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**FM 100-20**

**WAR DEPARTMENT**

**FIELD SERVICE REGULATIONS**

**COMMAND  
AND EMPLOYMENT  
OF AIR POWER**

**21 July 1943**

**FM 100-20**

**FIELD SERVICE REGULATIONS**

**COMMAND AND EMPLOYMENT  
OF AIR POWER**



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WAR DEPARTMENT,

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BY ORDER OF THE SECRETARY OF WAR:

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(For explanation of symbols see FM 21-6.)

b. Aviation directly under command and control of other commanders. (The Commanding General, Army Air Forces, has such technical command of this aviation as is necessary for the control and supervision of training and the supply and maintenance of equipment peculiar to the Army Air Forces.) This category consists of air forces assigned to theater or task force commanders.

■ 5. TYPES OF TACTICAL AVIATION.—In accordance with the purpose for which various types of aircraft are ordinarily employed, tactical aviation is organized, trained, and equipped to engage in offensive and defensive air operations. Corresponding to the means with which equipped, tactical aviation is divided into bombardment, fighter, reconnaissance, photographic, and troop-carrier aviation.

a. Bombardment aviation is the term applied to all aircraft designed for the air attack of surface objectives, and the organizations equipped with such aircraft.

b. Fighter aviation is the term applied to all aircraft designed for offensive air fighting, and the organizations equipped with such aircraft. (Fighter-bomber aircraft are fighters modified so that they may attack surface objectives.)

c. Reconnaissance aviation is the term applied to air units which perform the service of information for military commands. The function of reconnaissance aviation is to secure information by visual and photographic means and to return this information for exploitation.

d. Photographic aviation is the term applied to air units which perform photographic reconnaissance missions beyond the responsibilities or capabilities of reconnaissance aviation and special photogrammetric mapping missions for engineer topographic troops.

e. Troop carrier (including gliders) is the term applied to air units which carry parachute troops, airborne troops, and cargo.

f. The tactics and technique of performing the functions of air attack, air fighting, and air reconnaissance are set forth in FM 1-10, 1-15, and 1-20. Communication procedure essential to air force operations is contained in FM 31-35 and FM 1-45.

## SECTION III

## ORGANIZATION

■ 6. IN A THEATER OF OPERATIONS.—In a theater of operations, there will normally be one air force. This air force will be organized in accordance with the task it is required to perform in any particular theater and, therefore, no set organization of an air force can be prescribed. However, the normal composition of an air force includes a strategic air force, a tactical air force, an air defense command, and an air service command. An air force may also include troop carrier and photographic aviation.

■ 7. OF AVIATION UNITS.—*a.* Tactical air units of the Army Air Forces from the smallest to the largest are designated flight, squadron, group, wing, division, command, and air force. The method of assignment and employment of the air forces necessitates a highly flexible organization within tactical units.

*b.* (1) The flight is the basic tactical grouping or unit of the Army Air Forces and consists of two or more airplanes.

(2) The squadron is the basic administrative and tactical unit and consists of three or four flights, depending upon the type of aviation.

(3) The group, composed of three or more squadrons, is both tactical and administrative; it contains all the elements essential for its air operations.

(4) The wing is the next higher unit of the Army Air Forces and its functions are primarily tactical.

(5) Two or more wings may be combined to form an air division.

(6) An "air command" may include divisions, wings, groups, service and auxiliary units, and is both tactical and administrative.

(7) The air force is the largest tactical unit of the Army Air Forces. It may contain a strategic air force, a tactical air force, an air defense command, and an air service command. It requires aviation engineer units for the construction and maintenance of air bases.

c. Units are designated according to their primary functions; for example, reconnaissance squadron, fighter group, bomber wing, air service command.

d. Ordinarily the group is the largest unit of the Army Air Forces that will operate in the air as a tactical entity under the command of one individual. Many air operations are conducted by smaller units. Reconnaissance and photographic missions, and less frequently bombardment missions, may be carried out by single airplanes with the required fighter cover.

e. In addition to tactical units, units are organized for the purpose of maintenance and supply and for facilitating air operations. These units comprise personnel of the Army Air Forces and Army Service Forces who are trained for rendering service for the Army Air Forces. The maintenance and service units serving an air force are collectively designated the air service command.

## CHAPTER 2

## AIR OPERATIONS

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## SECTION I

## GENERAL

■ 8. **BASIC TASKS.**—The combat operations in which air force units are engaged are directed toward the accomplishment of the following basic tasks:

a. Destroy hostile air forces. This will be accomplished by attacks against aircraft in the air and on the ground, and against those enemy installations which he requires for the application of air power.

b. Deny the establishment and destroy existing hostile bases from which an enemy can conduct operations on land, sea, or in the air.

c. Operate against hostile land or sea forces, the location and strength of which are such as to threaten the vital interests of the United States or its Allies.

d. Wage offensive air warfare against the sources of strength, military and economic, of the enemies of the United States and its Allies, in the furtherance of approved war policies.

e. Operate as a part of the task forces in the conduct of military operations.

f. Operate in conjunction with or in lieu of naval forces.

■ 9. **BASIC DOCTRINE OF EMPLOYMENT.**—a. A knowledge of the powers and limitations of military aviation is a prerequisite to sound employment. Air operations almost invariably precede the contact of surface forces. The orderly mobilization and strategic concentration of the field forces and their

ability to advance from their concentration areas in accordance with the strategical plan of operations depend in large measure on the success of these early air operations.

b. Air operations in joint Army and Navy operations are undertaken in furtherance of the strategical and tactical plan. They include the air operations for which the Army is responsible under special regulations governing joint action of the Army and the Navy. The success of such air operations can be assured only by adequate joint training and careful joint planning.

c. Complete control of the air can be gained and maintained only by total destruction of the enemy's aviation. Since this is seldom practicable, counter air force operations in the theater must be carried on continuously and intensively to gain and maintain air supremacy and to provide security from hostile air operations.

d. The impracticability of gaining complete control of the air necessitates the constant maintenance of air defenses to limit the effectiveness of enemy air operations.

e. In order to obtain flexibility, the operations of the constituent units of a large air force must be closely coordinated. Flexibility enables air power to be switched quickly from one objective to another in the theater of operations. Control of available air power in the theater must be centralized and command must be exercised through the air force commander.

f. Experience in combat theaters has proved the requirement for centralized control, by the air commander, of reconnaissance aviation as well as other types of aviation. Reconnaissance missions must be closely coordinated with our own fighter activities and are directly influenced by hostile fighter action. The attachment of a reconnaissance unit to the corps or smaller ground unit would deprive that reconnaissance unit of essential operating information and fighter protection which are readily available to the air commander only. The information of hostile air activities gained by the aircraft warning service will be furnished by the air commander to missions prior to take-off; and when urgent, to the reconnaissance unit in the air. This central-

ized control improves operating efficiency of reconnaissance aviation and limits reconnaissance losses. The Army Air Forces is responsible for providing the reconnaissance and photographic missions essential to the success of the ground forces in each theater of operations. The absence of reconnaissance units specially trained and equipped for the performance of such missions does not alter this responsibility.

*g.* When task forces are formed because of isolation by distance or lack of communication, the doctrine of command still applies (sec. I, ch. 1). The task force commander will command his ground forces through a ground force commander and his air force through an air commander.

■ 10. AIR BASES.—Air bases, suitably located, are essential for the sustained operation of military aviation.

*a.* Much of the equipment pertaining to aircraft is of a complex and highly technical nature; its operation requires highly trained air crews; its maintenance and repair require mechanics with specialized skill. All aircraft need regular and frequent care and maintenance. They are vulnerable to air attack both in flight and on the ground. The fatigue of air crews and the repair and reservicing of equipment and material require all aviation units to operate from air bases where the necessary facilities are provided for security, rest, replacement, maintenance, and repair.

*b.* The essential requirements for base facilities are landing areas, facilities for tactical control and planning, administration, maintenance, repair and supply, and provisions for the security of personnel and equipment on the ground. Aviation engineers are essential for the construction and maintenance of air bases. Adequate communications for the control and direction of air operations and for liaison are required.

## SECTION II

### STRATEGIC AIR FORCE

■ 11. GENERAL.—Strategic air force operations are undertaken in furtherance of the strategic plans prepared by the War Department General Staff. The selection of strategic

objectives is a responsibility of the theater commander. Ordinarily, the theater commander will control these air operations by the assignment of a broad general mission to the air force commander. The air force commander executes the assignment by means of a directive to the strategic air force commander and general supervision of his forces.

■ 12. MISSIONS.—Generally, the aim of the strategic air force is the defeat of the enemy nation. Missions are selected which make a maximum contribution to this aim. Objectives may be found in the vital centers in the enemy's lines of communication and important establishments in the economic system of the hostile country. Objectives are selected in accordance with the ultimate purpose of the strategic plan. Counter air force operations necessary to neutralize or limit the power of the enemy's air forces are of continuing importance. Although normally employed against objectives listed above, when the action is vital and decisive, the strategic air force may be joined with the tactical air force and assigned tactical air force objectives.

■ 13. COMPOSITION.—The strategic air force is normally comprised of heavy bombardment, fighter, and photographic aviation. Heavy bombardment aviation is the backbone of the strategic air force. This class of aviation is characterized by its ability to carry heavy loads of destructive agents for great distances. It is also capable of conducting long-range strategic reconnaissance over land and sea. It relies upon speed, altitude, defensive fire power, and armor for security. Accompanying fighter aviation, where its radius of action permits, is also used to increase security. Fighter aviation furnishes air defense for bombardment bases. Photographic aviation performs long range high altitude photographic missions for the theater, air force, and strategic air force commanders.

### SECTION III

#### TACTICAL AIR FORCE

■ 14. GENERAL.—*a.* In a theater of operations where ground forces are operating, normally there will be a tactical air force. Modern battle strategy and tactics derive success to

the degree that air power, sustained and in mass, is employed properly by the theater or task force commander.

b. The decision to launch a combined operation and to wage subsequent offensives is strongly influenced by the quantity and quality of air strength available.

c. Forces must be developed and committed to battle with overwhelming air components opposing estimated enemy air capabilities.

d. Tactical air force operations and ground force operations in the theater or task force will be coordinated by means of timely planning conferences of pertinent commanders and staffs, and through the exchange of liaison officers. Air and ground liaison officers will be officers who are well versed in air and ground tactics.

e. In modern battle operations, the fighting of land elements and the general air effort in the theater must be closely coordinated. The air battle should be won first whenever other considerations permit (par. 2).

■ 15. COMPOSITION.—a. The tactical air force may contain the following: reconnaissance aviation, light and medium bombardment units, fighter aviation and an aircraft warning service. This force does not serve the ground forces only; it serves the theater. Aviation units must not be parceled out as the advantage of massed air action and flexibility will be lost.

b. In a particularly opportune situation (offensive) or a critical situation (defensive), a part or a whole of the strategic air force may be diverted to tactical air force missions.

■ 16. MISSIONS.—a. The mission of the tactical air force consists of three phases of operations in the following order of priority:

(1) *First priority*.—To gain the necessary degree of air superiority. This will be accomplished by attacks against aircraft in the air and on the ground, and against those enemy installations which he requires for the application of air power.

(2) *Second priority*.—To prevent the movement of hostile troops and supplies into the theater of operations or within the theater.

## FIELD SERVICE REGULATIONS

## COMMAND AND EMPLOYMENT OF AIR POWER

(This manual supersedes FM 1-5, 18 January 1943. Pending revision of existing War Department publications which are affected by the publication of FM 100-20, whenever their contents are in conflict with the provisions of this manual, these instructions will govern.)

## CHAPTER 1

## GENERAL

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## SECTION I

## DOCTRINE OF COMMAND AND EMPLOYMENT

■ 1. RELATIONSHIP OF FORCES.—LAND POWER AND AIR POWER ARE CO-EQUAL AND INTERDEPENDENT FORCES; NEITHER IS AN AUXILIARY OF THE OTHER.

■ 2. DOCTRINE OF EMPLOYMENT.—THE GAINING OF AIR SUPERIORITY IS THE FIRST REQUIREMENT FOR THE SUCCESS OF ANY MAJOR LAND OPERATION. AIR FORCES MAY BE PROPERLY AND PROFITABLY EMPLOYED AGAINST ENEMY SEA POWER, LAND POWER, AND AIR POWER. HOWEVER, LAND FORCES OPERATING WITHOUT AIR SUPERIORITY MUST TAKE SUCH EXTENSIVE SECURITY MEASURES AGAINST HOSTILE AIR ATTACK THAT THEIR MOBILITY AND ABILITY TO DEFEAT THE ENEMY LAND FORCES ARE GREATLY REDUCED. THEREFORE, AIR FORCES MUST BE EMPLOYED PRIMARILY AGAINST THE ENEMY'S AIR FORCES UNTIL AIR SUPERIORITY IS OBTAINED. IN THIS WAY ONLY CAN DESTRUCTIVE AND DEMORALIZING AIR ATTACKS AGAINST LAND FORCES BE MINIMIZED AND THE INHERENT MOBILITY OF MODERN LAND AND AIR FORCES BE EXPLOITED TO THE FULLEST.

■ 3. COMMAND OF AIR POWER.—THE INHERENT FLEXIBILITY OF AIR POWER, IS ITS GREATEST ASSET. THIS FLEXIBILITY MAKES IT POSSIBLE TO EMPLOY THE WHOLE WEIGHT OF THE AVAILABLE AIR POWER AGAINST SELECTED AREAS IN TURN; SUCH CONCENTRATED USE OF THE AIR STRIKING FORCE IS A BATTLE WINNING FACTOR OF THE FIRST IMPORTANCE. CONTROL OF AVAILABLE AIR POWER MUST BE CENTRALIZED AND COMMAND MUST BE EXERCISED THROUGH THE AIR FORCE COMMANDER IF THIS INHERENT FLEXIBILITY AND ABILITY TO DELIVER A DECISIVE BLOW ARE TO BE FULLY EXPLOITED. THEREFORE, THE COMMAND OF AIR AND GROUND FORCES IN A THEATER OF OPERATIONS WILL BE VESTED IN THE SUPERIOR COMMANDER CHARGED WITH THE ACTUAL CONDUCT OF OPERATIONS IN THE THEATER, WHO WILL EXERCISE COMMAND OF AIR FORCES THROUGH THE AIR FORCE COMMANDER AND COMMAND OF GROUND FORCES THROUGH THE GROUND FORCE COMMANDER. THE SUPERIOR COMMANDER WILL NOT ATTACH ARMY AIR FORCES TO UNITS OF THE GROUND FORCES UNDER HIS COMMAND EXCEPT WHEN SUCH GROUND FORCE UNITS ARE OPERATING INDEPENDENTLY OR ARE ISOLATED BY DISTANCE OR LACK OF COMMUNICATION.

## SECTION II

### MILITARY AVIATION

■ 4. GENERAL CATEGORIES.—Aviation of the United States Army, referred to herein as military aviation, falls into two general categories as follows:

a. Aviation directly under command and control of the Commanding General, Army Air Forces. Included in this category are—

(1) All nontactical elements of the Army Air Forces such as those used for training, research, development, test, procurement, storage, issue, maintenance, and transport.

(2) All tactical units of the Army Air Forces not assigned to a theater or task force Commander.

(3) *Third priority.*—To participate in a combined effort of the air and ground forces, in the battle area, to gain objectives on the immediate front of the ground forces.

b. (1) *First priority.*—The primary aim of the tactical air force is to obtain and maintain air superiority in the theater. The first prerequisite for the attainment of air supremacy is the establishment of a fighter defense and offense, including RDF (radio direction finder), GCI (ground control interception), and other types of radar equipment essential for the detection of enemy aircraft and control of our own. While our air superiority is maintained, both the ground forces and the air force can fight the battle with little interference by the enemy air. Without this air supremacy, the initiative passes to the enemy. Air superiority is best obtained by the attack on hostile airdromes, the destruction of aircraft at rest, and by fighter action in the air. This is much more effective than any attempt to furnish an umbrella of fighter aviation over our own troops. At most an air umbrella is prohibitively expensive and could be provided only over a small area for a brief period of time.

(2) *Second priority.*—The disruption of hostile lines of communication (and at times lines of signal communication), the destruction of supply dumps, installations, and the attack on hostile troop concentrations in rear areas will cause the enemy great damage and may decide the battle. This accomplishes the "isolation of the battlefield." If the hostile force is denied food, ammunition, and reinforcements, aggressive action on the part of our ground forces will cause him to retire and the immediate objective will be gained. Massed air action on these targets with well-timed exploitation by ground forces should turn the retirement into rout.

(3) *Third priority.*—The destruction of selected objectives in the battle area in furtherance of the combined air-ground effort, teamwork, mutual understanding, and cooperation are essential for the success of the combined effort in the battle area. In order to obtain the necessary close teamwork the command posts of the Tactical Air Force and of the ground force concerned should be adjacent or common, at least during this phase of operations. Air and ground commanders

profit greatly from the other's successes. Airplanes destroyed on an enemy airdrome and in the air can never attack our troops. The advance of ground troops often makes available new airdromes needed by the air force. Massed air action on the immediate front will pave the way for an advance. However, in the zone of contact, missions against hostile units are most difficult to control, are most expensive, and are, in general, least effective. Targets are small, well-dispersed, and difficult to locate. In addition, there is always a considerable chance of striking friendly forces due to errors in target designation, errors in navigation, or to the fluidity of the situation. Such missions must be against targets readily identified from the air, and must be controlled by phase lines, or bomb safety lines which are set up and rigidly adhered to by both ground and air units. Only at critical times are contact zone missions profitable.

#### SECTION IV

#### AIR DEFENSE COMMAND

■ 17. GENERAL.—*a.* Air defense is the direct defense against hostile air operations as distinguished from the indirect defense afforded by counter air force operations. Air defense comprises all other methods designed to prevent, to interfere with, or to reduce the effectiveness of hostile air action.

*b.* Air defense is divided into active air defense and passive air defense.

(1) Active air defense comprises all measures aimed to destroy or to threaten destruction of hostile aircraft and their crews in the air. Active air defense is provided by fighter aircraft, antiaircraft artillery, and small arms fire; and by obstacles, principally barrage balloons

(2) Passive air defense is provided by dispersion, camouflage, blackouts, and other measures which minimize the effect of hostile air attack.

■ 18. COMPOSITION.—*a.* The active air defense means for any area may include fighter aviation, antiaircraft artillery, searchlights, barrage balloons and aircraft warning service.

Areas of responsibility for active air defense will be prescribed by the air force commander. Normally, the tactical air force will be responsible for the active air defense of the battle area utilizing fighter aircraft and the mobile aircraft warning service. This mobile aircraft warning service will include RDF (radio direction finder), GCI (ground control interception), and other types of radio equipment and warning facilities essential for the interception of enemy aircraft.

b. When antiaircraft artillery, searchlights, and barrage balloons operate in the air defense of the same area with aviation, the efficient exploitation of the special capabilities of each, and the avoidance of unnecessary losses to friendly aviation, demand that all be placed under the command of the air commander responsible for the area. This must be done.

c. Antiaircraft artillery attached or assigned to ground forces combat units remain under the command of the ground force unit commander, as distinguished from the antiaircraft units assigned to an air commander for the air defense of an area.

■ 19. TACTICS AND TECHNIQUE.—Tactics and technique of air operations in air defense are covered in FM 1-15.

## SECTION V

### AIR SERVICE COMMAND

■ 20. GENERAL.—The air service command in a theater provides the logistical framework of the air force. Its functions comprise such activities as procurement, supply, repair, reclamation, construction, transportation, salvage, and other services required by the tactical units of an air force. The air service command provides all repair and maintenance of equipment beyond the responsibility of first and second echelons of maintenance.

■ 21. ORGANIZATION.—a. All air force service organizations and installations are under the air service commander's direct control. These organizations and installations include air quartermaster, ordnance, signal, chemical, medical, and

engineer depots, and service centers. Where ground force depots supplying material *common to both ground and air forces* are adequate, suitably located, and can be used, such material should not be handled by an air force depot. Material peculiar to the Army Air Forces will normally be handled only by the Army Air Forces and not by ground or service force agencies.

b. The service center is a mobile organization provided to establish and operate the necessary third echelon maintenance, reclamation, and supply points within close supporting distance of the combat units. Service centers normally are set up on the basis of one for each two combat groups.

■ 22. REFERENCE.—The details of organization, functions, and method of operation of an air service command are contained in Army Air Forces Regulations 65-1.

