

# Lesson 5

## The United States Air Force



### Key Terms

Air Expeditionary Force  
Air Expeditionary Wing (AEW)  
Air Superiority  
Counterland  
Countersea  
Major Command  
Numbered Air Force  
Strategic Attack  
Strategic Triad  
Wing

### What You Will Learn to Do

- Explore the organization and mission of the U.S. Air Force

### Linked Core Abilities

- Do your share as a good citizen in your school, community, country, and the world

### Skills and Knowledge You Will Gain Along the Way

- Explain the mission of the U.S. Air Force
- Distinguish between NAFs and AEFs
- Explain the importance of Air Superiority
- Describe the purpose of Strategic Attack
- Distinguish between Counterland and Countersea missions
- Identify U.S. Air Force space missions
- Describe the Air Force's role in nuclear deterrence
- Define the key words contained in this lesson

# Chapter 2

## Introduction

The U.S. Air Force exemplifies the dominant role of air and space power in meeting this nation's security needs across the entire spectrum of peace and conflict, such as building U.S. influence globally through its presence and strengthening national capabilities to conduct decisive combat operations worldwide on short notice. In this lesson, you explore the role of the U.S. Air Force in the nation's defense forces.

## The United States Air Force

The Department of the Air Forces organizes, trains, and equips forces for *prompt and sustained offensive and defensive air operations*. Operational units are assigned to designated Unified Combatant Commands to control and exploit the air and space environment at the direction of the president of the United States. The official seal of the U.S. Air Force is shown in Figure 2.5.1.

The U.S. Air Force originated as a separate branch within the United States Army but was granted independent service status by an act of Congress on September 18, 1947.

The mission of the U.S. Air Force is to defend the United States through control and exploitation of air and space.

### Key Note Term

**Major Command** – organization that recruits, organizes, trains, equips, and supports Air Force operational forces

## Organization

The Department of the Air Force is headed by the Secretary of the Air Force assisted by the Chief of Staff of the Air Force and supported by the Air Staff. The Department of the Air Force directs a Supporting Establishment composed of nine **Major Commands** supplemented by five Direct Reporting Units and 33 Field Operating

Figure 2.5.1: U.S. Air Force Seal.

Courtesy of the US Department of Defense.



Agencies that recruit, organize, train, equip, and support Air Force Operational Forces. Air Force Operational Forces are tactically organized into Numbered Air Forces, Air Expeditionary Forces, and Wings. Upon the direction of the Secretary of Defense, the Chief of Staff of the Air Force will transfer operational control of tactical units to designated Unified Combatant Commands to conduct operations at the direction of the president of the United States.

Air Force MAJCOMs perform specific duties that are organized functionally within the United States and by geographical area overseas. Air Force major commands accomplish broad, overall missions. The Air Force has nine major commands, as shown in Table 2.5.1.

A **Numbered Air Force (NAF)** is the Air Force's largest operational unit. A Wing is the basic operational unit at the tactical level. It is the Air Force's largest fixed organization that trains and fights as a tactical team. Two or more wings may be assigned to a NAF.

NAFs were established in the European and Pacific theaters during World War II and became permanent fixtures to check Soviet aggression during the Cold War. NAFs are home based at locations in the United States, Europe, and Asia.

A **Wing** is a tactically self-contained combat unit. A Wing is composed of four Groups: Operations, Maintenance, Support, and Medical. The Operations Group is normally comprised of three air squadrons. Squadron size depends on the type of aircraft, but a fighter squadron may include anywhere from 18 to 24 aircraft. The Maintenance Group consists of the Aircraft Generation, Electronics Maintenance, Component Maintenance, squadrons necessary to sustain air combat operations. The Mission Support Group is composed of Security Forces, Communications, Civil Engineering, Contracting, Personnel, and Logistic Readiness squadrons. The Medical

### Key Note Term

**Numbered Air Force** – the Air Force's largest operational unit

### Key Note Term

**Wing** – the Air Force's basic operational unit

**Table 2.5.1: Major Air Force Commands**

MAJCOM	Headquarters
Air Combat Command (ACC)	Langley AFB, Virginia
Air Education and Training Command (AETC)	Randolph AFB, Texas
Air Force Material Command (AFMC)	Wright-Patterson AFB, Ohio
Air Force Space Command (AFSPC)	Peterson AFB, Colorado
Air Force Special Operations Command (AFSOC)	Hurlburt Field, Florida
Air Mobility Command (AMC)	Scott AFB, Illinois
Air Force Reserve Command (AFRC)	Robins AFB, Georgia
Pacific Air Forces (PACAF)	Hickam AFB, Hawaii
United States Air Forces in Europe (USAFE)	Ramstein AB, Germany

### Key Note Term

**Air Expeditionary Wing** – tactically self-contained, deployable wing-size unit

Group attends to the care and health of wing personnel. A Wing is typically comprised of a single type of aircraft. A Composite Wing is composed of different types of aircraft contributed by the NAFs to form a task organized, independently deployable **Air Expeditionary Wing (AEW)**.

## Air Force Operations

The purpose of the U.S. Air Force is to deter potential adversaries, and, if deterrence fails, decisively defeat them from the air. The U.S. Air Force retains a significant portion of the nation's nuclear arsenal to deter potential adversaries from employing weapons of mass destruction. The U.S. Air Force maintains a strong conventional capability to decisively defeat adversaries across the spectrum of conflict.

What distinguishes the U.S. Air Force from the other services is that it primarily seeks to destroy an enemy's ability to wage war. The U.S. Air Force specializes in Strategic Warfare by attacking an enemy's war production capacity to strangle his forces in the field. Precision Guided Munitions and Stealth Technology allow the U.S. Air Force to conduct surgical strikes and destroy high value targets deep inside enemy territory. Long-range bombers, as shown in Figure 2.5.2, allow the U.S. Air Force to strike anywhere at anytime.

The flexibility of airpower, however, also allows the U.S. Air Force to enhance the combat effectiveness of Army, Navy, and Marine operations. Air Mobility Command is the executive authority for providing Airlift to the military services. Airlift is essential to the rapid deployment of forces to combat theaters. Combat aircraft are capable of delivering ordinance anywhere on the battlefield, day or night, and provide Close Air Support to friendly forces in close proximity to the enemy or conduct Air Interdiction missions to reduce the flow of enemy troops and supplies to the front.

The main tenet of airpower is centralized control and decentralized execution. Centralized control is necessary to effectively mass air forces to attack priority targets.

*Figure 2.5.2: Long-range bomber.*

Courtesy of the US Department of Defense.



Centralized control is achieved today using an Air Tasking Order master attack plan. Air Superiority is the first objective in any campaign. **Air Superiority** affords freedom of action to friendly and allied forces while denying the same to the enemy.

### **Combat Air Forces**

Fourteen Numbered Air Forces comprise the Combat Air Forces to the U.S. Air Force. The Combat Air Forces are composed of Fighter and Attack Aircraft, Long Range Bombers, and Intelligence, Surveillance, and Reconnaissance Aircraft.

### **Fighter and Attack Aircraft**

Fighter and Attack Aircraft of the U.S. Air Force perform Counterair, Counterland, Countersea, and Strategic Attack missions. Counterair missions target enemy aircraft, airfields, and surface-to-air missiles to gain and maintain Air Superiority. Air Superiority entails freedom to conduct operations within enemy airspace. Since World War II, military commanders have understood the necessity of Air Superiority to conduct successful air, ground, and naval operations.

Fighter Aircraft of the U.S. Air Force help gain and maintain Air Superiority by engaging and defeating enemy fighter aircraft in air-to-air combat. All U.S. fighter aircraft are equipped with internal guns, but most modern engagements are fought with air-to-air missiles including the heat-seeking Sidewinder and the radar guided AMRAAM (Advanced Medium Range Air-to-Air Missile). The F-15C Eagle, shown in Figure 2.5.3, and F-16 Falcon are air superiority fighters capable of engaging the enemy in air-to-air combat. The F-15 and F-16 will eventually be replaced by the F/A-22 Raptor and F-35 Joint Strike Fighter. The new generation of air superiority fighters carry their missiles in internal weapons bays and incorporate stealth technology to be almost invisible on enemy radar.

Attack Aircraft drop bombs and fire missiles to destroy enemy ground targets. Attack Aircraft help gain and maintain Air Superiority by destroying enemy airfields and surface-to-air missiles. Attack Aircraft can also conduct Counterland and Countersea

### **Key Note Term**

**Air Superiority** – affording freedom of action to friendly and allied forces while denying the same to the enemy



*Figure 2.5.3: F-15C Eagle.*

Courtesy of the US Department of Defense.

### Key Note Terms

**Counterland** – missions interdicting enemy supplies and providing close air support to the Army

**Countersea** – missions targeting enemy ships and submarines operating in proximity to land

### Key Note Term

**Strategic Attack** – striking enemy Centers of Gravity to destroy their will and ability to fight

missions. **Counterland** missions interdict enemy supplies and reinforcements and provide close air support to Army forces engaged with enemy ground units. **Countersea** missions target enemy ships and submarines operating in proximity to land. The A-10 Thunderbolt, sometimes referred to as the “Warthog” (see Figure 2.5.4), F-15E Strike Eagle, and F-117 Nighthawk, are the primary Air Force Attack Aircraft. The A-10 was specially designed to provide close air support to the Army by flying low and slow over the battlefield, loitering long periods, and engaging enemy armor with a 30mm gatling gun that protrudes from the nose of the aircraft. The problem with flying low and slow is that the enemy can also acquire you as a target; consequently, the A-10 was designed to take heavy punishment. To the Air Force way of thinking, “speed is Life”; that’s why the attack version of the F-15 flies high and fast over the battlefield, using a sophisticated navigation and targeting system to accurately strike enemy targets. The F-117 Nighthawk is a first-generation stealth platform specializing in precision strike. Carrying two precision guided bombs in its internal weapons bay, the F-117 flies at night, invisible to enemy radar to sneak in close and destroy heavily defended enemy targets. The next generation F/A-22 Raptor and F-35 Joint Strike Fighter are both multirole aircraft capable of flying both air-to-air and air-to-ground missions just by changing out the weapons load in the internal weapons bays.

### Long-Range Bombers

Long-range bombers conduct Counterland, Countersea, and Strategic Attack missions. Air Force bombers carry bombs and missiles and attack surface and land targets the same as Attack Aircraft. Bombers are distinguished, however, by their greater range and larger payloads. Bombers specialize in **Strategic Attack**, striking the enemy’s Centers of Gravity to destroy their will and ability to fight. From the airman’s perspective, Strategic Attack is the quickest means to ending conflict. Strategic Attack proved its worth during World War II in bringing about the surrender of Japan. The Air Force bomber fleet is comprised of the B-52, B-1, and B-2 bombers. First introduced in 1953, the B-52 is the oldest aircraft in the active inventory. Initially designed as a high-altitude bomber, the B-52 was extensively modified during the Cold War to penetrate Soviet air defenses by flying close to the

Figure 2.5.4: The A-10  
“Warthog.”

Courtesy of the US Department of Defense.



ground, below radar coverage. The B-52 remains in the Air Force inventory because it can still carry a large payload over intercontinental distances. Carrying the latest in precision guided munitions, the B-52 no longer needs to overfly the target to strike it, and can avoid flying into hostile airspace. The B-1 operates much the same as the B-52, but it's newer, sleeker, and faster than the B-52. The B-1 also has a smaller profile and is harder to see on enemy radar. Because they're slower than fighter and attack aircraft, the B-52 and B-1 can operate in enemy airspace only after air superiority has been attained, or with fighter escorts. The B-2, however, is invisible to enemy radar and can conduct night attacks within hostile airspace without the need for fighter escort or air superiority. The payload and range advantages of the long-range bomber make it a force multiplier. Consider that during Operation Enduring Freedom the Navy, operating from aircraft carriers in the Arabian Gulf, flew 75 percent of the missions over Afghanistan, but the Air Force, operating from Diego Garcia in the Indian Ocean, dropped 75 percent of the bombs because they carried a much greater payload.

Precision is another force multiplier. Today's Air Force is much smaller than the Army Air Force that fought World War II because today's bombs are much more accurate. The B-17 with the Norden bombsight had an accuracy measured in Circular Error Probable (CEP) of a half-mile. This means half the bombs dropped from the B-17 fell within a half-mile of the intended target. In order to gain a statistical probability of actually hitting the target, the 8th Air Force massed large formations of bombers over the target. At the height of the bombing campaign in 1943, the 8th Air Force would launch as many as a thousand bombers against a single target. Before the advent of the P-51 escort fighter, the bombers sustained as high as 10 percent casualties. That's 1,000 aircraft, each bomber with a 10-man crew, meaning 1,000 airmen were lost in a single mission. Today's laser-guided and GPS-guided bombs provide a CEP of less than 6-feet. Today we don't need large bomber formations to hit the target. A one-man crew in an F-117 can destroy the intended target in a single mission. Instead of 1,000 bombers flying a single mission, today we have a single bomber flying multiple missions. Precision is a force multiplier.

### ***Intelligence, Surveillance, and Reconnaissance Aircraft***

Today, the Air Force is so good at hitting the target that the hardest task is finding the target. That's why the Air Force flies an array of Intelligence, Surveillance, and Reconnaissance (ISR) aircraft designed to pinpoint the enemy. The Air Force flies a set of airborne radar stations including the E-3 Airborne Warning and Control System (AWACS) and the E-8 Joint Surveillance, Targeting, and Radar System (JSTARS). AWACS establishes an air radar net to spot enemy aircraft closing in on friendly forces. Air controllers aboard the AWACS can then vector in friendly fighters to intercept. JSTARS has a synthetic aperture radar that's looking for targets on the ground. JSTARS can penetrate through clouds and darkness to locate enemy targets and then direct air and ground attack forces to engage them. The Air Force also employs the U-2 Dragon Lady photographic surveillance and RC-135 Rivet Joint electronic surveillance aircraft. With operations over Afghanistan and Iraq, the Air Force is now moving into the realm of Uninhabited Aerial Vehicles such as the RQ-1 Predator and RQ-4 Global Hawk that can spy the enemy without endangering the lives of any aircrew.

## Mission and Support Forces

The U.S. Air Force provides most of the United States' Military Space capability, as well as the land-based segment of the nuclear deterrent force. The U.S. Air Force also provides Airlift and Refueling services, and conducts Special Operations.

### Space and Missile

The U.S. Air Force provides 90 percent of the United States' Military Space capability. The U.S. Air Force provides Space Support, Space Control, and Force Enhancement to all the services.

Space Support launches payloads into space. Operating from its two launch sites at Patrick Air Force Base in Florida and Vandenberg Air Force Base in California, the U.S. Air Force can launch satellite payloads into equatorial and polar orbits.

The Air Force launches satellites that enhance the abilities of terrestrial forces by providing surveillance, warning, communications, and weather services. These services are collectively known as Force Enhancement.

Space Control manages and maintains satellites once they're on orbit. The Air Force Satellite Control Network operates satellites in orbit to control their attitude, manage their payloads, and monitor their functions to prolong systems in the harsh environment of space. Satellites are susceptible to the effects of the Van Allen radiation belts and solar discharges that can fry electrical components. Space Controllers can prolong the operation of a satellite by powering down systems, re-orienting it away from the sun, and activating backup systems to survive the effects of space weather.

The U.S. Air Force maintains the land-based segment of the **Strategic Triad** designed to deter nuclear missile attack against the United States. The Strategic Triad is comprised of land-based bombers and missiles, and fleet ballistic missile submarines. The Strategic Triad is designed such that at least one segment will survive a surprise enemy attack, and consequently deter attack through threat of retaliation. The Navy maintains the fleet ballistic missile submarines. The Air Force maintains the land-based bombers and missiles. All nuclear deterrent forces are under the control of U.S. Strategic Command.

### Airlift and Refueling

The U.S. Air Force provides inter-theater and intra-theater airlift to military forces. Inter-theater airlift is accommodated with long-range heavy lifters such as the C-5 Galaxy and the C-17 Globemaster. Each is capable of carrying an Army M-1A2 Abrams tank. Equipment and forces can be rapidly moved in and about the theater with the C-130 Hercules, as seen in Figure 2.5.5. The C-130 can't carry a tank, but it can carry a Humvee and other equipment and troops to rapidly transport them anywhere within the theater of operations.

To give our aircraft range, the U.S. Air Force operates a fleet of tankers that can conduct in-flight refueling of all Air Force and most Navy aircraft. Both the KC-10 Extender and KC-135 Stratotanker can extend the range of aircraft giving the Air Force *global reach*.

### Key Note Term

**Strategic Triad** – nuclear deterrent force of land-based bombers and missiles, and fleet ballistic missile submarines

## Special Operations

The U.S. Air Force operates a variety of Special Operations aircraft designed to transport and support special operations forces. The MH-53J PaveLow helicopter refueled by the MC-130P Combat Shadow is long-range, day/night, all-weather capable for inserting and extracting special operations forces undetected deep inside enemy territory. The AC-130 Spectre gunship provides artillery fire support to ground forces engaged with the enemy. The AC-130 has a 105mm Howitzer mounted through its side fuselage connected to an electronic targeting system that's accurate to the first round. Because the AC-130 itself is such a big target, it can only operate in special circumstances or at night. The MC-130E Commando Solo (see Figure 2.5.6) is a flying radio and television station designed to override enemy signals to accommodate Psychological Operations (PSYOPS) against the enemy. Air Force Combat Control Teams work with other services to target the enemy with precision guided munitions. And Combat Weather teams are typically the first forces on the ground to establish the conditions for air support operations.

## Conclusion

The Department of the Air Force directs Major Commands, Direct Reporting Units, and Field Operating Agencies to recruit, organize, train, equip, and support Operational Forces. The Numbered Air Force (NAF) and Air Expeditionary Force (AEF) are the Air Force's basic combat units. The NAF operates from permanent home bases in Asia, Europe, and the United States. The AEF is task organized using NAF assets to deploy and conduct operations where the United States doesn't have permanent basing rights. The purpose of the U.S. Air Force is to deter potential adversaries, and if deterrence fails, decisively defeat them from the air. The U.S. Air Force specializes in Strategic Warfare attacking an enemy's war production capacity to



Figure 2.5.5: C-130.

Courtesy of the US Department of Defense.



Figure 2.5.6: MC-130E Commando Solo.

Courtesy of the US Air Force.

strangle its forces in the field. Precision Guided Munitions and Stealth Technology allow the U.S. Air Force to conduct surgical strikes and destroy high value targets deep inside enemy territory. Long-range bombers allow the United States Air Force to strike anywhere at anytime. Airlift is essential to the rapid deployment of forces to combat theaters. With aerial refueling, combat aircraft are capable of delivering ordinance anywhere on the battlefield, day or night, and provide Close Air Support to friendly forces in close proximity to the enemy, or conduct Air Interdiction missions to reduce the flow of enemy troops and supplies to the front. Air Superiority is the first objective in any campaign. Air Superiority affords freedom of action to friendly and allied forces while denying the same to the enemy. The U.S. Air Force retains a significant portion of the nation's nuclear arsenal to deter potential adversaries from employing weapons of mass destruction. The U.S. Air Force maintains a strong conventional capability to decisively defeat adversaries across the spectrum of conflict.

Next, you will learn about the U.S. Marine Corps, its origin, and its place in the U.S. Military scheme.

### *Lesson Review*

1. **What is the mission of the U.S. Air Force?**
2. **What is the difference between a NAF and an AEF?**
3. **Why is Air Superiority important?**
4. **What is the purpose of Strategic Attack?**