personnel removed. However, the destruction of the enemy's airbases and facilities may be decisive in the control of the airbattle if it denies him the required range, facilities, or other conditions necessary for offensive operations.

c. The importance of airbases to the enemy's offensive capability varies materially in terms of their size, distance from the area of combat, and the installations and facilities thereon. Moreover, the bases may contain heavy concentrations of personnel and aircraft at one time, or they may be almost deserted at another. Therefore, the selection of offensive counterair targets must take into consideration the factors of conditions and time.

d. Airborne aircraft are profitable targets as their destruction eliminates highly trained crews as well as the aircraft. However, where and when airborne aircraft will be encountered depends upon the enemy's discretion to expose them. Since aircraft and missiles on the ground are consistently more accessible than airborne aircraft, they are more valuable as counterair targets. Further, air vehicles on the ground are more vulnerable to air attack.

42. INTERDICTION TARGETS:

a. Interdiction cannot be expected to result in complete denial of resources to the enemy; rather, interdiction seeks to interrupt movement and destroy existing stocks to the extent that resources are reduced below the critical level. Therefore, a thorough study of the enemy's logistical system is necessary to identify the most sensitive and vulnerable areas. In view of the multitude of potential targets, interdiction target systems are usually confined to the main lines of communication and a few critical supply and maintenance elements that are within the sustained capabilities of the available force.

b. In land-mass warfare, the bulk of supplies and personnel are usually moved by railroad, so rail bridges and movement are valuable targets. As the interdiction of rail traffic progresses, highway traffic of necessity increases and its value as a target system advances. Inland waterways, if available, are used extensively to carry a great amount of necessary supplies, so neutralization of this carrier system places a greater demand on the road and rail systems. Thus, it can be seen that interdiction of a specific transportation system will enhance the value of other methods of transportation to the enemy. In the same vein, interdiction of a main rail or road net may necessitate the use of previously insignificant routes as the main artery of supply. As a result, target selection in interdiction is a continuing requirement with constant consideration given the whole of the enemy's transportation system, including his capability to reroute, transship, or employ new means of transport.

c. Selection of interdiction targets should provide the most damage for the effort expended. For example, destroying a bridge usually creates a greater repair and traffic problem than attacks of equal weight made elsewhere on the roadbed. Likewise, cutting a rail will usually impede traffic more effectively than cutting a road, and destroying a rail junction is easier than maintaining cuts on two rail lines. However, target selection for interdiction of enemy lines of communication entails more than consideration of ease of method. Defenses of bridges and rail junctions may occasion greater losses to attacking aircraft than making a series of cuts of a single, but less defended, rail line. The type terrain, the facilities in use by the enemy, the future need for certain of these facilities by friendly forces, and the limitations of air forces during bad weather and darkness will influence the application of the several methods at various times and places. The interdiction program must have adequate depth to impede and harass logistical support sufficiently and continuously, regardless of bad weather, darkness, and his ability to improvise and substitute.

d. Traffic on railways, highways, waterways, and airways is an excellent target but usually provides only targets of opportunity. If armed reconnaissance is carefully planned,

destruction of rolling stock is highly profitable and makes movement extremely costly for the enemy. Destruction of bridges and roadbeds causes bottlenecks of traffic that are extremely lucrative targets. Troop movement and stockpiles within the area of interdiction are also excellent targets and their destruction or neutralization further impedes the enemy's logistical efforts.

e. Wide coverage by reconnaissance and other intelligence-collecting agencies is essential to the maintenance of effective interdiction. The enemy's repair effort and his improvisation and substitution must be constantly surveyed. It is generally advantageous to allow the enemy to expend effort to repair to the point where the facility is almost ready to become operative. A reattack at this time is more effective and less costly in terms of the total effort.

43. CLOSE AIR SUPPORT TARGETS:

a. Targets for close air support operations are almost characterized by their mobility and fleeting nature; however, some may be fixed, such as fortifications. The criteria for selection are generally those previously indicated in this chapter for the selection of all targets. Allied is the fact that close support attacks are not generally conducted against targets which can be engaged effectively by surface forces within the time required.

b. In contrast with counterair and interdiction, close air support target selection is short ranged and relatively impromptu, the targets being developed during the course of battle and selected for attack immediately or within 24 hours. The variety of close support targets is infinite, and the effectiveness with which "air" can neutralize them is contingent upon several variables, including the target composition and disposition, weather, weapons, time available, illumination, proximity to friendly forces, etc. Listed below are general categories which comprise the majority of close air support targets, viewed in the light of vulnerability to conventional weapons carried by fighter-bombers.

(1) Vehicles. All vehicles are highly vulnerable to air attack by most conventional weapons. Thinskinned vehicles are easy prey for machineguns, bombs, rockets, frag bombs, or napalm, whereas tanks and heavily armored vehicles are relatively impervious to attacks by machinegun or frag bombs. Rockets, napalm, and general purpose bombs are all effective on armored vehicles and tanks, but require accurate delivery.

(2) Troops. Troops in the open are good air targets. When they are under cover, troops are difficult to kill except with napalm. However, close-support attacks against troops are accompanied by two outstanding secondary contributions: a demoralizing effect on survivors and disruption of cohesive enemy effort through the incidental destruction of radios, telephones, and organic combat equipment.

(3) Defended villages. Defended villages are vulnerable to mass bombing, but are not good fighter-bomber targets. Best results can be obtained by selecting specific targets within the village for attack.

(4) Fortifications. Heavy fortifications of the bunker type are generally not vulnerable to tactical air except with very accurately placed napalm tanks, or bombs weighing 4,000 pounds or more. Field fortifications, including pillboxes, artillery emplacements, and other positions usually heavily revetted are vulnerable to air attack, but must be struck individually and accurately. Near misses have little effect. Since fortifications are usually heavily defended by antiaircraft, they also inflict high attrition on attacking aircraft.

c. From the foregoing, it can be seen that effective close support requires a very high degree of accuracy. Fighter-bombers, individually aiming each bomb, rocket, or burst of machinegun fire, can deliver the necessary accuracy; however, the destructive radius of conventional weapons carried by fighter-bombers is relatively small. Likewise, the most suitable close support targets are correspondingly small. Therefore, these targets must be easily identifiable from the air or accurately marked to provide an aiming point. Although area targets can be attacked by fighters, they are not generally good targets and do not efficiently utilize the fighter-bomber effort. Best effects can be obtained by identifying critical elements within the area target and selecting them for attack.

44. ATOMIC AND THERMONUCLEAR CONSIDERATIONS:

The employment of mass destruction weapons does not affect consideration of the basic target selection factors discussed in paragraph 42. However, the additional destructive power will greatly enhance the capabilities of the TAF and place most conceivable targets within the vulnerable category. Economy will take on added significance in consideration of the selection factors. Are the anticipated results in consonance with the expenditure of available force and weapons?

CHAPTER 9

AIR RECONNAISSANCE

45. INTRODUCTION TO AREA AIR RECONNAISSANCE FORCES:

a. Intelligence Requirements for Area Operations.

(1) Throughout history, intelligence concerning the movement, disposition, and capability of enemy forces has been a fundamental requirement for effective military operations. Intelligence information is the very basis of planning every military action. The accelerated tempo and global aspects of modern military operations have increased both the need for, and the scope of, intelligence required for these operations. Timeliness, accuracy, and completeness are vital characteristics of intelligence required for modern war.

(2) A comprehensive knowledge of enemy capability is a major criterion in formulating area plans. This knowledge is obtained largely through aerial reconnaissance activities.

b. The Role of Air Reconnaissance in Area Operations.

(1) Area air reconnaissance forces have the inherent capability to penetrate deep within enemy territory and to obtain necessary and timely intelligence information. They provide data for correlating information of enemy disposition and movement on a wide front and from great depth. Air reconnaissance forces thus contribute information toward a meaningful picture of the enemy's over-all capabilities and are essential and vital for the success of area ground, sea, and air operations.

(2) Area air reconnaissance forces are responsible, to an unprecedented degree, for the ability of the area forces to master the enemy. They will be the major source of active intelligence information after hostilities have begun.

c. Interdependence of Area and Strategic Air Reconnaissance Forces.

(1) The acceleration of military operations, occasioned by present-day technical improvements, increases the necessity for timely intelligence concerning enemy activities in all areas. Activity in enemy rear areas may be rapidly translated into combat action, thereby necessitating intelligence information from distant areas. Information obtained from deep in the enemy's territory generally indicates the most fundamental of his probable capabilities. This is the information that permits the determination of the most vulnerable portion of the enemy's over-all military structure.

(2) Air reconnaissance operations conducted by area and strategic air reconnaissance forces are mutually complementary; and the combined results, when properly correlated, will provide information for planning over-all military strategy. Strategy planning requires the free and timely exchange of intelligence information between area and strategic forces.

46. FUNCTIONS OF AREA AIR RECONNAISSANCE FORCES:

a. General.

(1) Area air reconnaissance forces are the basic information gathering agency for an area of operations in time of war. These forces produce the bulk of the raw data, which, when analyzed, indicate the nature, capability, and possible courses of action of the opposing military forces.

(2) Before an outbreak of hostilities, area air reconnaissance forces gather as much intelligence information about an enemy as existing national policy will allow.

(3) In gathering intelligence information, area air reconnaissance is concentrated to obtain data considered to be essential. This requires the employment of reconnaissance forces primarily to collect that information most essential to planning for over-all area objectives. Intelligence information must be so categorized if the reconnaissance effort is to be expended practically and usefully. Once the categories of essential information have been defined, priorities are established within each category for employing the air reconnaissance effort. These priorities are flexible and vary according to the needs of operations. As the emphasis in operations progresses from one course of action to another, the emphasis of the reconnaissance effort is shifted accordingly.

(4) For clarity, the functions of air reconnaissance forces are described according to the category of information they produce. These functions, when combined with other methods of procuring similar or complementary data, produce the intelligence information necessary for operations. It should not be implied that air reconnaissance forces are the only activities in an area collecting such information. All forces, to the extent of their capability, produce information in any one of these given functional areas. The discussion that follows, however, is devoted to air reconnaissance forces exclusively.

(5) The functions performed by air reconnaissance provide information about enemy air, ground, and sea forces, lines of communication and logistical support structures, industrial targets, deployment of enemy forces, topographic and cultural features of the area of combat or projected areas of combat, electronic targets, and weather conditions which affect military operations. Information gathered will be available for evaluation and use by air, ground, or sea forces. Normally, air reconnaissance forces are not used exclusively to support any one phase of the effort, but to gather information for all phases simultaneously.

b. Enemy Air Forces.

(1) In the conduct of the counterair battle, the first requirement is to determine the enemy air order of battle. Usually, information of the enemy's air strength and general composition will be available before the outbreak of war. This general information needs immediate detailed elaboration and confirmation upon the outbreak of hostilities. Thus, the first function of area air reconnaissance forces is systematically to gather comprehensive data about the enemy air force facing the area.

(2) In this function, area air reconnaissance forces employ visual, photographic, and electronic methods to locate and identify the main airfield system from which the opposing air force will sustain its operations. An analytical study of the data procured by the air reconnaissance forces provides a basis for estimating the combat potential of the opposing air force, and furnishes operational data for launching strikes to destroy and neutralize the enemy air force on the ground.

(3) When the deployment and composition of the enemy air force have been determined, data are required on other enemy defenses. These defenses consist of the air defense system, coupled with passive defenses to minimize the effects of attacks. Area air reconnaissance forces provide information about these enemy defenses. This function entails the use of all methods of electronic reconnaissance. From raw data, technical analysis supplies a detailed perspective of the enemy air defense system and indicates weaknesses which can be exploited by the penetrating air forces.

(4) An air force requires overhaul and repair facilities, and large quantities of fuel and ammunition to be capable of sustained fighting. Information on the enemy's logistical support facilities and air structure may form an additional basis for employing area air forces on the counterair task. Area air reconnaissance forces gather this information about the enemy's air logistical support facilities. This function of locating and identifying the opposing air force's supporting facilities usually is accomplished by all types of reconnaissance. Photographic and electronic information are combined and analyzed to determine the most effective means of attack.

(5) The function of area air reconnaissance in gaining information about the enemy air force is of a continuing nature. As long as the enemy has a semblance of an organized air force, air reconnaissance is required to maintain a current appraisal of this air force. Gathering information about enemy air forces is a continuous responsibility from the outset of war to its conclusion. The priority given to that function will be in direct proportion to the threat that the enemy air force poses.

c. Enemy Ground Forces.

(1) In the conduct of the over-all area plan, the area commander must know the enemy ground order of battle. Some of this information will be available at the outbreak of hostilities, and if required, will be confirmed and enlarged upon through aerial reconnaissance, immediately after outbreak of hostilities.

(2) Air reconnaissance forces furnish this information for evaluation and use. Knowledge of the strength and disposition of enemy ground forces enables the area commander to defend or exploit the military situation. Much of this reconnaissance is visual as enemy ground forces will be constantly moving. Photographic reconnaissance is used to assess the fixed fortifications. Most air reconnaissance required by the ground forces will be frontline reconnaissance to meet their needs for information on enemy troop disposition and changes.

(3) Knowledge of the location of the enemy strategic reserve forces is essential to the area commander when he plans his campaign. Air reconnaissance forces penetrate enemy defenses in depth and they obtain current information on redeployment of reserve forces.

(4) In addition to determining the enemy ground order of battle, air reconnaissance forces locate the general supply areas supporting the combat troops.

d. Enemy Sea Forces. Should enemy sea forces pose a threat to the area, air reconnaissance forces will obtain necessary information on the size, type, and location of such forces.

e. Enemy Lines of Communication and Logistical Support Structures. Lines of communication are essential to the enemy war effort. Over these lines, forces and supplies are converted into war action--ground, sea, and air. Planning for the interdiction campaign is based partially upon detailed, accurate, and timely intelligence information of lines of communication and logistical support structures. Day and night route reconnaissance is conducted to observe movements of supplies and troops. From this observed movement, planners may estimate type and volume of movement, possible sources of movement, and direction of movement.

f. Enemy Industrial Targets. A high priority function of area reconnaissance forces is to obtain or verify information on all the enemy's industrial facilities, within the area air zone of interest and capability. These facilities may support any or all the enemy combat for forces, and may be included for attack in the counterair or interdiction phases of the air war. A complete knowledge of this industrial complex is vital to effective planning for operations.

g. Friendly Forces. To contact isolated friendly forces is a function of area air reconnaissance forces. This is known as "contact" reconnaissance and may be necessary because these forces have had communication failures, or because they have been trapped by enemy forces. The location and disposition of such forces must be learned and reported to the interested commander.

h. Topography. Accurate data concerning the topographic, hydrographic, and cultural features of the area of operations are essential to the efficient conduct of all phases of area operations--ground, sea, and air. Air reconnaissance forces gather these data to determine the manner in which friendly forces are to be employed. Accurate and reliable information gathered by air reconnaissance forces will supplement information from other sources, for planning area operations. Area air reconnaissance forces also furnish aerial photography for cartographic purposes, within the limits of their capability.

i. Electronic Targets.

(1) Information concerning location and use of electronic installations is extremely valuable for planning means of denying radar warning and usable radio communications to the enemy.

(2) Effective reconnaissance of electronic targets is performed by specially equipped aircraft. Location of radar and communication sites may be verified by photographic reconnaissance.

j. Weather. Weather data are used in planning all phases of air, sea, and ground operations. This information is needed in determining times of attack, selection of routes, weapons to be used, and probable enemy countermeasures. Weather data from enemy controlled territory are obtained by area air reconnaissance forces especially equipped to observe, record, and transmit the information to friendly forces. These weather reconnaissance flights, flown at various levels in the atmosphere, gather information necessary to air operations, such as wind speeds and directions, temperatures, visibilities, horizontal and vertical cloud distribution, and weather hazards, such as thunderstorms, icing, and hail.

47. COMMAND, CONTROL, AND ORGANIZATION OF AREA AIR RECONNAISSANCE FORCES:

a. Command and Control.

(1) The area air commander will ensure the conduct of air reconnaissance operations. He will assign and deploy the reconnaissance forces to facilitate their rapid response to his directions, and at the same time he will decentralize the execution of the assigned tasks. The scope and magnitude of area operations, the organizational structure of the area air force, and the type and size of the air reconnaissance force available influence the exact placement of these units. Normally, these forces are assigned to the highest air headquarters conducting day-to-day operations.

(2) Air reconnaissance units are employed as components of major operational commands of the area air structure. Reconnaissance aviation is directly subordinate to the air headquarters it serves and is located close to it when feasible.

(3) Primary staff supervision of air reconnaissance forces, which are subordinate organizations, is a function of the operations staff. The staff reconnaissance officer is a member of the operation staff section. He should--

(a) Have a complete knowledge of the capabilities and limitations of reconnaissance aviation.

(b) Have an understanding of photographic scale and the limitations on interpretation of various scales.

(c) Know the capabilities and limitations of all methods of electronic reconnaissance.

(d) Have a detailed knowledge of the intelligence processes and requirements for which the reconnaissance organization gathers information.

(4) The intelligence staff officer of a headquarters supervising air reconnaissance requirements works closely with the operations staff officer in developing reconnaissance plans.

(5) Air reconnaissance forces of the USAF may be augmented by air reconnaissance forces of any service or nation. All air forces so employed are utilized as a single force by the area air commander; however, service and national integrity are maintained.

b. Organizational Structure. The basic reconnaissance unit in the United States Air Force is the wing. It is the smallest reconnaissance organization that is expected to fulfill all the functions of reconnaissance. Its primary mission group operates the aircraft that carry the sensing equipment, be it photographic, electronic, or weather. The wing also has a reconnaissance technical squadron that provides the necessary processing, interpretation, and dissemination of the product derived from aerial reconnaissance.

48. PLANNING:

a. Responsibilities in Planning.

(1) The area air commander will direct the air reconnaissance forces to coincide with the needs of the area. He will develop the primary air reconnaissance plan based on general requirements established by the area commander and based on the requirements inherent in his own mission and tasks. The reconnaissance plan is a part of the operation plan and must be coordinated with over-all area operations. This coordination is a specific responsibility of the staff reconnaissance officer.

(2) The TAF develop the detailed operational plans for air reconnaissance forces. The staff reconnaissance officer will ensure coordination of the reconnaissance plan with the intelligence collection plan and the over-all operational plan.

b. Selection of Reconnaissance Objectives.

(1) The selection of objectives is of primary importance in the development of an air reconnaissance plan. The selection of these objectives will be guided by current intelligence, the intelligence collection plan, the area plan of operation, and the plans of operation of the area ground, sea, and air forces. Once selected, these objectives are subject to continuous review as the military situation and the plans of operation change.

(2) The major undertakings, and to some extent specific tasks, of these forces are defined by the area air commander. The extent to which he defines the objectives will depend upon the tactical situation and the type of operation. Essentially, the operations revolve around main parts of systems of the enemy structure. When air reconnaissance targets are largely transient or mobile, the selection of the targets will be delegated to the air commander actually conducting the operations.

c. Priorities of Air Reconnaissance Tasks.

(1) Because of the great demand for air reconnaissance, priorities are necessary. Priorities for accomplishing air reconnaissance do not remain constant and are almost certain to change soon after hostilities commence. Only by following the over-all military situation and the plan of operation can the objectives be selected properly and the priorities set. Generally, reconnaissance priorities must coincide with the over-all area air priorities so that timely intelligence information will be available for the air effort.

(2) Aerial reconnaissance precedes--both in time and space--the air, ground, and sea operations, for which that reconnaissance is intended.

d. Requirements for Air Reconnaissance Inherent in the Area Air Commander's Mission. The area air commander's over-all mission, in general, will include three basic combat tasks: counterair, interdiction, and close air support of surface forces. Close relationship exists between the targets in each of these tasks and the targets which are appropriate for the reconnaissance plan.

(1) The types and numbers of reconnaissance targets planned for each of the above tasks will be influenced by--

(a) The nature of the target system for the combat task.

(b) The number of targets in that system.

(c) The timing of the attack as it relates to the objectives to be accomplished.

(d) The intelligence available.

(e) The means for obtaining the required information, other than air reconnaissance.

(2) Planning for the reconnaissance requirement is a continuing process. The staff reconnaissance officer must always maintain a standby force of sufficient strength to cope with emergency requirements. He must also consider that reconnaissance requests can be satisfied either from existing information or by coordinating or integrating the implementation of these requests for aerial reconnaissance with those of higher headquarters.

e. Reconnaissance for Counterair.

(1) The air reconnaissance required in the counterair phase will cover first of all the enemy's airbases and air forces. His airbases are fixed and provide stable targets for air reconnaissance. Conversely, his air forces are highly mobile and flexible, and may be shifted to suit his purposes and to confuse opposing forces. Therefore, his air forces pose the greatest and most elusive threat to the area. The plan for finding and destroying these forces is vital to the entire area. The reconnaissance information concerning these forces must be timely. The air reconnaissance plan and the plan of area air operations must be coordinated as completely as possible because air action in the very early stages of a campaign may be decisive. Finding the enemy's air force is a function of all available intelligence from every source.

(2) Reconnaissance to locate enemy airbases after the beginning of hostilities may be unable to provide information in time for use in the counterair battle. Enemy airbases should be located prior to hostilities, and a means should be established for obtaining timely information concerning the movement of their air vehicles and air units from one base to another.

(3) Differences in the degree of control of the air will alter the scope of air reconnaissance operations. When an enemy possesses control of the air, he will be confident and move his forces openly. Well-planned and executed air reconnaissance can expose these movements. Enemy control of the air will affect the amount of air reconnaissance that can be undertaken, and may even necessitate using a portion of the fighter effort for escorting reconnaissance missions.

f. Reconnaissance for Interdiction.

(1) The interdiction of the enemy logistical system constitutes another function of the area air force. The objectives and essential elements of information contained in the area air reconnaissance plan should relate directly to this task so that the most vital elements of the system can be selected as targets.

(2) Interdiction operations against the enemy's logistical system require intelligence information on what to attack, where to attack, and when to attack. Then, after the attack is made, the results must be assessed, and, in many cases, surveillance must be maintained over the target to indicate if and when it is being rebuilt. Air reconnaissance in conjunction with other sources provides this information.

(3) To get the best possible perspective in the selection of reconnaissance objectives for the interdiction task, the planners must look first at the enemy's over-all logistical system rather than becoming occupied with any one of his subsystems. Frequently, the enemy possesses sufficient flexibility to shift his supplies from one means of transportation to another, to meet the exigencies of battle. His main lines of communication must be located, their features and characteristics identified, and the nature of the traffic along them determined. Air reconnaissance furnishes the planners with information on enemy lines of communication and logistical support structure.

(4) When an enemy lacks control of the air, he probably will attempt to restrict his major movements to the hours of darkness or periods of bad weather. Then he will resort to many types of dispersal and concealment for protection against air attack. Enemy measures of this type emphasize the requirement for effective night and all-weather reconnaissance.

g. Reconnaissance for Close Air Support.

(1) The third task of area air operations, close air support of ground forces, is aimed at destroying or neutralizing enemy ground forces which are in contact with friendly ground forces. Air reconnaissance furnishes intelligence information to both surface and air forces for this task.

(2) Many reconnaissance targets for close air support operations can be selected only after the air-ground battle takes form and the requirements become apparent. The reconnaissance effort available for close air support will vary from time to time, depending upon the importance and urgency of other tasks it has to perform. Specific objectives of the air reconnaissance force will be delineated in the daily plan of air operation as the need becomes apparent. Requests for air reconnaissance by components of ground forces are processed through the air-ground operation system. Each request is evaluated to determine its priority in relation to current requirements.

h. Reconnaissance for Surface Forces.

(1) Concurrent with planning for reconnaissance for air operations, the reconnaissance staff officer plans for air reconnaissance for all area surface forces. These forces require continuous intelligence information of opposing forces for planning proper strategy. The amount of air reconnaissance available and the priorities established by the area commander for accomplishing the area mission will determine the number of reconnaissance sorties made available for this effort.

(2) All functions of air reconnaissance forces, as outlined in chapter 2, must be kept in mind continuously by the reconnaissance planners at all levels of command. Close coordination with surface force commands is established to meet their requirements for air reconnaissance.

(3) The selection of some of the objectives for photographic cover for surface forces, in general, can be determined and planned for well in advance of operations. The basic photographic cover calculated in terms of area can be provided for in the long-range plan. Frontline coverage in terms of length, depth, and general location can be included, and also the air mapping and charting requirements of ground forces which are identifiable. Photographic mapping for the sake of general information only should be the lowest priority target

for any air reconnaissance forces as this prevents gathering specific intelligence information required for other area tasks.

i. Security. Because it is generally difficult to conceal air reconnaissance from the enemy, any increase in air reconnaissance before a combat operation prejudices surprise. Before any major operation, therefore, visual, photographic, and electronic reconnaissance should be spread over as long a period of time as possible. Moreover, in the interest of security, it may be necessary to carry out a cover plan by simulating interest in areas where no operation is intended.

j. Planning Cartographic Requirements. The minimum cartographic requirements for a particular phase of area operations can be estimated in advance of that operation. Existing cartographic material should be analyzed to determine its adequacy to meet the minimum requirements and the additional material necessary, and then the means by which it will be procured should be determined. The accomplishment or revision of cartographic materials is time-consuming, and the required cartographic photography should have a priority as high as the phase for which it is necessary.

k. Planning Force Requirements. The type and amount of air reconnaissance required for area operations are only two of the several important factors to be considered in determining force requirements. Other factors are--

(1) The characteristics of aircraft assigned to perform aerial reconnaissance.

(2) The weapon system or systems to be employed against the enemy.

(3) Weather characteristics of the area of operations.

(4) Size of area of operations.

(5) Topographical characteristics.

(6) Fluidity of the tactical situation.

(7) Degree of control of the air.

l. Planning Use of Available Resources. The nature and character of the forces assigned to an area of operations will vary with the needs of the area, availability of forces, and the state of technical development. Planning in the area will deal with the forces available or specified to become available to the area. The tasks are balanced against available forces.

49. AREA AIR RECONNAISSANCE OPERATIONS.

a. General.

(1) Area air reconnaissance operations aid in fulfilling the intelligence requirements for conducting all area operations.

(2) Pertinent intelligence information, already available, must be passed down to the operating forces so that duplication of effort is eliminated.

(3) Air reconnaissance forces must maintain operational readiness in peacetime as well as wartime. They should have the latest equipment for all reconnaissance capabilities.

b. Types of Reconnaissance Targets.

(1) Target for air reconnaissance forces may be classified generally as fixed, transient, and fleeting, as follows:

(a) Any structure or object which is not subject to movement is a fixed target. Missions employing various sensing equipment usually are employed in preference to visual missions in gathering information about fixed targets.

(b) Transient targets are areas or installations in temporary use by the enemy. These include such military installations as camps, bivouacs, supply installations, ammunition dumps, and ponton bridges. Both photographic and visual missions are employed on transient targets.

(c) Fleeting targets are objects that move, such as air vehicles, concentrations of troops, motor vehicles, ships, and trains. Generally, visual reconnaissance is used to obtain and relay information on fleeting targets.

(2) Many individual targets may exist which do not completely fit the description of either of these three classes. In such cases, an examination of the type of information required, and the time allowable for getting it, will give an indication of the type of mission to employ.

c. Types of Air Reconnaissance Missions. Air reconnaissance missions are typed according to the sensing equipment used: visual photographic, electronic, and weather. Any or all these types may be necessary to support any area operation. Air reconnaissance missions generally are interrelated and of complementary significance in terms of the intelligence they produce. Hence, much of the intelligence information provided by air reconnaissance will accrue to the benefit of all area forces, regardless of the immediate reason for which it was obtained.

d. Visual Reconnaissance.

(1) Visual air reconnaissance is defined as gathering information through the vision of the aircraft crew, and it precludes the use of sensing equipment. Visual observation reports may be enhanced by using voice recording equipment for accuracy and detail.

(2) There are five general types of visual reconnaissance: area search, specific search, route reconnaissance, artillery adjustment, and contact reconnaissance.

(a) Area search is used to observe clearly limited and defined enemy areas from the line of surface contact to the depth required. The size of the individual areas is determined by such factors as the nature of the terrain, the intensity of search desired, and the number of reconnaissance aircraft available to do the search. This type of reconnaissance is suited to sparsely populated or open country.

(b) Specific search is used to reconnoiter a limited number of points for specific information. Specific search is suited to close or densely populated terrain. It sometimes may be used to supplement area search mission.

(c) Route reconnaissance covers enemy lines of communication, such as roads, railroads, and waterways. It is carried out on a point-to-point or town-to-town basis over the enemy's main transportation arteries.

(d) Artillery adjustment:

1. Artillery adjustment is correcting long-range artillery fire and naval gunfire. The freedom with which reconnaissance aircraft can operate over enemy territory to observe artillery fire depends upon the degree of air superiority held by friendly air forces. Fighter protection may be required to protect reconnaissance aircraft.

2. Aircrews assigned to perform artillery adjustment missions must be given all information which will assist them in quickly locating and identifying the target.

(e) Contact reconnaissance is locating isolated units out of contact with the main forces. Prearranged air-ground signals are a requisite and they will be prescribed by the area air commander. Air reconnaissance units will establish and maintain contact with isolated units as long as necessary or possible.

e. Limitations on Visual Reconnaissance.

(1) The effectiveness of visual reconnaissance missions is limited by the nature of the task and the conditions under which it is performed. While flying at high speed, the pilot or observer is limited by his inherent ability to see and recognize many details.

(2) Many of the limitations of visual reconnaissance may be compensated for by using camera equipment to supplement visual observations. The detailed accuracy of the information increases, but the time required to land, process the film and interpret the photographs is such that information about fleeting targets may be useless by the time it is available.

(3) The value of visual reconnaissance lies in the speed with which information about fleeting targets can be relayed to friendly units capable of attacking those targets.

f. Weather Reconnaissance. Weather reconnaissance is flown to obtain weather data over areas where weather reports from other sources are not available. Weather reconnaissance is accomplished--

(1) To obtain weather data for use in preparing weather analyses and forecasts. These missions fall into two general classes:

(a) Scheduled missions which make weather observations, to include atmospheric soundings, at predetermined locations and at scheduled times.

(b) Unscheduled missions to investigate doubtful weather conditions which will affect the battle area.

(2) To obtain special reports of weather conditions along the routes to and in the vicinity of targets for proposed air operations. These reports are required to permit immediate operational decisions, such as diversion, change of flight track, cancellation of missions, laying on missions to targets of opportunity, and so on.

g. Electronic Reconnaissance.

(1) Electronic reconnaissance is used to locate and analyze the various types of electromagnetic radiation devices operated by the enemy. The information collected is used for two general purposes:

(a) To determine the enemy electronic order of battle.

(b) To determine countermeasures which will be most effective.

(2) Typical reconnaissance targets of this type are--

(a) Radars (gun laying, early warning, and GCI).

(b) Navigation systems.

(c) Control systems for missiles or pilotless aircraft.

(d) Communication systems.

(e) Electronic countermeasure facilities.

(3) Electronic reconnaissance is performed through a variety of sensing equipment. Staff reconnaissance planners should be current on the capabilities and limitations of all types of electronic and special equipment, such as --

(a) Electromagnetic intercept.

(b) Television aids for instantaneous viewing.

(c) Emission detecting (light and heat by infrared, and so on).

(d) Radar.

h. Photographic Reconnaissance. By means of air vehicles, highly developed cameras are positioned in space to record information in detail not possible by any other means. The two general uses of photographic reconnaissance are--

(1) To provide detailed intelligence information regarding strength, organization, disposition, activity, and equipment of the enemy.

(2) To provide topographical information for map making or map revision.

i. Photographic Interpretation.

(1) Photographic data collected by air reconnaissance require interpretation before they become useful data to the planner or commander. This interpretation determines the identity and characteristics of terrain features; and the nature and extent of air, ground, or sea activity. Specially trained personnel examine these photographs and report on specified or significant items. Interpretation of periodic coverage of the same area assists in keeping abreast of all activity at airdromes, ports, factories, communication lines, defense positions, and similar enemy installations. The comparative study is the basis of photographic intelligence.

(2) Interpreters are highly specialized personnel, and must have sufficient time to assess and evaluate required data.

(3) Photographic interpretation reports:

(a) Photographic interpretation reports are issued in a variety of forms. These reports range from an oral summary giving the location of an enemy position to a series of written reports detailing the entire defense, communications, and terrain situation of an area. Detailed writing is kept to a minimum, and annotated photographs, mosaics, overprinted maps, and overlays are used whenever possible.

(b) Reports are divided into three broad classes: immediate, mission review intelligence, and detailed reports.

1. Immediate reports are made immediately after the film is developed, sometimes from the negative itself or from wet prints. Immediate reports are disseminated at high priority. They generally concern enemy aircraft concentrations or movements, large concentrations of surface forces, movement of reserves, damage assessment, and similar information of immediate importance.

2. Mission review intelligence reports (MRIR) are made on all film procured from photographic missions. These reports are used to record and categorize all information of potential intelligence value that can be gained from aerial photographs, whereas immediate reports contain only information relating to the purpose for which the mission was dispatched, or that of an immediate tactical nature. MRIR are intended to report all the information from the photograph, and do not include the photographs or other illustrations.

3. Detailed reports are complete studies on targets or target areas which can be used for operational planning. They contain information from MRIR and confirmed ground intelligence and include details of a technical nature. Included with the reports are annotated photographs, mosaics, and other graphic materials.

j. Dissemination of Intelligence Information. After intelligence information has been collected and interpreted, the dynamic nature of modern warfare requires that it be disseminated immediately to the proper activities. Atomic warfare in particular requires that rapid, accurate, and concise reports be made to the commander having operational control of special weapons. Dissemination channels and means must be reviewed constantly to see that all unnecessary time delays are eliminated from the system.

k. Reconnaissance During Night and Bad Weather.

(1) As control of the air is increased by friendly forces, the enemy will be forced to move as much as possible during darkness and bad weather. Effectively planned and executed reconnaissance will expose much of this movement. Reconnaissance in conditions of restricted visibility for some time to come will be considerably less effective than daylight reconnaissance. As a result, the effort available for night or bad weather reconnaissance can be employed best on such essential tasks as--

(a) Paying particular attention to significant enemy forces which are expected to move by night or in bad weather.

(b) Determining the routes normally used by the enemy to supply his forward formations and units by night.

(c) Pinpointing probable centers of activity where the enemy is unable to move by day because of ground or air observation.

(2) Radarscope photographic reconnaissance in some cases will fulfill the requirement for reconnaissance during night and bad weather.

(3) Night and bad weather reconnaissance present fundamental problems which are solved in part by special equipment and special training. Night and bad weather capabilities can be expected to increase by improved sensing equipment, better navigational aids, and better and faster communications. Night photographic capability is determined by the illuminant capability of an aircraft during daylight hours. Research is continuing for a more satisfactory solution. Much can be done to compensate for the inherent deficiencies of reconnaissance during night or bad weather by skillful and imaginative employment of the reconnaissance force.

CHAPTER 10

THEATER AIRLIFT FORCES

50. MISSION:

Troop carrier air forces primarily are organized, equipped, and trained to provide intratheater airlift operations; however, they are capable of intertheater operations also. The airlift mission encompasses these basic tasks:

a. Logistical Airlift Operations:

(1) Unit deployment.

(2) Airdrop supply operations.

(3) Airlanded supply operations.

(4) Scheduled airlift operations.

(5) Nonscheduled airlift operations.

b. Aeromedical evacuation.

c. Airborne operations.

d. Special airlift operations.

51. PRIORITY OF TASKS:

No one task is considered to have an over-all priority. Priorities will shift from time to time as the theater situation changes. Therefore, airlift forces must maintain their versatility and ability to accomplish any task or combination of tasks within the purview of their mission, and for the rapid shifting of effort from one to another of these tasks.

52. ASSIGNMENT:

Troop carrier and other airlift forces assigned to a theater are reassigned by the theater commander to his theater air commander for integration into the theater airlift capability.

53. ORGANIZATION:

a. The theater air commander establishes a troop carrier command usually designated as a numbered Air Force. Normally there are assigned to this organization heavy, medium, and assault troop carrier units; a unit for providing communications between command headquarters and its operating agencies; aerial port operations unit(s); combat control teams; and aeromedical evacuation units. Each of these types of units is integrated into the troop carrier organization (and command) structure.

b. A troop carrier air force may be composed of two or more troop carrier air divisions, depending upon the needs of the theater, its geographical size, the capabilities of the airlift communications system, and the range of assigned aircraft.

54. COMMAND:

a. Troop carrier forces are placed under the command and control of the theater air commander. He is responsible for over-all planning and employment of these forces, for discharging the theater airlift task, and for success or failure of the airlift mission. This places the over-all organization, command, and control of theater airlift capability at a level of responsibility not affected by geographical subdivisions of the theater area.

b. The theater air commander usually delegates authority to the troop carrier commander for direct communication with other services and component commanders on airlift matters. Over-all plans for execution by subordinate airlift forces are prepared at the troop carrier command level.

c. Areas of responsibility are assigned by the troop carrier commander to troop carrier air forces and their subordinate commands. The air forces execute the operational plans of higher headquarters and control directly the movement of all troop carrier aircraft within their areas of responsibility.

55. PRIORITIES AND ALLOCATIONS:

Troop carrier airlift is utilized by all theater activities. Allocation of airlift capability to the major components within the theater is the responsibility of the theater commander.

a. The theater commander usually establishes a Theater Transportation and Allocation Board composed of representatives from the three major components; it is a permanent, full-time working agency. It translates the directives of the theater commander into terms of priority tasks for execution by the airlift forces. Subsequent to the establishment of airlift task precedence, the Theater Transportation and Allocations Board allocates shares of transportation capability to the major components. Within this allocation the components are free to determine their individual priorities for the traffic of their services.

b. Under the Theater Transportation Allocations Board, and a part thereof, is the Theater Air Transportation Board (similar boards exist for ground and sea transportation). This agency is responsible for translating the general policies of the Theater Transportation and Allocations Board into specific requirements. From this agency, specific airlift tonnages are allocated to the theater components, broken down into individual service requirements.

c. Major components submit airlift needs at specified intervals to the Theater Air Transportation Board. Concurrently, the troop carrier commander determines and submits his airlift capability estimate. Needs are adjusted to airlift capability. When airlift needs exceed airlift capabilities, the decision concerning allocation or augmentation is made by the theater commander.

56. AIRLIFT SYSTEM COMPONENTS:

a. Aircraft. Cargo aircraft are the basic tools of the airlift system. The speed, range, and loadcarrying characteristics of troop carrier aircraft impart great versatility to the airlift system. The organizational concept, backed by multipurpose cargo aircraft, gives the system great mobility and flexibility. These salient factors must not be compromised nor maximum exploitation vitiated by organizational or command limitations or by overspecialization of aircraft to a particular task. The capabilities of various types of cargo aircraft organic to troop carrier forces pose strategic and tactical threats to the enemy. Also, these capabilities permit employment of the cargo aircraft under a wide variety of conditions and circumstances and makes unnecessary requirements for highly specialized troop carrier aircraft

characteristics. Aircraft types organic to troop carrier forces make these forces highly mobile and facilitate the rapid transfer of airlift activities as required with minimum loss in time and effectiveness.

b. Airfields. Airfields and airbase facilities for airlift operations must be consistent with the task to be accomplished, the magnitude of the forces employed, and the time limitations imposed for accomplishment of the mission. Bases should provide for adequate runways, taxiways, parking ramps, dispersal, refueling, servicing, maintenance, and repair; facilities for permanent and transient personnel; and adequate storage and handling equipment for materiel, and for necessary expansion as required.

(1) An important factor in aircraft utilization is the number and quality of airfields and their facilities. Airfields must be planned and provided in accordance with the strategic and tactical needs of the theater forces. Therefore, airlift-airfield planning must be in consonance and concurrent with other logistical and operational planning. Parachute and helicopter delivery may complement airlanded delivery. However, ability to land, onload and offload, and adequately service large transport type of aircraft provides the greatest sustained airlift capability.

(2) Whenever possible, airfields should be constructed in both forward and rear areas for airlift operations exclusively. This provides for a common distribution point for combat logistics for all services, decreases air traffic on airfields supporting fighter and bomber combat operations, and increases effectiveness by concentrating on a particular type of airpower operation. Basic considerations for selection and development of airlift airfields are:

(a) Proper location adjacent to agencies generating airlift requirements, good terrain for airfield construction, and good meteorological weather conditions.

(b) Rapid access and linkup facilities between supply points, ports, units, and existing facilities.

(c) Actual and potential facilities, capabilities, and limitation - including housing, communications, and water supply.

(d) Flexibility of site for the accommodation of runways, ramps, taxiways, buildings, materiel handling and expansion of facilities as needed.

c. Aerial Port Operations. The value of the theater airlift system to the theater is measured in terms of human life, time, and effort saved compared to other modes of transportation. Effort is made to reduce to the minimum the time that logistics remain in the airlift system. Thus, the effectiveness of terminal procedures and facilities have a material bearing on aircraft utilization and turnaround time. Turnaround time largely is dependent upon the time required to onload and offload logistics; efficient turnaround enhances airlift operations in inverse proportion to the time consumed. The aerial port performs two main functions: It increases airlift capability by reducing aircraft ground and turnaround time, and it reduces the intransit time of critical items to the user.

(1) Selection, preparation, and operation of aerial ports is an Air Force responsibility. In a theater of operations this function is performed by aerial port operations squadrons. The function of aerial port operations is an integral part of troop carrier operations, therefore, aerial port operations squadrons are under the command and control of the troop carrier commander. When

aerial port operations squadrons or detachments are located on bases not under troop carrier jurisdiction, they acquire tenant organization status at their assigned locations but do not pass from command and control of the troop carrier commander. Aerial port operations squadrons will:

(a) Operate air terminals or aerial port facilities where personnel and materiel are assembled for airlift; documentation and transient facilities; or storage facilities for personnel or materiel for which airlift has been allocated.

(b) Move cargo from air terminals or aerial ports to aircraft onloading and from aircraft offloading to intransit points.

(c) Schedule, receive, inspect, and store materiel to be airlifted and delivered by airlanding, freedrop, or paradrop method.

(d) Furnish and operate materials-handling equipment which normally is not organic to the unit being moved, furnish technical assistance to and direct supervision over units engaged in onloading or offloading airlifted personnel and materiel.

(e) Prepare load plans, load, and secure cargo in aircraft: eject cargo for inflight deliver, and offload materiel in airlanded operations not involving unit movements.

(f) Provide personnel and materiel for ground control of aircraft in airhead areas as directed by higher authority.

(g) Provide personnel, materiel, and facilities to assist aeromedical evacuation as directed by higher authority.

(h) Prepare Air Force materiel for airlanded, freedrop or paradrop delivery. The magnitude of the airlift and aerial port operation at a given time and location determines the size of the air terminal establishment. Aerial port operations squadrons have a flexible organization which provides cellular units or detachments for manning air terminals according to their needs. Specialized units from the sister services may be located at air terminals operated by the Air Force. These tenant-status units are concerned primarily with monitoring logistics of their services and have no responsibility for air terminal management although they may augment aerial port operations squadron capability.

d. Communications. As in all military operations. The effective and efficient operations of the entire airlift system is dependent upon the functioning of its communications which permits timely transmission of aircraft loading, movement, arrivals, departures, and centralized direction and coordination of the entire airlift force. These communications must be rapid, dependable, and capable of peak traffic demands on a 24-hour basis, and must be immediately available to the airlift commander. The wide dispersal of facilities and varying conditions of operations from forward combat zones to rearmost areas require several types of communications facilities. Coordination with combat forces in forward areas requires mobile equipment, while long-range transmission requires less mobile high capacity equipment. Telephone, teletype, point-to-point, air-to-ground, and air-to-air communications facilities, separately or in combination, are required to maintain control of the airlift system. Additionally, communications links with services and areas provided airlift is necessary for planning and coordination purposes.

(1) Air route electronics and navigational and landing aids with high volume capabilities are necessary to process large numbers of aircraft of different types, operating under all conditions of weather, and at minimum inflight intervals. Such facilities are provided in whole or in part by the theater air commander. Where such facilities are lacking, provision must be made for their early and rapid establishment.

(2) The nature of the communications traffic generates security requirements. These security measures should prevent the enemy from gaining intelligence but not hamper airlift operations. The troop carrier commander is assigned a communications squadron for discharging his communications needs. This unit provides the means for integrating airlift headquarters, the transport movement control center, troop carrier units, air terminals, and aerial port communications nets. Direct landline communications between the transport movement control center and operational troop carrier units facilitate and expedite airlift operations.

e. Control. The control facility is the brain of the airlift system, the focal point for communications, and the source of command-direction for the airlift force. The purpose of the control facility is to present to the airlift commander that information which will give him a clear picture of his operations and provide a means for controlling his organization. Also, it provides essential information to his staff and to the component representatives (ALCO's) to permit their functioning with maximum effectiveness and efficiency.

(1) The control facility is a procedure rather than a thing or place and it is centralized in troop carrier headquarters. It consists of:

(a) Coordinating airlift matters with user representatives.

(b) Receiving airlift needs and developing means and procedures for maximum utilization of the airlift capability for fulfilling these requirements.

(c) Directing and monitoring airlift progress.

(d) Operating a transport movement control agency which accurately and expeditiously controls the overall airlift and depicts its status.

(2) By means of the airlift control facility the airlift commander, his staff, and user representatives follow theater airlift progress closely. This information is employed to advise component commanders and their logisticians rapidly and accurately on the status of their intransit personnel and materiel. To accomplish this, the control facility must present the following information accurately and rapidly:

(a) Airlift routes status and airlift pattern.

(b) Traffic flow.

(c) Type of logistics being airlifted.

(d) Aircraft location and status.

(e) Airfield and air terminal status.

(f) Aeromedical evacuation status.

(g) Communications status.

(h) Weather and meteorological data.

(i) Enemy air status.

(3) Reduction of these factors, modified by aircraft utilization rates, is converted to airlift tonnage capability. This represents the airlift ton-mile potential, under conditions stated, over given air routes. The theater air commander may modify this capability on the basis of more complete knowledge of enemy air activity. The final estimate of airlift capability is given to the theater commander who then allots, through his airlift allocation agency, the percentages of airlift potential to the components under his command.

(4) Each component is represented by an airlift liaison coordination officer (ALCO) at the control center facility. The component ALCO's are responsible for coordinating their respective component airlift requirements through the transport movement control for action by the operating agencies of the airlift system. The transport movement control is a part of the airlift commander's operations staff; it receives requests from ALCO's and initiates the necessary airlift operations. ALCO's are responsible for the delivery and removal of the logistics of their services at the specified air points to minimize surface intransit time. Arrangements by ALCO's should be finalized 24 hours in advance of actual operations.

(5) Daily airlift requests are consolidated, operational plans integrated, and coordination completed prior to departure of planned airlift. Planned arrivals and departures eliminate saturation workloads, permit normal 24-hour operations, assure more effective and efficient handling of emergency requests, and expedite the entire theater airlift operation.

f. Airlanded Supply Request System Control. To summarize: Usually, there are four general areas or parts to the airlift request system:

(1) Headquarters of the troop carrier commander, which prepares the forecast troop carrier capability. This periodic forecast may be made as frequently as required.

(2) The Theater Air Transportation Board, which receives the ton-mile capability forecast and allocates this capability in accordance with the theater commander's wishes.

(3) User representatives who are called airlift liaison coordination officers. ALCO's are located at theater air command or troop carrier headquarters. Generally, better coordination and communication is effected when ALCO's are located at troop carrier headquarters.

(4) The transportation movement control center, which schedules airlift flights for the entire airlift system.

g. Aeromedical Evacuation Control. Aeromedical evacuation control facilities will be established at airlift headquarters for necessary coordination. However, the troop carrier commander commands, controls, and operates the medical facilities for the processing, holding, and intransit treatment of patients.

57. AIRBORNE OPERATIONS:

There is no distinct separation between the various types of airborne operations. All airborne operations are essentially the same; varying mainly in degree, time, and objective. They generally are categorized as:

a. Early Linkup. This concerns the delivery of airborne units into combat areas to the rear or flanks of enemy ground positions. After initial objectives are attained, the committed airborne forces plan to effect an early surface linkup with friendly ground forces.

b. Independent. Independent airborne operations involve seizure of an airhead in hostile territory from which further air or ground operations may be conducted. Airborne forces involved will be independent of surface lines of communications for an extended period of time and will require resupply by air.

c. Raid. A raid entails delivery of airborne units into hostile territory to destroy, neutralize, or capture, or to effect a particular mission. Upon completion of the mission a planned withdrawal is executed by air or other means.

d. Special. The special category of airborne actions encompasses those not categorized previously as early linkup, independent, or raid type of operations. Special airborne operations usually are show-of-force, aid to partisan or guerrilla forces, or psychological-politico type actions. Evacuation or recovery of these forces depends on the type of activity involved and facilities available for recovery.

58. FUNCTIONS OF THE AIR FORCE IN AIRBORNE OPERATIONS:

Although troop carrier type air forces are responsible for airborne airlift, many types of air forces usually are involved directly or indirectly in airborne operations. The need for meticulous coordination of detail among all forces involved is continuous, especially because the types of forces other than troop carrier forces, will vary for each separate operation.

a. Troop Carrier Air Forces. Troop carrier air forces are combat type forces; they participate in offensive action against the enemy during an airborne operation. Also, troop carrier forces are responsible for:

(1) Locating drop zone (DZ) or landing zone (LZ).

(2) Maneuvering their forces to the drop or landing zone. This responsibility includes selection of approach, and air speed to minimize flack, fighter opposition, and air traffic congestion.

(3) Precise delivery of airborne units by paradrop, assault landing, or combination of these means and precise delivery of materiel by freedrop, paradrop, assault landing, or combination thereof.

(4) Delivery of sustaining or reinforcement forces with their weapons, heavy equipment and materiel.

(5) Air evacuation of troops and materiel, to include casualties and prisoners of war.

(6) The provision of combat control teams.

b. Combat Control Teams. The specific responsibilities of combat control teams are:

(1) To establish ground-to-air communications and navigation aids in the drop or landing zone and to assist incoming troop carrier aircraft in accurate delivery of their cargo.

(2) Relay information and advise incoming aircraft crews on conditions to be encountered in the drop or landing zone which may be pertinent to the operation.

(3) Assist aircraft in lead echelons to land, park, and to take such other action as may be required.

(4) Prepare designated areas for the efficient and effective Air Force evacuation of casualties so as to not interfere with combat operations.

c. Other Air Considerations. In addition to the troop carrier forces effort, other air force tasks in conjunction with the airborne operations must be carefully coordinated. Before the airborne operation is seriously considered, friendly air forces must have or be able to acquire an exceptionally high degree of control of the air; interdiction operations must be feasible, close air support capability must be adequate, and sufficient air reconnaissance forces must be available.

(1) Counterair. Counterair operations include air defense of the marshaling area, effective screening of inflight troop carrier forces, and a very high degree of control of the air, especially in the immediate objective and surrounding area.

(2) Interdiction. Interdiction of enemy forces and materiel is essential to the success of an airborne operation. Every effort must be made to destroy or delay enemy personnel and materiel enroute to the objective area before, during and after the area has been made secure.

(3) Close Air Support. Since airborne forces normally are limited in organic firepower, they will require close air support in proportion to the enemy surface opposition encountered.

(4) Air Reconnaissance. Extensive photo, visual, and electronic air reconnaissance of the objective area is vital to success of an airborne operation. Reconnaissance coverage prior to, during and subsequent to the airborne operation is mandatory.

59. EXECUTION OF THE AIRBORNE OPERATION:

Execution of the airborne operation is the application of the plans, tactics, and techniques previously agreed upon by the troop carrier and the ground force commanders. Each is responsible for discharging his individual functions. There are few stereotype airborne operations; much depends on the cooperation and selflessness of the commanders and their staffs. However, there are certain principles which have proved effective, such as:

a. Surprise. Surprise is one of the most important criteria for success in an airborne operation. Surprise and aggressive tactics frequently compensate for numerical superiority enjoyed by the enemy. Secrecy in planning judicious but thorough application of air reconnaissance capabilities, and appropriate cover plan, absolute cooperation and coordination, proper application of airpower capabilities in counterair, interdiction, and close support, plus

positive and speedy execution of the operation itself will add materially to the probability of success.

b. Mass. Mass has always been recognized as a prime principle of military operations. Ordinarily, the principle of mass connotes concentration of forces in time and space. In airborne operations, such mass may offer unusual opportunity to the enemy for the application of munitions of mass destruction. Yet, concentration in some form is essential to the success of the airborne operation. Therefore, it must be remembered that too great a dispersal of the airborne forces to avoid consequence of attack by enemy area munitions will make counterair, interdiction, and close air support operations very difficult and possibly, ineffective, while an over concentration of airborne forces will make adequate dispersal and deployment of those forces difficult. The air and ground commanders must base their decisions upon intimate knowledge of the problems confronting one another and what is best for the overall operation.

c. Simplicity. Both the air and the ground commander will be confronted with complexities which they must solve individually. Therefore, it is to the mutual benefit of all concerned to simplify the operation. One means of accomplishing this is by adequate training and rehearsal prior to the operation.

60. LOGISTICAL AIRLIFT:

Logistical airlift operations are the movement by air of combat units, materiel, and personnel of any component into areas already held by friendly forces or into sterile areas within a theater of operations. It includes airdrop and airlanded supply operations; both scheduled and nonscheduled. Airborne, aeromedical, and special airlift operations also are included in this category. However, because of differing requirements generated and the detailed planning necessary, and because these latter have request and control system which differ considerably from normal logistical airlift operations, airborne, aeromedical, and special airlift operations are traced separately.

61. UNIT DEPLOYMENT:

a. The movement of entire units by air becomes particularly advantageous under theater of operation conditions which must be cognizant of rapidly changing tactical situations. When units are air transportable they become more mobile, and even though not committed to action, they constitute a threat to the enemy because they can be redeployed quickly and at will. These airlift operations provide theater forces with a capability which enhances their normal combat potential. Also, unit airlift reduces the noneffective time and delay usually accompanying unit redeployment. The theater air commander's responsibility for assisting units in the preparation of realistic, practical movement and mobility plans is delegated to the troop carrier commander.

b. Unit deployment entails considerable advance planning by both airlift forces and the unit being airlifted. Arrangements must be made for the grouping of personnel and materiel and other impediment into adequate aircraft loads and for the orderly movement to and from unit areas and onloading and offloading of transport aircraft. Plans indicating aircraft loading and sequence of movement must be developed in unison by the troop carrier commander and the commander of the unit being airlifted. In preparing the sequence of onloading, offloading, and other details, consideration must be given to reducing as much as possible the time period during which the unit being moved will be nonoperational.

c. The troop carrier command may find it advantageous to form unit movement control teams within his aerial port operations resources. These teams are dispatched to the old

and new sites of the unit being moved to provide planning and technical assistance and supervision during the airlift operation.

62. AIRDROP SUPPLY OPERATIONS:

Operations in which the materiel is airlifted and delivered by paradrop or free drop are designated airdrop may increase because of devastation for the purpose of airdropping supplies and materiel to sustain air and surface forces in locations where surface lines of communication are unable to provide the logistics required. During the advance of friendly forces the requirement for airdrop may increase because of devastation wrought by prior air attacks on the enemy-held roads and bridges. In withdrawal actions, small units may become separated from their parent units by enemy action and surrounded by enemy forces. Airdrop supply may be their only means of obtaining ammunition, POL, and sustenance until a reunion with friendly forces can be effected. Supply may be accomplished by airdrop, provided that supplies are not subject to excessive damage by this means.

63. AIRLANDED SUPPLY OPERATIONS:

Airlanded supply is that form of personnel and cargo operations in which the aircraft lands and is offloaded. In airlanded operations, suitable forward landing areas are located in proximity to main lines of communications. Landing areas may be prepared well in advance for sustained operations or may be hastily prepared open areas for operations of limited duration. When facilities are less than required, the airlanded operation will be limited to a similar degree.

64. SCHEDULED AIRLIFT OPERATIONS:

Scheduled airlift operations are conducted to provide friendly forces occupying friendly areas a scheduled airlift operation in a theater. This airlift task is similar to domestic airline operations in that it is designed to provide rapid, dependable, and adequate airlift of personnel, small items of cargo, official and unofficial mail.

65. NONSCHEDULED AIRLIFT OPERATIONS:

Nonscheduled airlift operations provide timely airlift that cannot be obtained through scheduled airlift or surface means of communications; this may be the task to which the major portion of the airlanded supply operation will be devoted.

APPENDIX I

REFERENCES

Joint Training Directive for Air-Ground Operations 1 September 1957

AFM 1-1 (FM 110-5)	Joint Action Armed Forces
AFM 1-2	USAF Basic Doctrine
AFM 1-3	Theater Air Operations
AFM 1-4	Air Defense Operations
AFM 1-5	Air Operations in Conjunction With Amphibious Operations
AFM 1-7	Theater Air Forces in Counterair, Interdiction, and Close Support Operations
AFM 1-9	Theater Airlift Operations
ST 31-35-1	USAF Basic Data (C&CSC, Fort Leavenworth) USAF Instructional Notes, The Artillery School, Fort Sill, Oklahoma
	Far East Air Ground Operations School, Indoctrination Course Outline
Course 314	Air Weapons, U.S.A.F. E.C.I. A.U.
T 12	Instructional Notes USAF - The Artillery School, Fort Sill, Oklahoma
	Air Force Information - The Army War College

APPENDIX II

JOINT ARMY-AIR FORCE AGREEMENT ON AIR CONTROL TEAMS

Following is the joint Army-Air Force agreement on "Delineation of Service Responsibilities for Air Control Teams as extracted from AR 95-330-AFR 55-9, 27 August 1953.

* * * * * * *

"2. Responsibilities. Originally, the United States Air Force had the responsibility of providing air control teams for use in close combat support to the United States Army. Subsequent to the tentative effective date, 1 January 1954, the responsibilities of each of these two services with respect to air control teams will be as follows:

(NOTE: 1 January 1954 was the effective date.)

a. The United States Army will be responsible for furnishing, maintaining, and commanding the equipment and personnel (less the forward air controllers) of air control teams.

b. The Air Force will be responsible for:

(1) Providing forward air controllers.

(2) Directing aircraft through the forward air controllers.

(3) Controlling allocation of frequencies which are employed in close air support port communications.

"3. Implementation. Implementation of this arrangement will be governed by the following considerations:

a. This assignment of responsibilities applies only to the equipment used to direct the flight of aircraft through simple visual-voice procedures.

b. Communications equipment of air control teams must be compatible with and possess the same channel spacing as that used in aircraft."

* * * * * * *

APPENDIX III

NEW TERMINOLOGY USED IN JOINT AIR-GROUND OPERATIONS

The following is a list of terms peculiar to tactical air operations together with their definitions. These new terms, where applicable, supersede the terms and definitions appearing in the Joint Training Directive for Air-Ground Operations, (JTD), 1 September 1957.

Old Term	New Term and Definition
1. ALERT ALERT.	AIR ALERT - The operational status of aircraft in the air that are ready for the immediate accomplishment of a mission.
2. FORWARD AIR CONTROLLER.	FORWARD AIR CONTROLLER - A rated Air Force officer member of the air control team, who, from a forward position, directs the action of combat aircraft engaged in close air support of ground forces.
3. COLUMN COVER.	COLUMN COVER - Cover of a column by aircraft in radio contact therewith, to provide protection, reconnaissance, and/or attack of air or ground targets which threaten the column.
4. FIGHTER COVER. COMBAT AIR PATROL.	FIGHTER COVER - The maintenance of a number of fighter airplanes over a specified area or force for the purpose of repelling hostile air activities.
5. AIR LIAISON OFFICER.	AIR LIAISON OFFICER - A tactical air force or naval aviation officer attached to a ground formation.
6. GROUND LIAISON OFFICER.	GROUND LIAISON OFFICER - A specially trained army officer attached to operational units and/or formations of a tactical air force, who is responsible for army-air liaison. These officers are normally organized into ground liaision sections under the control of army headquarters.
7. ARMED RECONNAISSANCE.	ARMED RECONNAISSANCE - An offensive mission conducted to search for and attack targets of opportunity in a designated area or along designated routes.
8. No exact equivalent.	MISSION REPORT - A report on the results of an air mission.
9. No exact equivalent.	SNAP REPORT - A preliminary report of observations by air crews rendered by intelligence personnel immediately following interrogation and dispatched prior to compilation of a detailed mission report.

Old Term	New Term and Definition
10. SPOT REPORT.	SPOT REPORT - A concise report of information of critical value transmitted by radio from aircraft in flight.
11. AIR SUPERIORITY.	AIR SUPERIORITY - That degree of superiority which prevents the enemy air forces from interfering effectively with our own air, ground, and sea operations.
12. CLOSE AIR SUPPORT.	CLOSE AIR SUPPORT - Air action against hostile targets which are in close proximity to friendly forces and which requires detailed integration of each air mission with the fire and movement of these forces.
13. FIGHTER SWEEP.	FIGHTER SWEEP - An offensive mission by fighter aircraft to seek out and destroy enemy aircraft in the air and on the ground. (Also Counter-Air Sweep).
14. No exact equivalent.	GROUND OBSERVER TEAM - Small units or detachments deployed to provide information of aircraft movements over a defended area, obtained either by aural or visual means.
15. TACTICAL AIR CONTROL PARTY.	AIR CONTROL TEAM (ACT) - A team, especially organized to direct close air support strikes in the vicinity of forward ground elements by visual or other means.
16. No exact equivalent.	AIR OPERATIONS CENTER - The AOC is an information, communications, and control center which is the focal point for all control and warning activities of the tactical air force.
17. AIR CONTROL CENTER.	SECTOR CONTROL CENTER - The SCC evaluates the air situation reported by control and reporting centers within its sector and is responsible for making final identification on all tracks.
18. No exact equivalent.	THE AIR SUPPORT OPERATIONS CENTER - The ASOC is an air force facility located in each field army area for final control and coordination of close air support and reconnaissance operations in support of the field army.

APPENDIX IV

NUMBERS OF AIRCRAFT ASSIGNED TO VARIOUS TYPE UNITS (WAR STRENGTH)

	Type of Unit	Type Aircraft	Number of Aircraft
1.	Heavy Bomber	B-36, B-52	10 per Squadron 40 per Wing (4 Squadrons per Wing)
2.	Medium Bomber	B-47, B-50, B-29	15 per Squadron 60 per Wing (4 Squadrons per Wing)
3.	Air Refueling Assigned Medium Bomber Wing	KB-29, KC-97	20 per Squadron 1 Squadron to a Wing
	Assigned Strategic Reconnaissance Wing		12 per Squadron 1 Squadron to a Wing
4.	Light Bomber	B-45 or B-26 B-57, B-66	16 per Squadron 64 per Wing (4 Squadrons per Wing)
5.	Night Intruder	B-57	16 per Squadron 48 per Wing (3 Squadrons per Wing)
6.	Fighter-Bomber and Fighter Escort	F-84, F-86, F-100 F-101, F-104	18 per Squadron 72 per Wing (4 Squadrons per Wing)
7.	Fighter, Interceptor	F-86, F-100, F-102	25 per Squadron 75 per Wing (3 Squadrons per Wing)
8.	Fighter, All-Weather	F-86, F-94, F-89	25 per Squadron 75 per Wing (3 Squadrons per Wing)
9.	Strategic Reconnaissance Heavy	RB-36, RB-52	10 per Squadron 40 per Wing (4 Squadrons per Wing)
10.	Strategic Reconnaissance Medium	RB-47, RB-50, or RB-29	12 per Squadron 48 per Wing (4 Squadrons per Wing)

	Type of Unit	Type of Aircraft	Number of Aircraft
11.	Tactical Reconnaissance		18 per Squadron
	Reconnaissance, Day	RF-80, RF-84, RF-86	(Normally 2 Fighter Squadrons and 1 Light
	Reconnaissance, Night	RB-26, RB-57	Bomber Squadron per Wing)
12.	Troop Carrier, Heavy	C-124	12 per Squadron 48 per Wing (4 Squadrons per Wing)
	Troop Carrier, Medium	C-54, C-119, C-130	16 per Squadron 64 per Wing (4 Squadrons per Wing)
13.	Assault Transport, Medium	C-123	16 per Squadron 1 Squadron authorized per Troop Carrier Group
14.	Rescue	Amphibian (SA-16/10 or SB-29)	12 per Squadron
		Helicopter	8 per Squadron
		Medium Transport	8 per Squadron
15.	Strategic Support	Heavy Transport	12 per Squadron
16.	Air Resupply and Communications	Medium Bomber	12 per Squadron
		Amphibian	4 per Squadron
		Medium Transport	4 per Squadron
		Helicopter	4 per Squadron
17.	Weather Strategic Reconnaissance	Weather Reconnaissance Medium Bomber Type	12 per Squadron

APPENDIX V

STANDARDIZATION FACTORS FOR USE IN MAP MANEUVERS

For purposes of map maneuvers only, use the following operational factors for both offensive air and air reconnaissance missions:

Time Intervals

Immediate air request from Division to Tactical Support Center	5 minutes
Process immediate air request at Tactical Support Center	5 minutes
Approved immediate request to aircraft (takeoff)	10 minutes
Time of takeoff to time over target (strike)	30 minutes
Time in target area	60 minutes
Time from target area to landing at home base	30 minutes
Time of landing to when aircraft are available	120 minutes
Time from aircraft strike to report of results via spot report receiver net	5 minutes
Time from aircraft strike to detailed pilot report	120 minutes
Time from exposure of film over target to flash report from wet negative	90 minutes
Time from exposure of film over target to delivery of interpreted photos at division	240 minutes

Sortie Capability

Fighter Wing	96 Sorties per day
Fighter Squadron	32 Sorties per day
Night Intruder Wing	48 Sorties per day
Reconnaissance Wing	96 day sorties per day, or 64 day sorties and 32 night sorties per day

APPENDIX VI

GUIDE TO AIRCRAFT EMPLOYMENT
(For School Uses Only)

Type of Target	Number of Aircraft	Armament
Airfields	1 Wing	Rockets, Machineguns, Bombs
Airborne Aircraft	As Required	Machineguns, Air to Air Rockets
Fuel Dumps	2 Flights (8 Acft)	Rockets, Bombs, Machine-guns, Napalm
Pipeline and/or pumping stations	1 Flight (4 Acft)	Rockets, Bombs, Machine-guns, Napalm
Ammunition Dumps	2 Flights	Rockets, Bombs, Machine-guns, Napalm
Bridges:		
Large and Heavy Construction	Wing or Tactical Command Bombers	Bombs
Concrete	1 Squadron (16 Acft)	Bombs
Wooden	1 Squadron	Bombs, Rockets, Machine-guns, Napalm
Pontoon	2 Flights	Bombs, Rockets, Machine-guns, Napalm
Prepared positions	2 Flights	Napalm, Rockets
Fortified positions	1 Squadron	Napalm, Machineguns, Bombs
Large Railroad Marshalling Yards	1 Wing or Tactical Air Command Bombers	Bombs, Rockets, Machine-guns, Napalm
Small Marshalling Yards and railroad junction	1 Squadron	Bombs, Rockets, Machine-guns, Napalm
Open track cuts	1 Flight	Bombs, Rockets
Railroad fills	1 Flight	Bombs

Type of Target	Number of Aircraft	Armament
Barges	1 Flight	Bombs, Rockets, Machine-guns, Napalm
Canals	1 Flight	Aerial mines
Tanks	1 Flight	Bombs, Rockets, Machine-guns, Napalm
Vehicles	1 Flight	Bombs, Rockets, Machine-guns, Napalm
Locomotives and rolling stock	1 Flight	Bombs, Rockets, Machine Guns, Napalm
Troops	1 Flight	Bombs (Parachute Fragment) Rockets, Machineguns, Napalm

NOTE: Number of aircraft indicated above are for guidance only. Numerous factors will cause variances.

Appendix VI (Cont)

FUNCTIONS AND CAPABILITIES OF UNITS

Headquarters, Troop Carrier Wing

Function: To provide command and staff supervision over the assigned carrier squadrons.

Capabilities: The Troop Carrier Wing Headquarters is capable of directing and controlling up to three troop carrier squadrons (medium and heavy), plus one troop carrier squadron (assault).

Troop Carrier Squadron (Medium)

Function: To provide air transportation for airborne forces, their equipment and supplies; to provide long-range movement of personnel, equipment and supplies including air evacuation within the theater of operation.

Capabilities: When equipped with C-119-type aircraft: to airlift approximately 200,000 pounds of personnel and equipment in a single operation.

Headquarters, Composite Air Wing

Function: To provide command and staff supervision over operational units engaged in executing fighter-bomber, day fighter, light bomber, and tactical reconnaissance missions designed to destroy enemy forces and facilities. To establish and operate a joint operations center for the combat control of strike force air units who operate independent of or in coordination with units of the field army.

Capabilities: To command and direct theater operations of three fighter, two reconnaissance and two light bomber squadrons.

Fighter-Bomber Squadron

Function: To execute fighter missions designed to destroy enemy forces and facilities.

Capabilities: When equipped with F-100 D-type aircraft, to conduct air-to-air combat, dive and low altitude bombing and escort missions.

Fighter Day-Squadron

Function: To execute fighter missions designed to destroy enemy forces and facilities.

Capabilities: When equipped with F-100 C-type aircraft, to conduct interceptor and air-to-air combat missions.

Composite Tactical Reconnaissance Squadron

Function: To provide visual and photographic information concerning the disposition, movement, and activity of friendly and hostile forces.

Capabilities: When equipped with RB-57 and RF-84F-type aircraft, to conduct day and night aerial photographic reconnaissance to include bomb damage assessment and combat mapping and charting; visual reconnaissance to include long-range army artillery gun fire, target

search, and lead in for fighter-bomber strikes. Further capable of providing the reconnaissance and strike forces with route and target weather, and to accomplish photographic processing and interpretation.

Bombardment Squadron, (Light)

Function: To execute bombardment missions designed to destroy enemy forces and facilities.

Capabilities: When equipped with B-66-type aircraft, to conduct medium and high altitude bombing missions in all-weather conditions, day and night.

OPERATIONAL PLANNING DATA -- (AIRCRAFT)

1. F-100C (18 A/C per Sq).

a. Armament and Fuel

(1) 4 20 MM cannon (400 rounds)

(2) Radar Sighting System

(3) Fuel: internal - 450 gals; external 400 gals

(4) Estimated average expenditure rate:

Fuel -- 500 GPH
Ammo -- 300 Rd/sortie

b. Performance

(1) Speed and climb at combat wt. (No external fuel)

Altitude	V Max (Kts)	Time to Climb	Rate of Climb
S. L.	600	-	12, 300 ft/min
40, 000	475	7 min	500 ft/min

(2) Takeoff ground roll (standard day S. L.) 3, 000 feet

(3) Radius of action 250 N. M.

(4) Endurance (Optimum) 1. 5 hrs

c. Operational Factors

(1) 75% in commission rate

(2) 1% operational losses

(3) 30 days per month flyable

(4) Average length of sortie -- 1 hour

2. F-100D (18 A/C per Sq).

a. Armament and Fuel

(1) Guns -- 6 50 cal -- (1800 rds)

(2) Rockets -- 84 2.75" HVAR

(3) Bomb -- max 2 -- 1000# bombs

(4) Nuclear weapon X or Z type -- max 1 per A/C per sortie

(5) Fuel: internal 700 gals; external 500 gals (If max fuel carried externally, no HE bombs or rockets can be carried. Reduce range by 10% if special weapon is carried)

(6) Estimated average expenditure rate:

	As Interceptor	As Fighter Bomber
Fuel	400 GPH	GPH
Ammo	Ordnance expended according to type mission flown.	

b. Performance

(1) Speed and climb at combat wt. (No external load)

Altitude	V. Max (Kts)	Time to Climb	Rate of Climb
S. L.	621	--	9,000 ft/min
10,000	610	1.4 min	6,300 ft/min
40,000	480	10 min	3,000 ft/min
46,000	470	13.5 min	500 ft/min

(2) Takeoff ground roll (standard day S. L.)

(a) Full internal, no external 4,000 feet

(b) Full internal, max external 5,000 feet

(3) Radius of action -- combat load 650 N. M. (to and from target at optimum altitude plus five minutes combat at sea level)

(4) Endurance

(a) With internal fuel 1.8 hours

(b) With external fuel 3.0 hours

c. Operational Factors

(1) 75% in commission rate

(2) 3% operational losses

(3) Average length of sortie -- 2 hours.

3. RB-57 Aircraft (Night Intruder) (8 A/C in Composite Sq)

a. Armament and Fuel

(1) Recce Equipment:

Photo Night or Day
Electronic Reconnaissance
Weather
(Note -- All types of recce cannot be performed during one sortie.)

(2) (Four aircraft have SHORAN equipment installed.) All aircraft have infrared detection equipment.

(3) Guns: 8 -- 50 Cal; (1600 rds total)

(4) Fuel: 3500 gal.

(5) Estimated average expenditure rate:

Fuel -- 700 GPH
Bombs -- dependent upon type mission

b. Performance

	Altitude	V. Max. Kts.
(1)	sea level	580 kts.
	10,000	560 kts.
	25,000	510 kts.
	40,000	450 kts.

(2) Takeoff ground roll (standard day S. L.) 4,500 feet

(3) Radius of action (max fuel) 1000 N. M.

(4) Endurance (optimum) 4.5 hours

(5) Maximum gross weight takeoff 50,000 lbs

(6) Maximum gross weight landing 45,000 lbs

c. Operational Factors

(1) 80% in commission rate

(2) 3% operational losses

(3) 30 days per month flyable

(4) Average length of sortie: 4 hours

4. RF-84F Aircraft (8 A/C in Composite Sq)

a. Recce Equipment

(1) Visual and day photo recce capability

b. Fuel

(1) 800 gal. internal -- 600 gal. external

(2) Fuel consumption rate -- 400 GPH

c. Performance

(1) Altitude	V. Max (kts)	Rate of Climb
S. L.	650	10,000 ft/min
10,000	630	6,000 ft/min
30,000	600	2,000 ft/min
45,000	580	500 ft/min

(2) Takeoff ground roll (Standard day S. L.)

(a) Full internal, no external 4,000 feet

(b) Full internal, max external 5,000 feet

(3) Radius of action 950 N. M.

(4) Endurance:

(a) With internal fuel 2.2

(b) With external fuel 3.5

d. Operational Factors

(1) 75% in commission rate

(2) 3% operational losses

(3) Average length of sortie -- 3.5 hours

5. B-66 Aircraft (16 A/C per Sq)

a. Armament and Fuel

(1) Maximum bomb load 10,000# -- any combination of:

500# S.A.P.
3,000# T-55 (Modified Fin)
750# T-54 (Modified Fin)
500# -- (Frag clusters)

(2) Nuclear weapon X or Z type, max 1 A/C per sortie

(3) 12 aircraft are equipped with a "K" type bombing system.
(Four aircraft per squadron have SHORAN equipment installed.)

(4) Guns: 8 -- 50 cal (1600 rds)
Tail guns have radar sighting system

(5) Fuel: 4300 gal.

(6) Estimated average expenditure rate:

Fuel -- 700 GPH
Ammo -- 200 rds API/sortie
Bombs -- dependent upon type mission

b. Performance

(1) Altitude	V. Max (Kts)
sea level --	580
10,000	560
25,000	510
40,000	450

(2) Takeoff ground roll (standard day S. L.) 7,000 feet

(3) Radius of action (max fuel) 1,000 N. M.

(4) Endurance (Maximum) 6.0 hours

c. Operational Factors

(1) 70% in commission rate

(2) 3% operational losses

(3) 30 days per month flyable

(4) Average length of sortie -- 4 hours

6. C-119 Aircraft (16 A/C per Sq)

a. Fuel

(1) 2780 gal. internal

(2) Est. average expenditure rate -- 250 GPH

b. Performance

(1) Takeoff ground roll -- 71,800# gross wt -- 3600' S. L.

(2) Speed and climb at combat wt.

Altitude	V. Max (Kts)	Rate of Climb
S. L.	160	700'/min
10,000	170	500'/min

(3) Radius of action --

600 N. M. 14000# payload with full gas fuel load
Troop capacity -- 42 combat equipped

(4) Endurance -- 10 hours

c. Operational Factors

(1) 80% in commission rate

(2) 3% abort rate

(3) Average length of sortie -- 8 hours

Appendix VII

WEAPONS SELECTION GUIDE

NOTE: The following planning information can be used to determine weapons appropriate for the type of target to be attacked and the recuperability factors of various target systems.

Target Data Planning Information (HE Weapons)

TYPE OF TARGET	RECOMMENDED WEAPONS	TYPE A/C NR REQUIRED	TYPE* ATTACK	FREQUENCY OF REATTACK	REMARKS
Tank Farms	.50 Cal APE 2.75" HVAR 500#, 100#	10 F-100D 12 B-66	Low Alt Hi Alt	 5 days	Storage capacity reduced 10% and is fully restored in 5 days time. 12 A/C are required because of camouflage and underground storage.
A/C Storage	500# Frag Cluster	4 B-66 6 B-66	Low Alt Hi Alt	5 days	50% of aircraft will not be available for use as replacements from 2-10 days.
Depots	750# or 1000#	6 B-66 10 B-66	Low Alt Hi Alt	1 - 6 months	
Headquarters	750# or 1000#	30 F-100D 8 B-66 12 B-66	Low Alt Low Alt Hi Alt	6 - 8 weeks	Temporary headquarters can be set up.
Marshalling Yards	750# or 1000#	6 B-66 9 B-66	Low Alt Hi Alt	2 weeks	
Oil Refineries	750#	5 B-66 8 B-66	Low Alt Hi Alt	1 - 8 months	Area of cracking units only.

Appendix VII (Cont)

Target Data Planning Information (HE Weapons, Cont)

TYPE OF TARGET	RECOMMENDED WEAPONS	TYPE A/C & NR REQUIRED	TYPE* ATTACK	FREQUENCY OF REATTACK	REMARKS
Port Facilities (large)	750# or 1000#	5 B-66 8 B-66	Low Alt Hi Alt	Indeterminate, Recon only	
POL Dumps	50 Cal API and 2.75" HVAR or 750#	14 F-100D or 3 B-66 5 B-66	Low Alt Low Alt Hi Alt	50% reduction 10 days	Only initial strikes 50% effective. Repeat attacks results must be determined by reconnaissance.
Single Span Bridges	1000# or 750#	20 F-100D	Low Alt	10 days	
Multiple Span Bridges	1000# or 750#	35 F-100D 7 B-66	Low Alt Low Alt	10 days	
Road Defiles	1000#	16 F-100D	Low Alt	2 - 10 days	
Rail Junctions	1000#	35 F-100D	Low Alt	1 - 15 days	
Supply & Ammo (open)	110 gal Napalm	20 F-100D	Low Alt		
Gun Batteries	2.75" HVAR or 750#	Intense 24 F-100D Moderate 15 F-100D Meager 10 F-100D	Low Alt Low Alt		

Appendix VII (Cont)

Target Data Planning Information (HE Weapons, Cont)

TYPE OF TARGET	RECOMMENDED WEAPONS	TYPE A/C & NR REQUIRED	TYPE* ATTACK	FREQUENCY OF REATTACK	REMARKS
Radar Sites	2.75" HVAR	4 F-100D	Low Alt	5 - 15 days	
Truck Repair Stations	750#	25 F-100D 5 B-66 8 B-66	Low Alt Low Alt Hi Alt		
Tunnels	1000#, 750#	24 F-100D 5 B-66 8 B-66	Low Alt Low Alt Hi Alt	5 - 15 days	
Rail Cuts	1000#, 750#	20 F-100D	Dive Bombing	3 - 5 days	5 cuts in a 10-mile length of track.

*For night or weather attacks using SHORAN use same number of sorties as for visual bombing.
For night or radar bombing increase sorties required 20%.
Substitute dive bombing for low altitude where appropriate.

Appendix VII (Cont)

Target Data Planning Information (Nuclear Weapons)

TYPE OF TARGET	RECOMMENDED WEAPONS	TYPE A/C & NR REQUIRED	TYPE ATTACK	FREQUENCY OF ATTACK	REMARKS
Marshalling Yards	Class-Y Class-Z	1 F-100D 1 B-66	Low Alt Hi Alt	3 weeks 4 weeks	Contact bursts
Oil Refineries	Class-Y Class-Z	1 F-100D 1 B-66	Low Alt Hi Alt	Complete Destruction	Rebuild on new site
Port Facilities (Large)	Class-Y Class-Z	1 F-100D 1 B-66	Low Alt Hi Alt	Recon Required	
POL Dumps	Class-Y Class-Z	1 F-100D 1 B-66	Low Alt Hi Alt	15 days 25 days	90% reduction for this length of time.
Single Span Bridges	Class-Y	1 F-100D	Low Alt	10 days	Temporary replacement.
Multiple Span Bridges	Class-Y	1 F-100D	Low Alt	20 - 30 days	Temporary replacement
Road Defiles	Class-Y	1 F-100D	Low Alt	20 days	Contact bursts
Rail Junctions	Class-Y	1 F-100D	Low Alt	20 days	Contact bursts
Supply and Ammo (Open)	Class-Y Class-Z	1 F-100D	Low Alt		Dispersion is the main factor.

Appendix VII (Cont)

Target Data Planning Information (Nuclear Weapons, Cont)

TYPE OF TARGET	RECOMMENDED WEAPONS	TYPE A/C & NR REQUIRED	TYPE ATTACK	FREQUENCY OF ATTACK	REMARKS
Airfields	Class-Y Class-Z	1 F-100D 1 B-66	Low Alt Hi Alt	30 days 40 days	Use contact burst for cratering. Replacement with temporary facilities.
Tank Farms	Class-Y Class-Z	1 F-100D 1 B-66	Low Alt Hi Alt	6 months 6 months	Complete destruction. Rebuild on new site.
A/C Storage	Class-Y Class-Z	1 F-100D 1 B-66	Low Alt Hi Alt		Complete replacement.
Depots	Class-Y Class-Z	1 F-100D 1 B-66	Low Alt Hi Alt	6 months	Rebuild on new site.
Headquarters	Class-Y Class-Z	1 F-100D 1 B-66	Low Alt Hi Alt	8 weeks	Temporary headquarters Set up a new site.
Gun Batteries	Class-Y	1 F-100D	Low Alt		Dispersion of batteries important.
Radar Sites	Class-Y	1 F-100D	Low Alt	90 days	Complete replacement
Truck Repair Stations	Class-Y Class-Z	1 F-100D 1 B-66	Low Alt Hi Alt	90 days 90 days	Complete replacement.
Tunnels	Class-Y	1 F-100D	Low Alt	15 days	Contact burst at entrance.

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