CHAPTER 2

ORGANIZATION OF NAVAL AVIATION

INTRODUCTION

You first learned about Navy organization in recruit training. Here, we deal primarily with the organization of naval aviation so you will become familiar with the overall picture. This knowledge will help you understand the importance of your job as an Airman.

Naval aviation starts with the Secretary of the Navy, who is head of the Navy Department. The Navy Department is under the cabinet post of the Secretary of Defense. The training manual, Basic Military Requirements, Naval Education and Training (NAVEDTRA) 14325, covers the organization of the Navy Department.

See Figure 2-1, organization for naval aviation. The Chief of Naval Operations (CNO) is the head of the military part of the Navy Department. He/She is usually the senior naval military officer in the Department.

An organization does not remain static. Missions differ and change. Various missions and tasks influence the organization of a particular squadron, station, or ship.

Whether you are assigned to a shore duty or shipboard billet, you are part of a division. There is a division officer in charge. The division officer is responsible for training personnel within the division. He/She makes sure that command policies are carried out and that the jobs assigned to the division are completed on time. You will probably be assigned to a smaller group called a crew. A senior petty officer is in charge of the crew, He/She will help you with your on-the-job and in-service training.

LEARNING OBJECTIVES

When you have completed this chapter, you will be able to do the following:

1. Explain the naval aviation chain of command and your role within the chain.
2. Identify the organizational structure of a naval air station.
3. State the responsibilities within the organizational structure of a naval air station.
4. Identify the functions of naval air facilities and Naval Aviation Depots.
5. Identify the basic types of squadrons.
6. Describe the organization within the squadron and the squadron mission.
7. Explain the responsibilities of squadron personnel.
8. State the function of squadron departments.
9. Explain the purpose of the aircraft carrier.
10. State the function of the various organizations on an aircraft carrier.
11. Define the purpose of the aircraft carrier within a Navy task force.
12. Identify the purpose of the aircraft carrier schedule.
13. Identify naval aircraft and their designations.
NAVAL AVIATION CHAIN OF COMMAND

Every organization in the Navy has a chain of command. Figure 2-1, organization for naval aviation, shows a typical chain of command. The commanding officer (CO) of a squadron or ship must report to a superior officer. That superior officer must report to a superior, and this procedure is repeated all the way up to the CNO. You have a chain of command to follow. You report to your crew leader or supervisor. The crew leader or supervisor reports to the branch or division chief petty officer. The branch or division chief reports to the division officer. Normally, all matters concerning you are handled at the division level. Matters of extreme importance should go to your department head. From the department head, the chain goes to the executive officer (XO), and finally to the CO. This chain of command could change some from command to command, but basically it will remain the same.

The chain of command serves many purposes in the accomplishment of the Navy’s mission. The chain of command provides direction in the assignment of duties. Communication is the key word in the chain of command. Communication must flow in both directions, up and down the chain. A good chain of command provides a way to solve work-related problems.

Figure 2-1 — Organizational chart of naval aviation.
NAVAL AIR STATION (NAS) ORGANIZATION

There are several activities devoted to naval aviation. Certain stations provide facilities for equipping, supplying, repairing, and maintaining aircraft. Others provide specialized training to flight and ground personnel.

You have already had duty at the Recruit Training Command (RTC). In this section, you will learn about the basic organization of a naval air station (NAS) that you will see during your naval career. It will show you that there are many duties to be performed. You can strike for any one of the aviation ratings found on an NAS. The organization of an NAS is similar to that of a squadron or a carrier, but it is much more extensive.

The mission of an NAS is to provide service and support to the fleet. An NAS carries out its mission through several functions.

- It supports operating aircraft and squadrons assigned to the NAS.
- It also supports any transient aircraft that land at the NAS.
- It provides air traffic control to all aircraft flying in its controlled air space.

NAS and squadron personnel perform organizational-level maintenance on their assigned aircraft. The NAS also has the responsibility of providing intermediate-level maintenance. This is a higher level of maintenance work done on aircraft. Some NASs provide depot-level maintenance, which is the highest level of maintenance for naval aircraft.

Providing training is another function of an NAS. Some NASs provide one or more types of flight training. There are three types of flight training—preflight, basic, and advanced. These three types of flight training apply to naval officer aviators and to enlisted aircrew personnel.

Some NASs provide Aviation Maintenance Administration Management Training (AMAMT) courses. AMAMT provides formal and On the Job Training (OJT) maintenance training for the type of aircraft and the support equipment used on that aircraft.

Not all NASs do everything you will read about here. Some can handle all phases of training. Others may handle only the maintenance phase. The size of NASs varies according to their functions. However, all NASs provide service and support to the fleet.

See Figure 2-2, which shows the organization of a typical naval air station. The CO is responsible for the safety, well-being, and efficiency of the command.

The CO and XO have several special assistants. They are the legal officer, the service information officer, the chaplain, the aviation safety officer, the management engineer, and the general safety officer.
Figure 2-2 — Organizational chart of a naval air station.

Administration Department
The administration department is responsible for providing administrative services for the station. These services include mail distribution, communications, and maintenance of personnel files. The divisions within the administration department include the administrative, communications, personnel administrative support services (PASS), mess, special services, and family services divisions.

Comptroller Department
The head of the comptroller department assists the CO and the XO. He/She advises the station budget board, the department heads, and other levels of station management. The comptroller assists in planning, organizing, directing, and executing financial matters that affect the station. In this capacity, the comptroller provides technical guidance, coordination, and advice in budget control. He/She recommends allocations of civilian personnel to departments and programs. The comptroller develops and monitors data collection systems for program performance analysis and progress reporting. He/She also provides accounting and disbursing services.

Human Resources Office (HRO)
HRO is headed by a naval officer or a civilian personnel officer. He/She is assisted by civilian experts on employment, wage, and classification. Employee relations and services are also handled in this office.

Security Department
The security department consists of the police guard or marine guard, shore patrol, fire, brig, and administrative divisions. The department is responsible for maintaining the security of the station to
prevent sabotage, espionage, theft, fire, or other hostile acts. The functions of the department include internal security, investigation, training, and coordination for off-station shore patrol activity.

**Air Operations Department**

The air operations department is responsible for providing and operating the airfield. This department provides services to support aircraft operations, which include station, squadron, and transient aircraft (both military and civilian) support. The air operations department is also responsible for providing air traffic control in the air facility assigned to them. They collect, analyze, and report weather data, schedule flights, and update other important information. The department performs organizational maintenance for assigned aircraft, performs flight line services for transient aircraft, and operates firing ranges. Other services provided by the air operations department include ground electronics maintenance, photographic, and administrative functions within the department.

**NOTE**

The aircraft maintenance division is responsible for organizational-level maintenance of assigned and transient aircraft. The organization of this division is similar to that of a squadron, which is discussed later in this chapter.

**Supply Department**

The supply department is headed by the senior supply corps officer. The department is responsible for the logistic support of the NAS and all activities on the station. The supply officer and assistants have the responsibility of issuing all fuel and oils. Responsibilities extend to issuing aircraft parts and support equipment. The supply department also operates the general mess.

**Public Works Department**

The public works department is headed by a civil engineer corps officer. The officer in this position is responsible for the minor construction, maintenance, and operation of all public works and utilities. This department consists of utilities, maintenance, transportation, engineering, maintenance control, and administrative divisions. The department is staffed by both naval and civilian personnel.

**Weapons Department**

The weapons department is headed by a weapons officer. The department is responsible for the care, handling, stowage, accountability, and issuance of aviation ordnance, ammunition, and pyrotechnics. The department is also responsible for the maintenance of magazines, armories, and the equipment associated with ordnance.

**Dental Department**

The dental department is responsible for the oral health of all station military personnel. The senior dental officer performs dental examinations and does other dental work. He/She is assisted by dental officers and dental technicians.

**Medical Department**

The medical officer is responsible for all health-related problems on the base. Their responsibilities include prevention and control of disease and treatment of the sick or injured. The medical officer is informed of all matters regarding hygiene, sanitation, and epidemics. The medical officer also advises
the CO in matters affecting the health and physical fitness of personnel. A flight surgeon, under the direction of the medical officer, takes care of all aviation medicine. The medical department is also responsible for the medical care of dependents of military personnel.

**Levels of Naval Aircraft Maintenance**

Naval aircraft maintenance is divided into three levels—organizational, intermediate, and depot. Organizational maintenance is work performed by operating units, such as a squadron, on a day-to-day basis. This work consists of inspecting, servicing, lubricating, adjusting, and replacing parts, minor assemblies, and subassemblies. Intermediate maintenance is work performed at centrally located facilities, such as an FRC, in support of operating units. This work consists of calibration, repair, or replacement of damaged or unserviceable parts, components, or assemblies; limited manufacture of parts; and technical assistance. Depot maintenance is performed at large industrial-type facilities, such as a Naval Aviation Depot (NADEP), and includes major overhaul and major repair or modifications of aircraft, components, and equipment, and the manufacture of parts.

**Fleet Readiness Center (FRC)**

The primary function of the FRC is to perform intermediate-level maintenance. It supports station aircraft, tenant squadrons, and special units.

The FRC department is broken down into divisions, as shown in Figure 2-3. A brief description of each is provided in the following paragraphs. Shipboard Intermediate maintenance departments are referred to as Aircraft Intermediate Maintenance Departments (AIMDs).

![Figure 2-3 — Fleet Readiness Center (FRC) (ashore) organizational chart.](image_url)

Breakdowns beyond the basic divisions are not illustrated because of the variety of branches possible. Activities will be required to establish the necessary branches to meet their individual requirements. Branches should be established only when more than one work center is involved, for example, jet engine branch with work center J52 engine.

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Quality Assurance/Analysis (QA/A)

QA/A is staffed with a relatively small group of highly skilled personnel. These permanently assigned personnel are responsible for conducting and managing the QA/A programs of the department. The maintenance personnel assigned to QA/A are known as Quality Assurance Representatives (QARs). A data analyst is assigned to QA/A. His/Her purpose is to get more efficient use of the information collected by the aviation Maintenance Data System (MDS). The primary duty of the data analyst is to perform all MDS functions of QA/A. The QA/A division also maintains the technical library.

The QA concept is that of preventing defects. The concept takes in all events from the start of the maintenance operation to its completion. QA is the responsibility of all maintenance personnel. The achievement of QA depends on prevention, knowledge, and special skills.

Administration Division

The administration division provides clerical and administrative services for the FRC department. The administration division maintains, controls, and establishes a central reporting and record-keeping file system for all maintenance reports and correspondence. The safeguarding and distributing of personal mail to department personnel is another function of the administration division.

Manpower, Personnel, and Training Coordinator

The manpower, personnel, and training coordinator will normally be a senior enlisted (E-9) person. The coordinator ensures that all divisions in FRC are conducting training sessions to improve the quality of performance. He/She also ensures promotional opportunities are available for the assigned personnel. The coordinator directs periodic inspections of assigned work spaces and personnel.

Maintenance material control

Is the heart of the FRC. It is tasked with the accomplishment of the overall production effort. It is responsible for repairing aircraft and related support equipment at the intermediate level of maintenance. There are two control centers under maintenance material control—production control and material control.

Production Control

Production control schedules workloads and coordinates production. It ensures the efficient movement of all aircraft or parts through the FRC activity. Production control ensures maximum use
Production control has many functions in an FRC, but its main responsibility is to manage resources efficiently.

Material Control
Material control within a maintenance organization is responsible for parts and material used in the activity. Material control ensures that parts and materials are ordered and received. Once parts or material are received, they are routed to the applicable work centers and are not allowed to accumulate.

Supply
The Supply Support Center (SSC) of an FRC is responsible for receiving all parts and materials ordered. SSC prepares the requisitions and picks up and delivers the material to the various FRC work centers. If maintenance is being performed 24 hours a day, the SSC will be open 24 hours a day. This allows for a quick response to the work centers' material needs.

ORGANIZATIONAL AND OPERATIONS MAINTENANCE DIVISION (OMD)
An Organizational Maintenance Division (OMD) is normally established in an FRC. Specific authority has to be granted to combine the organizational maintenance divisions and the intermediate maintenance activities on board an NAS. Not all FRCs will have an organizational maintenance division. An operations maintenance division is normally established when there is four or less aircraft assigned. OMDs on board an NAS are responsible for all organizational-level maintenance that must be performed to their assigned aircraft.

Power Plants Division
The power plants division performs all of the three-degree gas turbine engine repairs. The three-degree repair program is divided into first-degree repair, second-degree repair, and third-degree repair. The program covers all gas turbine engines, their accessories, and components. Their responsibilities include aircraft engines, auxiliary power units, and airborne or ground starting units.

Airframes Division
The airframes division has responsibilities associated with the Hydraulic Fluid Contamination Control Program. The division fabricates and tests hoses, tubes, and sheet metal parts for aircraft structural components. The division is responsible for the recertification of aeronautical equipment welders, Nondestructive Inspection (NDI), aircraft tire/wheel maintenance safety, and corrosion prevention/control programs.

Avionics Division
The avionics division tests and repairs electrical and electronics system components. The division is responsible for calibration of precision measuring equipment (PME) and for ensuring that personnel performing calibrations are qualified and trained. Corrosion prevention/control of avionics equipment, maintenance, and the safety of aircraft batteries are also the responsibility of the avionics division.

Armament Equipment Division
The armament equipment division is responsible for testing and repairing airborne weapon systems. This includes calibrations, cleaning, corrosion control, preservation, and storage programs.
**Aviation Life Support Equipment Division**

The aviation life support equipment division is responsible for the Aviator's Breathing Oxygen (ABO) program, which includes surveillance, contamination, and handling. The division maintains the egress, air-conditioning, and pressurization systems. Survival equipment for the aircraft and aircrew is another responsibility of the division.

**Support Equipment (SE) Division**

The SE division supplies aircraft support equipment to all organizational-level activities at the NAS. This division performs major repair and periodic inspection and maintenance of all aviation support equipment.

Aviation support equipment includes, but is not limited to, such items as test stands, workstands, mobile electric power plants, pneumatic and hydraulic servicing equipment, and avionics test equipment.

**NAVAL AIR FACILITIES AND NAVAL AVIATION DEPOTS**

**Naval Air Facility (NAF)**

Performs maintenance functions on aircraft and support equipment assigned to that command. These functions sometimes include organizational- and intermediate-level maintenance. NAFs are normally smaller than an NAS. NAFs are not equipped to handle large numbers of aircraft.

**NADEP**

Maintains and operates facilities for a complete range of depot-level rework operations to include designated weapons systems, accessories, and equipment. The depot manufactures parts and assemblies as required. It also provides engineering services in the development of changes to hardware design. The depot furnishes technical and other professional services on aircraft maintenance and logistic problems. The depot also performs other levels of aircraft maintenance for eligible activities when requested. The facility performs other functions as the Commander, Naval Air Systems Command may direct.

**SQUADRONS**

Squadrons are designated by the purpose they serve. You should be familiar with the various types, classes, and missions of each type of squadron.

**TYPES OF SQUADRONS**

There are four basic types of squadrons—carrier, patrol, composite, and noncombatant. In this section, you will learn about squadron missions and the primary aircraft that operate within a specific squadron.

**Carrier Squadrons**

There are many types of carrier squadrons, including strike/fighter, antisubmarine, and airborne early-warning squadrons.

**Strike fighter squadrons (VFAs)**

VFAs are employed for both fighter and attack missions. The F/A-18 Hornet aircraft are assigned to strike fighter squadrons.
Antisubmarine Squadrons

The primary mission of includes Antisubmarine Warfare (ASW), search and attack of enemy submarines, supply convoy coverage, and antisurface surveillance and targeting. Their secondary mission provides search and rescue (SAR), vertical replenishment (VERTREP), and medical evacuation (MEDIVAC). Helicopters assigned to Helicopter Antisubmarine (HS), Helicopter Antisubmarine Light (HSL), Helicopter Sea Combat (HSC), and Helicopter Maritime Strike (HSM) squadrons are the H-60.

Airborne early-warning squadrons (VAWs)

VAWs are carrier-based squadrons that provide early warning against submarines, weather, missiles, shipping, and aircraft. Aircraft assigned to an early-warning squadron include the E-2 Hawkeye.

Patrol Squadrons

Patrol squadrons (VPs) consist of aircraft that are land based and operate singly over land and sea areas. These squadrons are designed primarily for ASW, reconnaissance, and mining. Aircraft assigned to a patrol squadron include the P-3 Orion and P-8 Poseidon.

Composite Squadrons

Composite (utility) squadrons (VC and HC)

Composite squadrons include both fixed-wing aircraft (VC) and helicopters (HC). VC squadrons perform duties such as adversary, simulation, and target towing. HC squadrons perform duties such as ship's plane-guard, SAR, MEDIVAC, VERTREP, cargo and mail delivery, and troop and personnel transfer. Aircraft assigned to utility squadrons include the F/A-18 Hornet, H-60, and H-53 Sea Stallion.

Noncombatant Squadrons

There are three types of noncombatant squadrons. They are the development, tactical, and training squadrons.

Development squadrons

Include both fixed-wing aircraft (VX) and rotary-wing aircraft (helicopters) (HX). The mission of a development squadron is to test and evaluate VX and HX aircraft and their equipment. This type of squadron closes the gap between the experimental stages and the operational use of the new aircraft and its equipment. All types of aircraft that require testing and evaluation are assigned to these squadrons.

Tactical support squadrons (VRs and VRCs)

Provide for long-distance transfer of personnel and supplies (logistic support). Aircraft assigned to a tactical support squadron include the C-130 Hercules, C-40 Clipper, and C-2 Greyhound.

Training squadrons are designated VT and HT

The mission of a training squadron is to provide basic, advanced, operational, and refresher-type flight training. These squadrons cover both fixed-wing and rotary-wing aircraft. Some aircraft assigned to a training squadron include the T-6 Texan, T-34 Mentor, T-45 Goshawk, and TH-57 Sea Ranger.

ORGANIZATION OF A SQUADRON

Operating squadrons have a CO assisted by an XO, department heads, division officers, maintenance officers, and enlisted personnel. You should know the organization of your squadron.
Recognize your CO and display the courtesy required by military etiquette. Know your division officer and your responsibilities to that position. Know your chief petty officers and other rated personnel in your division. They should be your biggest help in your professional advancement. Know your part in your own organization. Now, let's take a look at a typical squadron organization, starting with the CO.

**Commanding Officer (CO)**

The CO is the senior naval officer in the squadron. He/She is known as the squadron commander. The CO has the duties and responsibilities as outlined in U.S. Navy Regulations. These duties and responsibilities include morale, discipline, readiness, and efficiency. The CO issues operational and employment orders to the entire squadron. The XO, department heads, and other officers and personnel fall under the CO. See Figure 2-4. The CO is responsible for the operational readiness of the squadron.

The squadron safety officer works directly under the CO. The safety officer's responsibility is to ensure the squadron follows all pertinent safety orders. The squadron safety officer is a member of the squadron aircraft accident board. He/She serves as crash investigator of all crashes occurring within the squadron.

**Executive Officer (XO)**

The XO is the second senior naval aviator in the squadron. He/She is the direct representative of the CO, and his/her duties are prescribed in U.S. Navy Regulations. The XO is assisted by various department heads, whose duties vary according to their designated mission and tasks. The XO assures that the squadron is administered properly and the squadron commander's orders are carried out.

**Maintenance Officer (MO)**

The MO has administrative control over the maintenance department and is responsible to the CO for accomplishing the squadron mission. The MO establishes procedures and delegates authority to subordinates. The MO reviews the decisions and actions of subordinates and controls personnel assigned to divisions within the department. The MO is assisted by the assistant maintenance officer (AMO). The AMO receives the same training and is qualified under the same guidelines as the MO. One of the major responsibilities of the AMO is the Maintenance In-Service Training Program.

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**Figure 2-4 — Typical aircraft squadron organizational chart.**
Maintenance Material Control Officer (MMCO)

This officer is responsible for the production effort of the department. The MMCO plans, schedules, and supervises all activities of the production divisions. The MMCO is responsible for obtaining all supplies needed to support the squadron workload and keeping related records.

AIRCRAFT SQUADRON DEPARTMENTS

All aircraft squadrons have an administrative department and a safety department. Most squadrons also have an operations department and a maintenance department. Some squadrons have one or more additional departments. Based upon the mission of the squadron, there may be a training, photographic, or intelligence department. A department head reports to the CO and is responsible for the operational readiness of the department and for organizing and training within the department. Operation, planning, security, safety, cleanliness of areas assigned, and records and reports are some of the department head responsibilities.

Operations department

The operations (OPS) department is responsible for the operational readiness and tactical efficiency of the squadron. Normally, the OPS department consists of the logs and records, schedules, training, communications, and navigation divisions.

Administrative department

The administrative (ADMIN) department is responsible for all the administrative duties within the squadron. This department takes care of official correspondence, personnel records, and directives. The personnel office, educational services office, public affairs office, and legal office are all part of the ADMIN department. The first lieutenant and command career counselor work as members of this department.

Safety department

The safety department is responsible for all matters concerning the squadron's safety program. Generally, this department is divided into the ground safety, aviation safety, and Naval Air Training and Operating Procedures Standardization (NATOPS) divisions. The NATOPS division is responsible for ensuring that standardized procedures are followed in operating the squadron's aircraft.

Maintenance department

The maintenance department is responsible for the overall maintenance of the squadron's aircraft. The maintenance department is usually divided into six areas: maintenance/material control, QA/A, maintenance administration, aircraft, avionics/armament, and line divisions. See Figure 2-5.
**Figure 2-5 — Squadron aircraft maintenance department organizational chart.**

**TYPES OF DIVISIONS**

**Maintenance administration**
Provides administrative and clerical services for the aircraft maintenance department.

**QA/A**
The QA/A section inspects the work of the maintenance department. QA/A ensures that maintenance performed on aircraft, engines, accessories, and equipment is done according to current Navy standards.

QA collects and reviews maintenance data, source documents prepared by shop personnel, and delivers the documents to data processing for computer input. The analysis petty officer receives the results from machine-produced reports. The reports are used to develop statistical charts, graphs, and additional reports, which the maintenance officer and other management personnel use.

**Maintenance control**
Maintenance control is the heart of the aircraft maintenance department. Maintenance control is responsible for planning and scheduling the daily, weekly, and monthly workloads for the entire maintenance department.

**Material control**
Material control is responsible for ordering and receiving all aircraft parts and materials needed to support the maintenance department. Material control is also responsible for keeping the records involved in obtaining such material.
There are four basic types of divisions within a squadron: unmanned aircraft systems, aircraft, avionics/armament, and line divisions.

**Unmanned Aircraft Systems (UAS) division**

UAS assignment and classification of O-level and I-level maintenance functions are applicable to UAS. All UAS operating activities are designated as O-level with limited I-level capability because of unique characteristics inherent in UAS design, operation, and life. Only designated squadrons will have a UAS division.

**Aircraft division**

The aircraft division supervises, coordinates, and completes scheduled and unscheduled maintenance. It also performs inspections in the areas of power plants, airframes, and aircrew personnel protective/survival equipment. The aircraft production branches are located within the aircraft division. They are the power plants, airframes, aviation life support equipment, and inspection branches.

**Avionics/Armament division**

The avionics/armament division maintains the electronic, electrical instrument, fire control, reconnaissance/photo, and ordnance portion of the aircraft. The avionics/armament production branches are located within the avionics/armament division. They are the electronics, electrical/instrument, reconnaissance/photo, and armament branches.

**Line Division**

The line division performs scheduled and unscheduled maintenance work on the aircraft. This responsibility includes preflight, turnaround, daily and post-flight inspections, servicing, and troubleshooting discrepancies.

The correction of aircraft discrepancies occurs on the line, providing the job does not require the removal of major assemblies. The ground handling of the squadron’s aircraft is a function of the line division. The plane captain assignment/qualification program is administered by and is a responsibility of the line division.

The line division is responsible for the squadron’s support equipment. This includes preoperation, postoperation, and daily inspections, as well as servicing and maintenance of the support equipment. Daily Maintenance Requirements Cards (MRCs) are provided for each major type of support equipment used by the squadron. The MRCs set forth the minimum daily inspection required for each piece of support equipment.

The Foreign Object Damage (FOD) prevention, fuel, oil, hydraulic fluid, and oxygen surveillance programs are the responsibility of the line division.

The plane captains, troubleshooters, and support equipment branches are located within the line division.

**AIRCRAFT CARRIER ORGANIZATION**

The purpose of aircraft carriers is to maintain the aircraft at sea. Their operation is mobile and independent of land facilities. These operations include naval air defensive and offensive missions. The types of aircraft aboard a carrier vary from turboprop aircraft to high-performance jets. To maintain and operate these aircraft, carriers are equipped with many well-known special features. These features include the flight deck, hangar deck, elevators, arresting gear, and catapult systems.
You should know something of the organization of the carrier to better understand your relationship to the carrier's mission. You should also recognize the CO of your carrier and know something about the responsibilities of that position. In addition to being a line officer qualified for command at sea, the CO must be a naval aviator. The CO is directly responsible for the ship's efficient performance of assigned tactical duties. The CO is also responsible for the personnel assigned to his command. Responsibilities include welfare, morale, training, discipline, military etiquette, customs, and daily routines. COs have duties that are so extensive they cannot personally attend to all the details involved. See Figure 2-6 typical aircraft carrier organization chart.

The XO aboard a carrier assists the CO the same as the XO of a squadron helps the squadron's CO. The XO, the operations officer, and the air officer also must be qualified naval aviators.

CARRIER AIR WING

Carrier air wings consist of squadrons assigned by the CNO. The air wing is under the command of an air wing commander. Air wing commanders report for duty to the CO of the parent carrier. They have tactical command of their wings during wing operations. When ship-based, the air wing commander exercises the rights conferred by U.S. Navy Regulations on heads of departments. The air wing commander also has responsibilities similar to that of a department head. These responsibilities include internal administration of air wing personnel and material upkeep of assigned spaces and aircraft. In matters concerning air department functions, the air wing commander acts under the direction of the air department officer. In matters concerning operations department functions, the commander acts under the direction of the operations officer. Air wings, squadrons, and units are established aboard Carrier Vessel Nuclear (CVN), Landing ship Helicopter Assault (LHA), and Multi-purpose amphibious assault ship (LHD) types of ships. See Figure 2-7.
Under the carrier CO and the air wing commander, squadron COs maintain the squadron organization. See Figure 2-8.

**Operations Department**

The operations department has the responsibility of air operations and the Combat Information Center (CIC). The allied divisions, including air intelligence, photography, meteorology, lookout, recognition, and air plot are added responsibilities.

**Air Department**

The carrier air department is organized into divisions that are responsible for landing and launching operations. They also handle and service aircraft and maintain the equipment necessary for these functions. Air department personnel are ship's company, and the department is a permanent shipboard activity.
Figure 2-8 — Administrative organization of a typical CVN air wing.

* Detachment of aircraft configured for special purposes, such as photo reconnaissance, night attack, helicopter sea-air rescue, and cargo.

Divisions within the air department may vary from ship to ship, but each one follows a broad general pattern. The maximum number of divisions is normally four in peacetime and seven in wartime. These are grouped according to the major functions of aircraft handling and aircraft maintenance. Division designation and responsible officers are shown in Figure 2-9.

Figure 2-9 — Administrative organization of an air department.

The principal duties and responsibilities of each division are discussed in the following paragraphs.

V-1 Division

The flight deck division is responsible for the handling of all aircraft on the flight deck. Spotting and directing aircraft, and operating aircraft-handling equipment, such as tractors and cranes. Also included in this division is the aircraft crash, fire, and rescue party. This crew is under the direction of the aircraft crash and salvage officer. The crew is responsible for flight deck firefighting, rescuing, clearing flight deck crashes, and maintaining crash and fire-fighting equipment.
V-2 Division
Personnel in the catapult and arresting gear division are usually assigned to one of two crews. The catapult crew is charged with the operation and maintenance of all catapult machinery. The arresting gear crew is responsible for the operation and maintenance of the arresting gear and barricade equipment. Occasionally, the catapult and arresting gear crews assist in clearing flight deck crashes.

V-3 Division
The hangar deck division is charged with the handling of all aircraft on the hangar deck. Other responsibilities include operation of aircraft elevators, hangar bay doors, and roller curtains. The division also maintains assigned fire-fighting equipment, such as sprinkler systems, water curtains, and foam monitors. Certain personnel from the V-3 division are assigned to the conflagration (fire) control stations on the hangar deck. Repair 1A (hangar deck forward) is operated by personnel from the V-3 division.

V-4 Division
The aviation fuels division is charged with the operation and upkeep of the carrier aviation fuel and lube oil transfer system. Including the inert gas producer and distribution systems (when installed). The division services embarked aircraft with clean, uncontaminated fuel and replenishes the ship's supply of aviation fuel and lube oil.

Weapons Department
In general, the weapons department is responsible for requisitioning, receiving, inspecting, unpacking, inventorying, accounting for, storing, and processing shipment of weapons and weapon components. These weapons and components include air/surface and sub-surface missiles, bombs, rockets, aircraft guns and accessories, ammunition handling equipment, aircraft arming equipment, suspension equipment, and launch and release equipment.

Engineering Department
The engineering department is responsible for all machinery, propulsion, ventilation, water supply, piping systems, electrical systems, and electronic devices on board the ship.

Navigation Department
The navigation department is responsible to the CO for the safe navigation and piloting of the aircraft carrier. This department also trains deck watch officers, orders navigational equipment for the ship, and provides for its upkeep.

Supply Department
The supply department handles such matters as ordering, receiving, storing, issuing, and accounting for all supplies needed for the ship's operation.

Medical Department
The medical department is responsible for maintaining the health of all personnel and advising the CO in matters of sanitation and hygiene.

Dental Department
The senior dental officer is responsible for the dental care and oral hygiene of the personnel aboard.
**Aircraft Intermediate Maintenance Department (Afloat)**

To improve fleet readiness, the CNO established an AIMD on aircraft carriers. The AIMD assumes the entire responsibility for the intermediate maintenance effort on the carrier, thereby relieving the air wing commander of the responsibility of providing O- and I-level maintenance for aircraft assigned. AIMDs are organized in a manner similar to shore-based aviation maintenance departments. See Figure 2-10. Some personnel are permanently assigned to the AIMD, and some are temporarily assigned from the squadrons embarked on the carrier. The temporarily assigned personnel accompany their squadrons when the squadrons disembark to be based ashore.

**CARRIER DIVISIONS**

Now you know the basic organization of a carrier. This knowledge allows you to understand how your carrier fits in the total organization of the Navy. If more than one carrier is operating with a Navy task force, your carrier is a part of a carrier division (CARDIV). The commander of a CARDIV is usually an admiral, who is assisted by a staff of highly qualified officers and administrative personnel. The CARDIV will be a part of the Naval Air Force, the U.S. Atlantic Fleet, or the U.S. Pacific Fleet. A CARDIV operating with the Atlantic Fleet will receive orders from the Commander, Naval Air Force, U.S. Atlantic Fleet (COMNAVAIRLANT). If the carrier operates with the Pacific forces, orders will come from the Commander, Naval Air Force, U.S. Pacific Fleet (COMNAVAIRPAC). COMNAVAIRLANT is directed by the Commander in Chief, U.S. Atlantic Fleet (CINCLANTFLT). COMNAVAIRPAC is directed by the Commander in Chief, U.S. Pacific Fleet (CINCPACFLT). CINCLANTFLT and CINCPACFLT are directly under the CNO. The CNO is the Navy representative for the Joint Chiefs of Staff. They have the responsibility for the protection of the United States.

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![Figure 2-10 — Aircraft intermediate-level maintenance department (afloat) organizational chart.](image)

IM1 — QA, Maintenance Material Control, Administration, and Manpower/Training.

TYPICAL CARRIER SCHEDULE

A carrier needs periodic repair and refitting. The time scheduled for this work is called a yard period. In a Navy shipyard, the carrier is repaired and any change or modernization is done. Included are rearrangement of compartments, repair of machinery, and installation of new systems. At this time, required supplies and spare parts are loaded aboard for both the carrier and its supported squadrons.

The carrier then takes several shakedown and training cruises. During the shakedown cruises, the carrier is checked for satisfactory operation of machinery, equipment, and systems. A return to the shipyard may be needed to correct discrepancies. During the training cruises, the squadron's and ship's personnel are trained in operations and procedures necessary to complete the ship's mission.

The carrier proceeds to its patrol area and conducts operations according to its mission. Supplies are provided by supply ships by Underway Replenishment (UNREP), Carrier Onboard Delivery (COD) aircraft, or VERTREP helicopter squadrons. The carrier usually takes a breather one or more times during this deployment period. This break allows personnel to go on liberty in foreign countries and bring supplies on board that are difficult to get at sea.

After the deployment period, the carrier returns to its home port for refitting. Each return to home port does not involve a yard period. While the carrier is home ported, the squadrons that were aboard are based ashore. While the carrier is being refitted and re-supplied during home port periods, personnel are transferred and new personnel are trained. The carrier is then ready for deployment.

DESIGNATION AND TYPES OF NAVAL AIRCRAFT

The present system of designating naval aircraft was initiated in late 1962. This system applies to all U.S. military aircraft. All the aircraft designations have one thing in common—a hyphen. The letter just before the hyphen specifies the basic mission, or type, of aircraft. The basic mission letters are as follows:

A—Attack
C—Transport
E—Special electronic installation
F—Fighter
H—Helicopter
K—Tanker
P—Patrol  
R—Reconnaissance  
S—Antisubmarine  
T—Trainer  
U—Utility  
V—VTOL and STOL  
X—Research  

If the aircraft has been modified from its original mission, a letter in front of the basic mission letter indicates its modified mission. Mission modification letters are as follows:

A—Attack  
C—Transport  
D—Director (for controlling drone aircraft or missiles)  
E—Special electronic installation  
H—Search/rescue  
K—Tanker  
L—Cold-weather aircraft (for Arctic or Antarctic operations)  
M—Mine countermeasures  
O—Observation  
P—Patrol  
Q—Drone  
R—Reconnaissance  
S—Antisubmarine  
T—Trainer  
U—Utility  
V—Staff  
W—Weather  

As stated above, all the aircraft designations have one thing in common—a hyphen; for example, the F/A-18E Hornet has a multipurpose role. The first letter(s) identify its mission. A number after the hyphen specifies the design number of the aircraft. A letter other than A (A being the original design) after the design number shows a change in the original design. For example, in F/A-18E, the F means fighter and A means attack aircraft. Its design number is 18, and it has been modified four times, represented by the E (fifth letter of the alphabet). Another example is the A-6A. When it is modified to perform early-warning missions, it then becomes the EA-6B Prowler because of the special electronic installation required for such missions.

If both the special-use letter and the modified mission letter apply to the same aircraft, the special-use letter comes first. For example, YEP-3E refers to a prototype (Y), early warning (E), patrol aircraft (P), design number 3, and the design has been modified four times (E).

Table 2-1 gives the basic mission, design number, manufacturer, and popular name of most naval aircraft. The Navy has aircraft of each major type, including fighter, attack, patrol, and ASW that are far superior to those flown in the past. As you read the rest of this section, refer to Figures 2-11 and
The Navy is constantly seeking better and more advanced aircraft operational capabilities. Manufacturers are aware of this and are constantly developing products to meet these demands. Some combat aircraft are described in the following paragraphs.

<table>
<thead>
<tr>
<th>BASIC MISSION AND DESIGN NUMBER</th>
<th>CONTRACTOR/MANUFACTURER</th>
<th>POPULAR NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>AV-8</td>
<td>McDonnell-Douglas</td>
<td>Harrier</td>
</tr>
<tr>
<td>C-2</td>
<td>Grumman</td>
<td>Greyhound</td>
</tr>
<tr>
<td>C-40</td>
<td>Boeing</td>
<td>Clipper</td>
</tr>
<tr>
<td>C-12</td>
<td>Beechcraft</td>
<td>Kingair</td>
</tr>
<tr>
<td>C-20</td>
<td>Gulfstream-Aerospace</td>
<td>Gulfstream</td>
</tr>
<tr>
<td>C-130</td>
<td>Lockheed</td>
<td>Hercules</td>
</tr>
<tr>
<td>E-2</td>
<td>Grumman</td>
<td>Hawkeye</td>
</tr>
<tr>
<td>E-6</td>
<td>Boeing</td>
<td>Mercury</td>
</tr>
<tr>
<td>EA-6</td>
<td>Grumman</td>
<td>Prowler</td>
</tr>
<tr>
<td>F/A-18</td>
<td>McDonnell-Douglas</td>
<td>Hornet</td>
</tr>
<tr>
<td>F-35</td>
<td>Lockheed Martin</td>
<td>Lightning</td>
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<tr>
<td>P-3</td>
<td>Lockheed</td>
<td>Orion</td>
</tr>
<tr>
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<td>Beech</td>
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</tr>
<tr>
<td>T-45</td>
<td>McDonnell-Douglas</td>
<td>Goshawk</td>
</tr>
<tr>
<td>OV-10</td>
<td>North American</td>
<td>Bronco</td>
</tr>
<tr>
<td>UH-1</td>
<td>Bell</td>
<td>Iroquois/Huey</td>
</tr>
<tr>
<td>AH-1</td>
<td>Bell</td>
<td>Cobra</td>
</tr>
<tr>
<td>CH-46</td>
<td>Boeing-Vertol</td>
<td>Sea Knight</td>
</tr>
<tr>
<td>H-57</td>
<td>Bell</td>
<td>Jet Ranger</td>
</tr>
<tr>
<td>H-60</td>
<td>Sikorsky</td>
<td>Sea Hawk, Knight Hawk</td>
</tr>
<tr>
<td>H-53</td>
<td>Sikorsky</td>
<td>Sea Stallion</td>
</tr>
<tr>
<td>V-22</td>
<td>Bell-Boeing</td>
<td>Osprey</td>
</tr>
</tbody>
</table>
McDonnell-Douglas Hornet, F/A-18

The F/A-18 is a twin-jet-engine aircraft designed for all-weather fighter escort and light attack. The Hornet is capable of catapult launch and arrested landings for carrier operations.

The crew consists of a pilot on the F/A-18 model aircraft, and a pilot and student on the TF/A-18 model aircraft. The Hornet is powered by two General Electric F404-GE-400 engines. Each jet engine is rated in the 16,000 pounds of thrust class. The F/A-18 has in-flight refueling capability, and it can carry three external fuel tanks for additional range.

The Hornet has nine weapon stations. Two are wing-tip stations for Sidewinders, and two outboard wing stations for fuel tanks or air-to-ground weapons. There are two nacelle fuselage stations for Sparrows or sensor pods, and two inboard wing stations for fuel tanks or air-to-ground weapons. Also, there is one centerline station for fuel or air-to-ground weapons. The internal M61A1 (20mm) gun is mounted in the nose. See Figure 2-11.

Lockheed Martin Lightning, F-35

The F-35 is a single-engine aircraft. It has three main models: the F-35A is a conventional takeoff and landing variant, the F-35B is a short takeoff and vertical-landing variant, and the F-35C is a carrier-based variant.

The F-35 has a maximum speed of over Mach 1.6, with a maximum takeoff weight of 60,000 pounds. The F-35’s main engine is a Pratt & Whitney F135. Its modern engine delivers over 60 percent more thrust in an aircraft of the same weight.

The F-35 includes a Gun Aircraft Unit 22 (GAU-22) and a four-barrel 25 mm cannon. The cannon is mounted internally with 182 rounds for the F-35A or in an external pod with 220 rounds for the F-35B/F-35C. It has two internal weapons bays, and external hard points that can mount four under-wing pylons and two near-wingtulpylons. See Figure 2-12.
**Grumman Prowler, EA-6B**

The EA-6 Prowler was designed to complement the Navy's defenses in today's electronic warfare environment for carrier and advanced base operations. With a crew of four, a pilot and three Electronic Countermeasures Officers (ECMOs), this long-range, all-weather-capable aircraft has the ability to intercept, analyze, and effectively jam and neutralize hostile radar.

The EA-6 is powered by two Pratt and Whitney J52-P-408 turbojet engines, and it has a combat range of 2,083 nautical miles and a maximum speed at sea level of 651 miles per hour (mph). It can carry Electronic Countermeasure (ECM) pods, external fuel cells, and stores to support strike aircraft, ships, and ground troops. See Figure 2-13.

**McDonnell Douglas Harrier II, AV-8**

The Harrier is one of today's truly unique and most widely known military aircraft. It is the only fixed-wing, Vertical Short Takeoff and Landing (V/STOL) aircraft in the free world. The original design was based on a French engine concept, which was adopted and improved upon by the British. The U.S. Navy and Marine Corps showed a major interest in the Harrier for day or night attack and close troop ground support missions.

With a crew of one pilot, it is powered by one Rolls-Royce Pegasus F-402-RR-404 vectored thrust turbofan engine. Its movable engine exhaust nozzles give it the capability of vertical flight. Ordnance wing mounts carry 500- or 1,000-pound bombs, and under belly pod-mounted, high-speed machine guns. Forward looking infrared radar (FLIR) and night vision goggles (NVGs) are some of the Harrier's war-fighting capabilities. See Figure 2-14.
Lockheed Orion, P-3

The P-3 Orion is a land-based ASW aircraft. It represents advancements stemming from the Navy’s antisubmarine research and development program over the last several years.

It is the world’s most complete airborne antisubmarine detection system. The C model has a new data processing system. It uses a high-speed digital computer for obtaining information from both the aircraft’s submarine detection sensors and a memory bank. The system display provides a readout of tactical ASW detection information to the operator.

It is powered by four Allison turboprop engines. The cabin is air-conditioned, pressurized, and equipped with bunks and a galley. Normally, a crew of 10 is needed for ASW operations. Included in its armament are depth charges, torpedoes, and rockets. See Figure 2-15.

Boeing Poseidon, P-8

The P-8 Poseidon is modified from the 737. Its primary mission is long-range ASW, anti-surface warfare, intelligence, surveillance, and reconnaissance. The P-8 is capable of broad-area, maritime, and littoral operations, which involve carrying torpedoes, depth charges, SLAM-ER anti-ship missiles, and other weapons. It will also be able to drop and monitor sonobuoys. It is designed to operate in conjunction with the Broad Area Maritime Surveillance unmanned aerial vehicle. See Figure 2-16.
Grumman Hawkeye, E-2

The Hawkeye was designed with one primary mission in mind: patrolling the skies to detect impending attack by hostile aircraft, missiles, or sea forces. Capable of all-weather carrier operations, the Hawkeye provides strike and traffic control, area surveillance, SAR guidance, navigational assistance, and communications relay. With its 24-foot revolving radar dish and sophisticated electronic equipment, it can track, detect, or direct targets within a 3-million-cubic-mile area.

The Hawkeye has a five-man crew, two pilots and three equipment operators. It is powered by two Allison T56-A-422 turboprop engines and has a speed of 630 mph. See Figure 2-17.

Figure 2-17 — E-2 Hawkeye.

Grumman Greyhound, C-2

The Greyhound’s primary mission is cargo and passenger transport, or a combination of both, for carrier onboard delivery (COD). The Greyhound has an 80-foot wingspan, with a ceiling of 33,500 feet. It is powered by two Allison T56 turboprop engines and has a speed of 630 mph. See Figure 2-18.

Figure 2-18 — C-2 Greyhound.
**Lockheed Hercules, C-130**

The C-130 is a multi-mission and tactical transport aircraft with four engines and a high wing. A rear ramp provides access to the cargo compartment and can be opened in flight for parachuting troops or equipment. Reversible pitch propellers allow for very short landing distance. See Figure 2-19.

![Figure 2-19 — C-130 Hercules.](image)

**Boeing Clipper, C-40**

The C-40 Clipper provides critical logistics support to the United States Navy. Its flight deck features a flight management computer system with an integrated global positioning system (GPS). It has the Traffic Alert and Collision Avoidance System II on board. It also has an enhanced ground proximity warning system, predictive wind shear, and head-up display (HUD).

The U.S. Navy Reserve, which operates and maintains the aircraft, was the first customer for the newest member of the Boeing 737 Next-Generation family. The Clipper was ordered by the U.S. Navy to replace its fleet of aging C-9B Skytrain. The C-40 is the first new logistics aircraft in 17 years to join the U.S. Navy Reserve. Currently, the Navy Reserve provides 100 percent of the Navy’s worldwide in-theater medium and heavy airlift. See Figure 2-20.

![Figure 2-20 — C-40 Clipper.](image)
**Sikorsky Sea Hawk, H-60**

The Sea Hawk, better known as the LAMPS (Light Airborne Multipurpose System), helicopter provides all-weather capability for detection, classification, localization, and interdiction of ships and submarines. Secondary missions include SAR, MEDIVAC, VERTREP, special warfare support, and communications relay.

It has a crew of four, two pilots and two enlisted aircrew, and is powered by two General Electric T700-GE-401 engines. Different variants of the Sea Hawk enable it to perform ASW, logistic, weapons delivery, or troop transport missions. See Figure 2-21.

**Sikorsky Sea Stallion, H-53**

The Super Stallion’s primary mission is to move cargo and equipment with a secondary role of troop transfer during amphibious assault operations. With two versions, utility and mine countermeasures, this heavy lift helicopter is one of the free world’s largest and most powerful. It has a crew of three, is powered by three General Electric T64-GE-416 engines, has seven main rotor blades, and weighs 73,500 pounds maximum loaded. The Super Stallion can refuel in flight, has accommodations for 38 combat-equipped troops or 24 litter patients, and can lift over 16 tons. See Figure 2-22.
Bell Cobra, AH-1

The AH-1 is a two-place, tandem-seat, twin-engine helicopter capable of land- or sea-based operations. The rear seat pilot is primarily responsible for maneuvering the aircraft. The front pilot controls the aircraft’s weapons systems, but also has a full set of aircraft controls.

The AH-1 distinguished itself with its more powerful T700-GE-401 engines and advanced electronic weapons capability. The AH-1W has significantly improved power available in high altitude, hot environment, and single engine performance.

The Cobra is armed with a 20 mm turret gun and is qualified to carry Hellfire, Sidewinder, and Sidearm missiles and 5-inch or 2.75-inch rockets. The Hellfire missile system increased ordnance delivery and firepower capabilities. The AH-1 Cobra provides full night-fighting capability with the night targeting system (NTS). The NTS further enhanced the AH-1 war fighting capability by adding FLIR sensor and laser designator/rangefinder. See Figure 2-23.

Bell Huey, UH-1

The UH-1 main rotor is powered by a PT6T-3/T400 Turbo Twin Pac made up of two Pratt & Whitney Canada PT6 turboshaft power turbines driving a single output shaft. They are capable of producing up to 1,800 shaft horsepower (SHP). Should one engine fail, the remaining engine can deliver 900 SHP for 30 minutes, enabling the UH-1 to maintain cruise performance at maximum weight.

The United States Marine Corps (USMC) modified a large number of their UH-1 with a Stability Control Augmentation System (SCAS), which provides servo inputs to the rotor head to help stabilize the aircraft during flight.

The UH-1 armament is variable, but may include a combination of:

- 2 x 7.62 mm M60 machine guns, or 2 x 7.62 mm GAU-17/A machine guns.
- 2 x 7-round or 19-round 2.75 in (70 mm) rocket pods.
- 2 x .303 Browning Mk II. See Figure 2-24.
Bell Jet Ranger, TH-57
The Sea Ranger is primarily used for training but also for photos, chase, and utility missions. It also provides advanced instrument flight rules (IFR) training to aviation students. See Figure 2-25.

Figure 2-25 — TH-57 Jet Ranger.

Boeing Osprey, V-22
The Osprey is a joint service multi-role combat aircraft that uses tilt rotor technology to combine the vertical performance of a helicopter with the speed and range of a fixed wing aircraft. See Figure 2-26.

Figure 2-26 — V-22 Osprey.
**Beech Aircraft Texan, T-6**

The Texan is a tandem-seat, turboprop trainer whose mission is to train Navy and Marine Corps pilots and Naval Flight Officers (NFOs). See *Figure 2-27.*

![Figure 2-27 — T-6 Texan.](image)

**McDonnell-Douglas Goshawk, T-45**

The Goshawk’s primary mission is to provide intermediate and advanced strike fighter training. It is aircraft carrier capable. See *Figure 2-28*

![Figure 2-28 — T-45 Goshawk.](image)
Review Questions

2-1. What department at a naval air station (NAS) is responsible for providing and operating the airfield?
   A. Air operations  
   B. Supply  
   C. Public Works  
   D. Weapons

2-2. What officer is next in the chain of command after the department head?
   A. CO  
   B. DO  
   C. XO  
   D. AO

2-3. What officer is responsible for the safety, well-being, and efficiency of the command?
   A. DO  
   B. XO  
   C. CO  
   D. AO

2-4. The mission of an NAS is to provide service and support to whom?
   A. Operations  
   B. Fleet  
   C. Maintenance  
   D. Supply

2-5. In what department does the aviation safety officer work?
   A. Security  
   B. Medical  
   C. Air operations  
   D. Special assistants

2-6. What department is responsible for the logistic support of the NAS?
   A. Security  
   B. Supply  
   C. Medical  
   D. Special assistants
2-7. What department's primary function is to perform intermediate-level maintenance?
   A. Medical
   B. FRC
   C. Air operations
   D. Security

2-8. Which of the following is the concept of quality assurance (QA)?
   A. Preventing defects
   B. Establishing central reporting
   C. Improving quality of performance
   D. Coordinating production

2-9. What are the functions of a Naval Air Facility (NAF)?
   A. Organizational- and intermediate-level maintenance
   B. Organizational- and depot-level maintenance
   C. Intermediate- and depot-level maintenance
   D. Scheduled and organizational-level maintenance

2-10. What level of maintenance provides development of changes to hardware design?
   A. Organizational
   B. Intermediate
   C. Unscheduled
   D. Depot

2-11. Which of the following commands is not equipped to handle large numbers of aircraft?
   A. NAS
   B. Aircraft Carrier
   C. NAF
   D. Squadron

2-12. How many basic types of squadrons are there?
   A. 2
   B. 4
   C. 6
   D. 8

2-13. What type of squadron's mission is designed primarily for antisubmarine warfare (ASW), reconnaissance, and mining?
   A. Patrol (VP)
   B. Strike fighter (VFA)
   C. Composite (utility)
   D. Early-warning (VAW)
2-14. What type of squadron provides long-distance transfer of personnel and supplies?
A. Training (VT)
B. Development (VX)
C. Patrol (VP)
D. Tactical support (VR)

2-15. Who is the senior naval officer in a squadron?
A. MO
B. XO
C. CO
D. DO

2-16. Who is responsible for the production of the maintenance department?
A. MO
B. MMCO
C. AMO
D. XO

2-17. Who is responsible for the Maintenance In-Service Training program?
A. MMCO
B. MCO
C. DO
D. AMO

2-18. What department in a squadron is responsible for operational readiness?
A. Admin
B. Safety
C. Operations
D. Maintenance

2-19. What work center inspects the work of the maintenance department?
A. Quality assurance (QA)
B. Maintenance control
C. Airframes
D. Avionics

2-20. What division in a squadron is responsible for the support equipment?
A. Aircraft
B. Avionics
C. UAS
D. Line
2-21. What must the CO of an aircraft carrier be qualified as?

A. Surface officer
B. Naval aviator
C. Supply officer
D. Chaplain

2-22. What is the purpose of an aircraft carrier?

A. To maintain aircraft ashore
B. To perform depot-level maintenance
C. To provide support equipment to the fleet
D. To maintain aircraft at sea

2-23. Who assigns the squadrons attached to a carrier air wing?

A. QAO
B. MO
C. CNO
D. CO

2-24. What department on an aircraft carrier is responsible for landing and launching operations?

A. Operations
B. Engineering
C. Air
D. Navigation

2-25. What division is responsible for clearing flight deck crashes and maintaining crash and firefighting equipment?

A. V-1
B. V-2
C. V-3
D. V-4

2-26. What division is responsible for handling all aircraft on the hangar deck?

A. V-1
B. V-2
C. V-3
D. V-4

2-27. What division is responsible for operation and upkeep of the carrier aviation fuel and lube oil transfer system?

A. V-1
B. V-2
C. V-3
D. V-4
2-28. What division is responsible for operation and maintenance of the arresting gear and barricade equipment?

A. V-1  
B. V-2  
C. V-3  
D. V-4

2-29. What period of the carrier schedule is repair and change or modernization done?

A. Shake down  
B. Yard  
C. UNREP  
D. Deployment

2-30. What aircraft is powered by two General Electric F404-GE-400 engines?

A. AV-8  
B. EA-6  
C. F/A-18  
D. F-35

2-31. Which of the following aircraft normally has a crew of 10?

A. AV-8  
B. EA-6  
C. P-3  
D. T-45

2-32. What does the letter X stand for in the designation of an aircraft?

A. Attack  
B. Fighter  
C. Patrol  
D. Research

2-33. What does the letter S stand for in the designation of an aircraft?

A. Antisubmarine  
B. Attack  
C. Helicopter  
D. Trainer

2-34. What is the design number of the Harrier?

A. AH-1  
B. AV-8  
C. CH-46  
D. H-60
2-35. What is the design number of the Poseidon?

A. C-40
B. C-130
C. P-3
D. P-8

2-36. What aircraft’s mission is patrolling the skies to detect impending attack by hostile aircraft, missiles, or sea forces?

A. C-2 Greyhound
B. C-12 Kingair
C. E-2 Hawkeye
D. H-57 Jet Ranger

2-37. What type of engine is in the H-60 Helicopter?

A. F404-GE-400
B. T700-GE-401
C. T-56
D. T64-GE-416

2-38. What type of aircraft uses tilt rotor technology uses tilt rotor technology to incorporate the vertical performance of a helicopter?

A. C-130 Hercules
B. C-40 Clipper
C. T-45 Goshawk
D. V-22 Osprey

2-39. Who manufactures the F/A-18 Hornet?

A. McDonnell-Douglas
B. Lockheed
C. North American
D. Sikorsky
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