1997

A M M P

Air Mobility Master Plan

AIR MOBILITY COMMAND

THE AIR MOBILITY TEAM ... RESPONSIVE GLOBAL REACH FOR AMERICA ... EVERY DAY!

FOREWORD

Never before in the history of our great country has air mobility been more vital to our national security. Without the ability to transport our forces anywhere, anytime, at a moment's notice, the most professional, competent, and respected military force the world has ever known will not be able to protect America's vital interests.

Air Mobility Command's (AMC's) fleet of tanker and airlift aircraft supported by tens of thousands of dedicated personnel stand ready to execute two Major Regional Contingencies (MRCs), even while supporting numerous Operations Other Than War (OOTW) throughout the world on a daily basis.

AMC is not resting on its laurels but is busy preparing for even greater challenges. We continue to modernize our aging aircraft and support equipment, upgrade our vital information systems, streamline and improve our processes, and enhance quality of life for our active duty, guard, reserve, and civilian personnel, despite decreases in funding and increases in ops tempo.

The primary tool we use to insure AMC continues meeting its increasing demands despite less people, equipment, and funding is our 25 year strategic plan--the Air Mobility Master Plan (AMMP). No other DoD organization boasts a strategic plan of such depth and breadth as our AMMP. It is the guiding force for our POM process and is the strategic framework, the guiding light, leading us into the third millennium.

Sections of the AMMP explain in detail the current status and future plans for our operations, people, infrastructure, and equipment. This is not a headquarters plan, but a MAJCOM plan which used inputs from all AMC wings, Air Mobility Operations Groups (AMOGs), Numbered Air Forces (NAFs), the Air Mobility Warfare Center (AMWC), the Guard and Reserves, USTRANSCOM, AMC directorates, and other organizations--a true team effort!

The airlifters and tankers of AMC have become the first weapon of choice in peace and war, and are a key element of every on-going military operation. This AMMP helps ensure that air mobility forces will continue meeting their crucial responsibilities well into the next century.

WALTER KROSS
General, USAF
Commander

FY '97 AMC
Year of the En Route System
Key to Worldwide Air Mobility

EXECUTIVE SUMMARY

Despite the end of the Cold War, air mobility taskings continue pushing people, aircraft, and infrastructure to their limits. This high ops tempo environment, coupled with tightening fiscal constraints, requires thorough planning to maintain an effective force. A team representing all air mobility functional areas compiled this Air Mobility Master Plan (AMMP-97) to ensure AMC's people, infrastructure, and equipment remain capable of meeting operational requirements. As a unified command, USTRANSCOM has global responsibility to support all combatant commanders. USTRANSCOM's Service components--Military Traffic Management Command (MTMC), Military Sealift Command (MSC), and Air Mobility Command (AMC) employ USTRANSCOM forces to satisfy DoD's worldwide transportation needs. As USTRANSCOM's Air Force component, AMC employs its tanker and airlift assets to meet the fast-paced requirements expected of the Defense Transportation System (DTS). AMMP-97 is AMC's strategic plan charting the path of America's air mobility forces into the 21st Century.

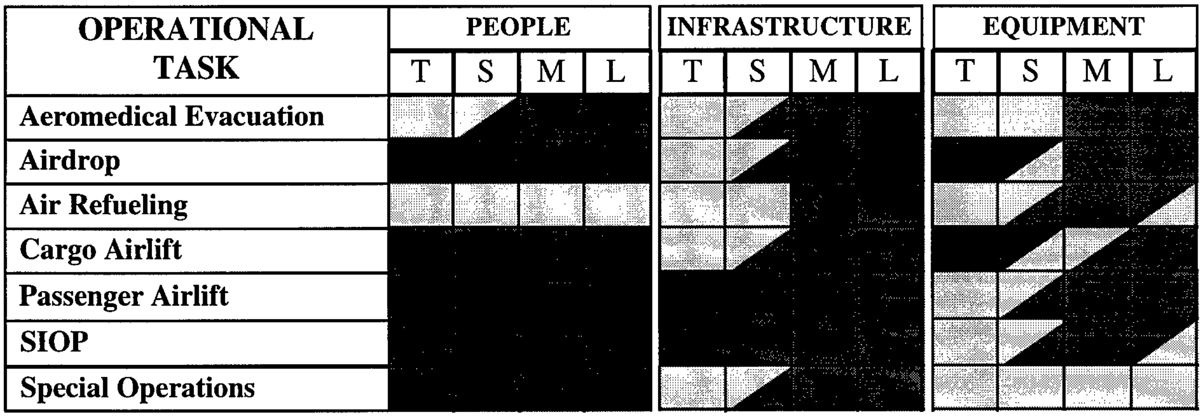
Section One of AMMP-97, the Strategic Plan, describes what air mobility is and why we need it. The Strategic Plan serves as the foundation for the subsequent Operations, People, Infrastructure, and Equipment sections. It builds upon the guidance from our senior leadership including AMC's Mission Statement, Core Values, Goals, and Objectives. These benchmarks guide AMC and particularly the Command's long-term strategic planning by stating our purpose, who we are, and our direction for the future. We validated our Lead and Supporting Objectives which spring from the broad, enduring, Air Mobility Total Force Goals and USTRANSCOM's Strategic Plan. The 16 Lead Objectives cover the entire spectrum of air mobility. These 16 are further defined by 43 specific Supporting Objectives. Next, the annual strategic planning model that is used to create this master plan is explained. This model is adapted from the Quality Air Force strategic planning process and DoD modernization planning processes. Key steps in this model are establishing what air mobility is, who our customers are, and the services we provide for America. Air mobility is an integral part of power projection, force sustainment, and operations other than war (OOTW). These operations include peacekeeping, peacemaking, peace enforcement, humanitarian and disaster assistance, counterdrug activities, security assistance, counterinsurgency, and assistance to domestic authorities, among others. Threats to our national interests have evolved and are more dynamic than ever. These threats can come from any point on the globe, often unexpected and violent. Because of America's acknowledged leadership role in the international community, it will continue to call upon air mobility to respond to crises the world over. As we prepare to enter the 21st century, the high level of conflict, tension, and turmoil continues with more than 70 flash points worldwide. Air mobility will therefore remain as a vital instrument of national power. AMC is addressing many difficult challenges arising in the evolving environment. These include: developing new operating concepts such as overflying former en route locations; continued high ops tempo as military operations other than war compete with normal airlift and air refueling requirements; limited resources to train, operate, and modernize while maintaining readiness; fewer numbers of aircraft in our fleet as the aging C-141 continues its retirement; and lastly, continued high expectations from our numerous customers. The National Command Authorities (NCA) will continue to use air mobility forces as non-lethal applications of air power to deter aggression and protect America's vital interests. The Strategic

Plan continues with the measures of air mobility readiness, how it is measured today and for the future. These include the Commander's Assessment and specific readiness assessments of Status of Resources and Training System (SORTS) reports, metrics, and force structure planning measures such as million ton miles per day (MTM/D). Finally, Section One examines the future of air mobility and potential technological opportunities industry experts suggest may exist by the year 2021.

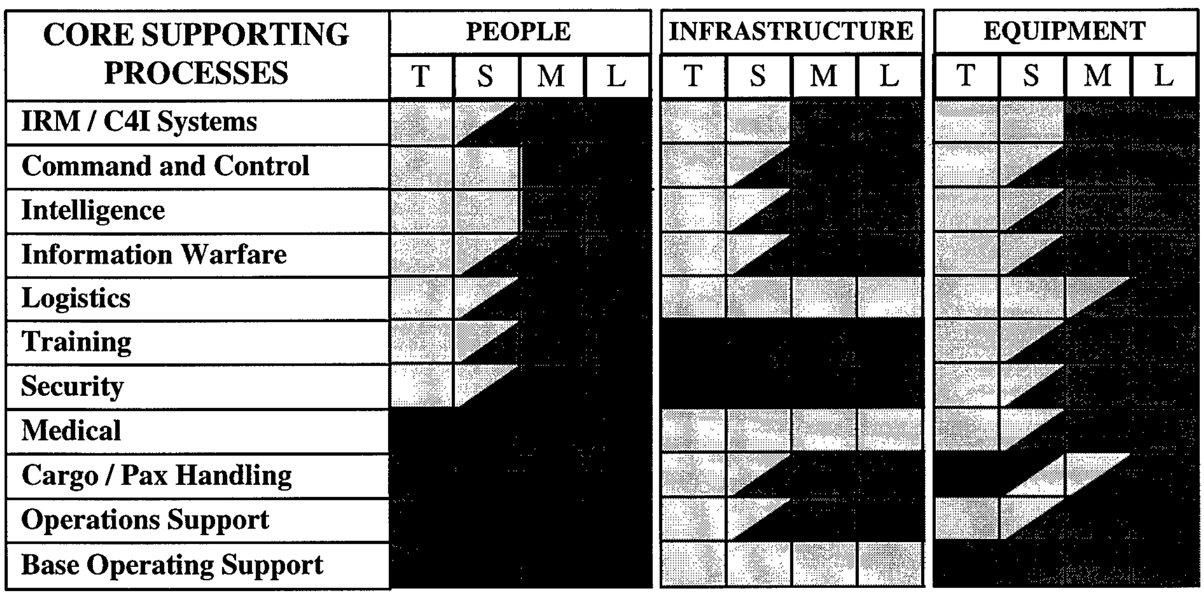
The following Commander's Assessment examines the people, infrastructure, and equipment capabilities. Each air mobility task and core support process is assessed to identify deficiencies and required corrective actions for Today--FY97, Short-term--FY98-03, Mid-term--FY04-12, and Long-term--FY13-21. Our top-level assessment employs the "stop light" color format. Green represents good capability to meet mission needs. Minor problems may be identified, but funding or solutions are secure. Yellow represents partial capability to meet mission needs. There are significant problems and proposed solutions identified, but with only partial funding secured. Finally, Red indicates poor capability to meet mission needs. Serious problems are identified, with only limited or no solutions or funding established.

1997 Air Mobility Master Plan
Commander's Assessment

AIR MOBILITY ASSESSMENT



CORE SUPPORTING PROCESSES ASSESSMENT



T: TODAY (FY 97)
S: SHORT - RANGE (FY 98 - 03)
M: MID - RANGE (FY 04 - 12)
L: LONG - RANGE (FY 13 - 21)

GREEN: GOOD CAPABILITY
YELLOW: PARTIAL CAPABILITY
RED: POOR OR NO CAPABILITY

AMMP-97 concentrates on three key themes: maintaining our readiness to perform our global missions, continually improving the key processes in our defense transportation system to maintain the best possible service to our customers, and preparing for the 21st century by modernizing our aircraft and support systems with cutting edge technology, reliable support equipment, and state of the art communications.

Our top four acquisition priorities reflect these three themes. Delivering and maturing the C-17 remains the number one priority in AMC. This impressively capable aircraft combines the advantages of a strategic airlifter--range, speed, aerial refueling and heavy, outsized payload with those of a tactical airlifter--survivability and operability on small austere airfields. AMC's second acquisition priority is modernizing its aging Materiel Handling Equipment (MHE). Aerial ports and Tanker Airlift Control Elements (TALCEs) must have adequate numbers of 60K loaders and Next Generation Small Loaders (NGSL) to meet the cargo throughput our customers demand. Meeting the extensive requirements of Global Air Traffic Management (GATM) is absolutely crucial for AMC operations and is the third acquisition priority. AMC's ability to provide credible power projection is in jeopardy because our airlift and air refueling aircraft are being outdated by rapid technological advances in communications, navigation, and surveillance equipment. We are developing a comprehensive plan to ensure our fleet is able to freely operate in the airspace environment of the future. The fourth acquisition priority is modernizing information systems for global management of air mobility forces. These are critical force multipliers as the command and control information processing system has illustrated with its ability to integrate information for decentralized mission execution and centralized in-transit visibility.

Section Two, Operations, highlights AMC's global operations which exceed 1,000 missions in over 40 countries weekly. This section begins with a discussion of the air mobility organization and the roles and responsibilities of key players. The focus is on each organization's contribution and how they support global reach. Global air mobility is then discussed by examining how peacetime and contingency missions are planned, scheduled and executed. The emphasis of this section is on "how" air mobility happens, expanding on "what" air mobility is as discussed in our Strategic Plan.

AMC is the lead command for the air mobility mission. It is crucial to have a single agent, responsible to guide the efforts of all mobility stakeholders. This ensures mobility experts solve mobility problems, provides for a synergistic unity of effort, and results in the best possible support for our customers. To fulfill this responsibility, AMC performs air mobility mission area assessment to define the mission area, mission needs analysis to define specific deficiencies, and mission solution analysis to develop corrective actions.

The Unified Commands (USEUCOM, USPACOM, USSOCOM, USACOM, USSOUTHCOM, USCENTCOM, USSPACECOM, USSTRATCOM), are air mobility's primary customers. Our customers are also the Services for training, other nations and multinational organizations like the United Nations, when tasked by the NCA, our own states, and US territories when disaster strikes, aeromedical evacuation patients, and authorized opportune travelers around the world. No other nation has the breadth and depth of air mobility resources that America has available. History clearly demonstrates this wide range of our customer's needs results in a demand for air mobility 24 hours a day, 365 days a year, whether America is at peace or war. AMC is the Air Force component of USTRANSCOM. When USTRANSCOM receives validated transportation requests, it determines the appropriate transportation mode. If the requirement must go by air, USTRANSCOM's Mobility Control Center (MCC) relays the tasking to the AMC Tanker Airlift Control Center (TACC). Air mobility command and control is based on the principle of centralized control and decentralized execution. The TACC is AMC's primary command and control agency. It is the central planning, scheduling, tasking, and execution agency for all operations involving AMC forces and provides users with a single entry point to the air transportation system.

Several other key AMC organizations ensure taskings are fulfilled efficiently and effectively. The Numbered Air Forces (NAFs) play a vital role in AMC's overall ability to train, organize, and provide operationally ready forces to the unified commanders. AMC wings are tasked directly by the TACC to meet airlift or tanker requirements. There are two types of wings: core (either airlift or tanker aircraft) and Air Mobility Wings (AMWs) which contain both aircraft types. Both core wings and AMWs are in the active and ARC forces located throughout the Continental United States (CONUS).

Our nation depends on the Air Mobility system to provide the Global Reach required to protect US interests in peace and war. To provide support for large-scale air mobility operations, a system of support forces is needed within the US and around the globe to ensure aircraft are maintained, crews are billeted, and passengers and cargo are properly handled. The En Route System (ERS) is an interdependent global network of manpower, materiel, and facilities that provide command and control, maintenance, and aerial port services to air mobility forces performing USTRANSCOM worldwide missions. A weakness in one area diminishes the entire system's effectiveness. Today, limitations within the ERS are reducing our Air Mobility effectiveness. We have not provided adequate support for the ERS, and the processes making it work. For this reason, AMC has declared fiscal year 1997 the "Year of the En Route System."

When operations transit locations where little or no support capability exists, a deployable en route support structure is used to fill the gap and is referred to as Global Reach Laydown (GRL). Under this strategy, additional forces and assets are positioned at appropriate locations deemed essential for expanded air mobility operations.

A variety of operational tasks have helped make air mobility the first weapon of choice during peace and war. These tasks include aeromedical evacuation (AE); cargo and passenger airlift; airdrop of troops, supplies, and equipment; air refueling of fighters and bombers and force extension of tankers and airlifters; supporting the SIOP; and support for special operations.

The high ops tempo of AMC operations since 1989 and the military downsizing have exacted their toll: fewer personnel, obsolete infrastructure, and aging aircraft have strained air mobility and emphasized the need for continued modernization.

Sections three, four, and five of the AMMP discuss AMC's Mission Needs Analysis and the contributions of people, infrastructure, and equipment to the mobility mission. These elements are first assessed to identify deficiencies. When possible, potential corrective actions are identified. AMC and Air Force Materiel Command (AFMC) continue to explore the full range of potential options for overcoming all identified AMC deficiencies.

Section Three, People, describes AMC's greatest asset and its highest priority. People are the heart and soul of the organization, the very foundation of our warfighting and readiness capability, and the key to our ability to provide effective Global Reach for America. This section follows the Personnel Life Cycle starting with Accessions, then Education and Training, followed by Career Development, Quality of Life, and finally Retirement and Separations. It addresses the Total Force concept and how the various components contribute to the readiness of AMC.

AMC people are a winning Total Force team comprised of the active duty force, the Air Reserve Component, DoD civilian employees, and commercial industry. Each plays a unique role in the success of the command. To ensure we can accomplish AMC's challenging mission we need to continue to bring high quality people to AMC and provide them with the skills and training necessary to be productive team members. We also have to apply an effective utilization strategy to meet mission requirements, develop the work force, provide career opportunities, and meet individual needs. By recognizing the inherent value and dignity of the individual, we will ensure our people are treated with respect in a professional environment and granted the quality of life they deserve. This "life cycle" process provides a framework within which we can build an even more productive and capable force while providing a system that strives to satisfy the needs of its members.

Quality Air Force Human Resources Development (HRD) frames the entire personnel life cycle and is aligned with our strategic plan. HRD is the practice of creating a high performance workplace. It's accomplished in an integrated way and is concerned with how well the human resource practices are aligned with the organization's strategic directions.

These challenging times have the potential to heavily impact morale and lifestyles. Many command housing and working facilities no longer meet Air Force standards. More than ever, our people need quality support from medical care and chapel programs to family support centers. AMC is committed to supporting its people through these programs and is dedicated to maintaining a strong, motivated force.

Section Four, INFRASTRUCTURE, describes AMC's fixed facilities, infrastructure architecture, and the Command, Control, Communications, Computer, & Intelligence (C4I) systems. An annual investment equivalent to 3 percent of the total AMC plant replacement value will be dedicated through major investment and real property maintenance to modernize fixed facility infrastructure.

AMC people are the key to maintaining America's capability to support rapid global air mobility. To attract and retain high quality people, we are promoting housing that supports the needs of members and their families. A large majority of AMC dormitories and family housing do not meet current Air Force standards. To address this command's housing needs, FOCUS DORMS and FOCUS HOMES programs have been established. FOCUS DORMS outlines the renovation and new construction required at each base to provide rooms of sufficient quality and quantity to meet the new requirement. The standards used in the program include new construction to the Air Force single occupancy standard which features a shared bath and a shared kitchen.

FOCUS HOMES integrates projects from the individual bases' Housing Community Plans using two investment categories. Military Construction (MILCON) projects provide large-scale replacement or renovations of entire units. Real Property Maintenance projects are used on a continuous basis to provide interim maintenance and repair.

In addition, we are making environmental restoration and pollution prevention a priority. AMC's goals and objectives support its efforts to lead the Air Force in environmental excellence. To meet our environmental obligations, we in AMC will focus on three primary areas of emphasis: cleaning up sites contaminated by past activities (Installation Restoration Program); ensuring present operations comply with federal, state, and local environmental standards (Environmental Compliance Program) and preventing future pollution (Pollution Prevention Program). Protecting the environment is not just a matter of compliance with the law--it is the right thing to do.

Our En Route System (ERS) is a dynamic global network comprised of people, equipment, and infrastructure designed to support air mobility forces worldwide. Recent assessments of the ERS found infrastructure deficiencies at many of the bases vital to AMC and our nation to meet major regional contingencies. With FY97 declared as "Year of the En Route System," special emphasis will be directed towards modernization, security, C2, service provided, and quality of life of the en route system. In addition, AMC is working to upgrade our mobile infrastructure through the development of Global Reach Laydown (GRL). With reduced presence overseas, the ongoing drawdown of forces, and a peacetime fixed en route structure, GRL provides the flexibility to rapidly establish en route stations or enhance a fixed support system anywhere in the world. Resources from the various CONUS based organizations are brought together to form deployed units required to meet the objectives of a specific air mobility operation. This enhances AMC's responsiveness and ability to support operations in austere environments. Additional enhancements of our mobile infrastructure take place in the theater deployable communication and theater battle management areas. They allow better management of AMC forces operating around the globe.

The change from a substantial overseas fixed base structure to a CONUS-based deployable structure means that our C2 capabilities must also be highly mobile. We must be prepared to move large numbers of troops and materiel on short notice, anywhere in the world. Aircraft reliability and maintainability problems, aircraft retirements, and the high cost associated with acquiring new aircraft mean that fewer assets will be available to accomplish increasing numbers of missions in future. All these factors are driving our C2 capability toward a goal of ensuring the highest possible level of efficiency in the use of strategic mobility assets.

Our C4I modernization is focused on providing more integrated, responsive, reliable communications and information .... globally. Programs are providing improved data and voice connectivity between fixed, deployed, and airborne assets. We are eliminating 44 legacy systems and migrating to 13 selected AMC systems e.g. GDSS, C2IPS, CAMPS, and GATES. These systems provide USTRANSCOM's Global Transportation Network the detailed in-transit visibility for all air mobility assets, their cargo and passengers. C2IPS forms the foundation for wing operations, coordinating all flight line activities, providing mission planning, scheduling, and crew information, in support of AMC, Guard, Reserve, ACC, USAFE, and PACAF, and air components participating in Joint Task Force deployments. Through a command-wide enterprise approach, and utilizing DoD data standards, these migration systems will begin losing their separate identities and evolve into one, seamless air mobility architecture. Dwindling resources and interoperability complexities increase this challenge and make C4I a major AMC priority.

Section Five, EQUIPMENT, discusses the aircraft, support equipment, and other hardware issues that need to be addressed to solve deficiencies and/or meet AMC objectives. AMMP-97 defines the remaining structural and economic service lives of existing weapon systems and projects a date when the Command may face retirement or modification of specific systems. From that date, the plan counts back an appropriate number of years (based on the probable modernization option) to arrive at an initial study date. This date is intended to be a point for informal review of the weapon system, its remaining effective service life, operating and support costs, continued viability of the mission, and available state-of-the-art technology. This review should point to either a continued use of the system as currently employed or the need for a more detailed study examining the replacement or modification options.

AMC advocates a core military aircraft strategy to better focus its long-range planning. This strategy relies on the future core airlifter--the C-17, and the core tanker--the KC-135, to act as workhorses, performing the heart of mobility missions. These core aircraft are augmented by the remaining organic assets and the Civil Reserve Air Fleet (CRAF).

Our present core airlifter, the C-141 Starlifter, was designed to carry Army equipment of the 1960s. This system, first flown in 1963, is rapidly approaching the end of its service life and has experienced recurring structural problems limiting its operational capability. In the short-term, we will concentrate on repairing those aircraft with remaining service life. Major modifications include a new autopilot and All Weather Landing System (AWLS), Global Positioning System (GPS), Airlift Defensive System (ADS), and more accurate fuel quantity indicators. These modifications are required to maintain the C-141 as an effective weapon system for the next 10 years. To minimize unnecessary costs, the youngest 63 aircraft will receive these upgrades and are termed the "ARC Core 63." We plan to retire active duty C-141s by FY03 and Unit Equipped (UE) ARC aircraft by FY06.

Our future core airlifter, the C-17 Globemaster III, implements the National Military Strategy that requires an airlifter with unique attributes. Designed in close coordination with the Army and Marines, the C-17 carries a full range of their equipment and combines the military-unique capabilities of the C-141, C-5, and C-130 aircraft in a single aircraft. This allows direct delivery of combat forces from the CONUS to the battlefield. AMC is concentrating on developing the C-17 as the follow-on core military airlifter and integrating it into the global mobility mission.

The C-5 Galaxy provides a significant portion of AMC's cargo capability, but of AMC's major weapons systems, the C-5A has the lowest mission capable and departure reliability rates. Because of these problems and the C-5A's increasing operating costs, we will study its economic service life to identify the best time to begin its replacement. Until this study is complete, AMC will advocate the replacement of the C-5A beginning in FY07. In the short to mid-term, AMC will concentrate on increasing C-5 fleet effectiveness by implementing a capital investment plan focused on improving reliability, maintainability, availability and lowering cost of ownership. Careful analysis of each modification is critical to ensuring the best use of resources.

CRAF capability currently meets AMC requirements in passenger, patient, and cargo airlift. CRAF provides a vital portion of total airlift capability. To prevent future loss of CRAF capability, AMMP-97 recommends continued aggressive incentives to encourage continued air carrier participation.

Air refueling provides the flexibility necessary to provide Global Reach on short notice and for extended periods of time. The KC-135 is our core tanker. The Q and some E models are completing the R-model conversion which increases mission effectiveness by enhancing offload capability and reducing operating costs. Additionally, the KC-135 fleet is making a further mobility contribution as a strategic airlifter. While carrying a small cargo load, its long range and high cruise speed make it suitable to fill a specialized niche in an airlift role. Corrosion is impacting our ability to accurately predict the KC-135 service life. AMC must be able to quantify the impact of corrosion on KC-135 service life to allow timely force structure decisions. If possible, AMC will retain the KC-135 through at least a 56-year service life, and its replacement, the KC-X, should be ready to enter the inventory by FY13.

Our other refueler, the KC-10, is a dual-role aircraft, carrying larger fuel loads over longer distances than the KC-135 while possessing significant airlift capability. The Air Force KC-10 fleet is but a small component of the total worldwide DC-10 fleet. Most first-tier commercial DC-10 operators are forecast to retire their aircraft by 2010. Because the Air Force KC-10 fleet is flown at much lower utilization rates than its civilian counterparts, it will have appreciable structural service life remaining after 2010. If there are not enough first and second-tier airlines operating these aircraft after this date, the commercial logistics tail for KC-10s will shrink, significantly driving up operations and support costs. Therefore, AMMP-97 advocates studies by FY00 to determine appropriate actions.

The primary Air Force aircraft supporting the Operational Support Airlift mission is the C-21. Because this is a relatively new aircraft, the plan calls only for avionics upgrades to ensure the system continues to operate in the most effective and efficient manner. Studies should begin by FY06 to determine the continued viability of the C-21. The Special Air Mission (SAM) uses a variety of aging aircraft to meet its high visibility requirements. The VC-X, the C-137 replacement, has been funded but the UH-1N replacement, although validated, awaits funding. The C-20B, C-9A, and C-9C do not meet civilian Stage III noise standards. Because these aircraft transit civil fields due to mission requirements, they require either hush kits, reengineering, or memorandums of understanding with civilian airfield managers.

The International Civil Aviation Organization (ICAO) and the Federal Aviation Administration (FAA) are requiring significant avionics and communications upgrades on aircraft to increase the capacity and efficiency of airspace. Formerly called the Future Air Navigation

Systems (FANS) and now called Global Air Traffic Management (GATM), this revolution in air navigation is one of the most significant technological challenges facing AMC. Modifications required by GATM could cost AMC billions of dollars and impact virtually all its aircraft. Unless these modifications are made, strategic airlift and air refueling capability could be significantly reduced.

The Joint Precision Approach and Landing System (JPALS) is an Air Force Flight Standardization Agency program to seek a replacement for the Instrument Landing System (ILS) and the Precision Approach Radar (PAR) which will retire in 2010. AMC is developing a program for a core group of 64 aircraft (40 C-17s, 12 C-5s, 12 C-141s) to determine landing system possibilities by November 1997. Ten to fifteen years are required to develop, procure, integrate, and install new systems on the ground and in over 10,000 aircraft.

Under the FAA Automatic Dependent Surveillance (ADS) program, large aircraft operating in oceanic airspace will be equipped with a satellite based data link capability to receive air traffic control instructions and information and transmit autonomous position reports and aircrew requests. Other mandatory upgrades include Reduced Vertical Separation Minimum (RVSM), GPS, and TCAS/Mode-S. Without these upgrades, AMC aircraft will be excluded from the most fuel-efficient airspace. Accordingly, all major AMC aircraft are included in these upgrades.

Currently, AMC is installing High Frequency (HF) Automatic Communications Processors (ACP) in the airlift fleet to automate the HF radio operations and improve connection success rates. Included in the HF modernization plan is Exclusive Call easing aircrew fatigue during long overseas flights by selectively alerting a particular crew that a call is being directed to their aircraft. In addition, the INMARSAT Aero-C commercial SATCOM system is being installed on the airlift and KC-10 fleet, and UHF SATCOM antennas are being installed on all AMC strategic airlift aircraft to increase their mission flexibility.

The global mobility system cannot function without adequate aircraft maintenance. Our maintenance equipment of the future will be multi-purpose in design and able to support multiple weapon systems. In addition, it will require less maintenance and be easier to deploy, making AMC more responsive to customer needs. AMC's MHE is old and labor intensive. A major upgrade will be the acquisition of the 60K loader which is able to support commercial aircraft as well as military organic aircraft. This item is so crucial to efficient air mobility operations that it is AMC's number two acquisition priority, second only to the C-17. Additionally, AMC's small loaders, especially 25Ks, are in very poor condition and incapable of servicing KC-10s and commercial wide-body aircraft. The wide-body elevator loaders (WBELs) are capable of servicing commercial wide-body aircraft but have also exceeded their design service life. Both the 25K and WBEL require replacement with a more reliable and flexible loader. AMC is currently exploring a Non-Developmental Item (NDI) loader as the Next Generation Small Loader (NGSL). This loader will be capable of servicing KC-10s and commercial wide-body aircraft.

Force protection of AMC personnel and equipment is key to safely operating in our global Area of Responsibility (AOR). The security police mission requires trained and properly equipped personnel to protect air mobility assets at home and abroad from military or terrorist attacks. To accomplish this mission, security police require ballistic protection body armor to guard against the growing threat and closed-circuit camera systems and deployable sensor equipment to protect air mobility flightlines. Security equipment modernization efforts therefore center on acquiring body armor, tactical vehicles, and a closed circuit surveillance camera. AMC also recognizes the need to protect aircraft in the air as global mobility places our assets in harm's way. Airlift Defensive Systems (ADS) are needed to protect aircraft from shoulder-launched infrared guided missiles. These systems automatically detect the launch of infrared-guided, shoulder launched, surface-to-air missiles, alerts the crew, and employs IR expendables/countermeasures to decoy the missile away from the aircraft.

Future requirements for medical equipment center on developing deployable medical equipment packages, primarily to support AMC's Global Reach Laydown concept. This capability will be similar to air transportable clinics/hospitals but more flexible in nature.

AMC is taking the first step across the threshold of a true revolution in military aircrew training. Advances in simulation technology now permit the use of simulators to accomplish many of the aircrew training events in a simulator or other non-flying training device, enhancing both safety and proficiency. Specifically, AMC is upgrading its simulators to FAA Level C+ equivalency through an extensive simulator upgrade program.

Finally, AMMP-97 provides Roadmaps for AMC's major systems and key programs. There are 8 aircraft, 8 infrastructure, and 7 key program Roadmaps. The Roadmaps outline the main issues, deficiencies, and game plan for the applicable system or program in a condensed 1 to 2 page format. Consult the basic AMMP and the Roadmaps when researching a particular issue, as they provide varying levels of detail.

The 1997 Air Mobility Master Plan is AMC's strategic and modernization plan for the next 25 years and provides a coherent and detailed planning tool for force structure planners and programmers. It also gives air mobility customers a single-source document describing AMC operations and capabilities. The annual AMMP has become a key reference document throughout the DoD, industry, and academia for those interested in AMC and its crucial role in America's National Security Strategy.

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Section One
STRATEGIC PLAN

INTRODUCTION

Section One is AMC's Strategic Plan that serves as the foundation for the subsequent Operations, People, Infrastructure, and Equipment sections of this 1997 Air Mobility Master Plan. It builds upon the guidance from our senior leadership including AMC's Mission Statement, Core Values, Goals, and Objectives. These benchmarks guide AMC and particularly, the Command's long-term strategic planning by stating our purpose, who we are, and our direction for the future. New this year is a streamlined list of AMC's Operational Tasks or services we provide America. An expanded discussion of *Readiness* and updated air mobility planning factors are also included.

The annual strategic planning model used to create this master plan, is adapted from the Quality Air Force strategic planning and DoD modernization planning processes. Key steps in this model are establishing *what* air mobility is, *who* our customers are, and the services, e.g., operational tasks, we provide for America. Critical for air mobility are the core support processes which, although primarily internal to AMC, are essential for successful service to our customers and quality of life for our people.

Section One continues with the measures of air mobility readiness, what readiness is, and how it is measured today and for the future. These measures include the top-level, Commander's Assessment charts which lead off the following People, Infrastructure, and Equipment sections. More specific readiness assessments are the Status of Resources and Training System (SORTS) reports, metrics, and force structure planning measures such as million ton miles per day (MTM/D). Finally, Section One examines America's future expectation for air mobility and what potential technological opportunities science and industry experts suggest may exist by the year 2021.

Air Force people building the world's most respected air and space force ... global power and reach for America.

USTRANSCOM, providing timely, customer-focused global mobility in peace and war through efficient, effective, and integrated transportation from origin to destination

VISION

AMC is guided by complementary Air Force and USTRANSCOM visions.

AMC MISSION STATEMENT

The Air Mobility Team...Responsive Global Reach for America...Every Day!

The AMC mission statement encapsulates who we are and what we do. Everyone associated with air mobility is part of a cohesive team that makes the AMC mission happen. We are responsive to our customers' needs and strive to employ resources in the most effective and efficient way possible. Our total commitment to quality is how we will continue to improve our process and provide effective, reliable, and efficient services. Global Reach--the ability to project and sustain forces worldwide--is unique to the United States of America. We operate around the world, around the clock, in support of America's national interests, every day . . . our mission never stops!

CORE VALUES

Integrity First ... Service Before Self ... Excellence in All We Do

Air Force Secretary Sheila Widnall and Chief of Staff General Ron Fogleman declared: “Integrity, service, and excellence. Three simple words that epitomize the core of the military profession: the bedrock of integrity, fortified by service to country, which in turn fuels the drive for excellence.” AMC commanders strive to create an environment built upon these professional ideals. These Core Values are what America expects of the Air Mobility Team.

AIR MOBILITY TOTAL FORCE GOALS AND OBJECTIVES

- **Champion, field and operate world-class air mobility for our customers**
- **Ensure and sustain air mobility readiness**
- **Provide quality support to people**
- **Lead the Air Force in environmental excellence**

These four broad, enduring goals guide our modernization strategies and the future of air mobility. They were created by the AMC Commander, Vice Commander, Numbered Air Force Commanders, Headquarters AMC directors, and senior Air National Guard and Air Force Reserve representatives at a 2 day strategic planning conference in Feb 94. This year they were revalidated by the AMC Council in Feb 96. After air mobility's deficiencies were established and validated, these four "boldface goals" are further defined by 16 lead objectives (x.x) with 42 specific supporting objectives (x.x.x) shown on the following pages. A key consideration for these lead and supporting objectives is USTRANSCOM's FY96-15 Strategic Plan, including its vision, goals, and objectives. AMC strongly supports all fifteen USTRANSCOM objectives which affect air mobility. Each supporting objective has AMC's office of primary responsibility (OPR) and expected year of completion. Subsequent sections of this AMMP expand on the objectives including a synopsis of how each will be achieved. During FY96, OPRs developed action plans for each supporting objective which describe the tasks involved, the strategy to achieve them, key metrics or milestones, and linkage to USTRANSCOM and/or Air Staff objectives. These action plans are maintained by each OPR.

AMC Headquarters, direct reporting units, numbered air forces, and wings should reference the Air Mobility Total Force Goals and Objectives in their own strategic plans. Not all lead or supporting objectives may apply to a particular organization; however, they should link the organization's plans where appropriate. All air mobility organizations should ensure their own plans follow the broad guidance laid out in this master plan.

This planning process of setting objectives, building the supporting action plans, and measuring progress with metrics is in its infancy in AMC. Annually, these objectives are reviewed and updated as necessary. However, we believe these goals and lead objectives are enduring. While supporting objectives and their action plans evolve over time, the emphasis for continual improvements in air mobility will not change.

GOAL 1:
Champion, field, and operate world-class air mobility for our customers

1.1 Maximize the future potential of air mobility for America.
   1.1.1 Foster innovative new mobility concepts and aggressively investigate new technological opportunities. .... XPD, FY03

1.2 Operate an air mobility system which delivers patient, passenger, cargo, and air refueling services which exceed customer expectations.
   1.2.1 Optimize use of the air mobility system.......... DOT, FY01
   1.2.2 Maximize successful mission performance in degraded operating environments. .... DOT, FY06

1.3 Provide an air mobility fleet and support equipment capable of meeting customer requirements across the spectrum of operations.
   1.3.1 Acquire/modernize the MHE fleet to meet user requirements for two nearly simultaneous MRCs. .... XPQ, FY01
   1.3.2 Reduce the air mobility footprint necessary for deployed operations. ....DOO, FY03
   1.3.3 Modify the aging air mobility fleet to maintain the capability to meet future requirements. .... XPQ, FY03
   1.3.4 Achieve the strategic air mobility requirement established by MRS BURU and the Defense Planning Guidance. .... XPD, FY05
   1.3.5 Replace C-141 aircraft capabilities to meet the broad spectrum of customer airlift requirements. .... XPD, FY05

1.4 Provide a responsive air mobility C4 system.
   1.4.1 Migrate AMC C2 and transportation systems to Global Command & Control System (GCCS) Defense Transportation System (DTS) and Defense Information Infrastructure (DII) Common Operating Environment (COE).......... SCT, FY99
   1.4.2 Provide accurate and timely passenger and cargo air movement data from receipt to delivery. ....DOU, FY00
   1.4.3 Establish an information superhighway at base level.......... SCP, FY04
   1.4.4 Provide global voice/data connectivity to aircraft and worldwide locations. ....DOU, FY02
   1.4.5 Integrate information warfare into all aspects of command operations..........DOO, FY02

GOAL 2:
Ensure and sustain air mobility readiness

2.1 Man the total force with the right people in the right numbers.
- 2.1.1 Maintain sufficient manning levels in each Air Force specialty to meet mission requirements for all AMC bases/units. ....DPA, Continuos
- 2.1.2 Meet the civilian drawdown challenge. ....DPC, FY01

2.2 Maintain equipment to meet global mobility requirements.
- 2.2.1 Increase aircraft availability and reliability to meet command goals and requirements. ....LGF, FY07
- 2.2.2 Modify/sustain support equipment to meet reliability and availability goals.... LGF, FY07

2.3 Provide a trained, responsive, and sustainable air mobility system capable of rapid deployment to operate in a joint environment.
- 2.3.1 Maximize logistics training resources to maintain 75 percent trained/ experienced level workforce for each weapon system and specialty code................................ LGQ, FY01

2.4 Assess the readiness of the air mobility system.
- 2.4.1 Ensure current assessment approaches fully and accurately evaluate mission capability, and are integrated...IGC, FY98
- 2.4.2 Ensure current assessment approaches fully and accurately evaluate the leadership and management system of AMC, and are integrated. ....IGC, FY98

GOAL 3:
Provide quality support to people

3.1 Provide education, training, and professional development opportunities.
- 3.1.1 Support programs that develop and broaden air mobility experts to increase mobility presence in Air Force and joint leadership positions. ....DPA,Continuous

3.2 Advocate compensation and benefit programs to retain a quality, trained force.
- 3.2.1 Support AF and DoD efforts to close military-private sector pay gap, maintain retirement benefits, close BAQ gap, and support commissary benefits.......... DPX, FY03

3.3 Achieve an atmosphere that embraces human dignity and encourages full development of each individual's potential.
- 3.3.1 Eliminate improper or unlawful discrimination or harassment.............. DPP, Continuous
- 3.3.2 Increase awareness of recognition programs for air mobility personnel.......... DPP, FY01

3.4 Provide care and support for our people.
- 3.4.1 Facilitate Implemention and maintenance of a managed health care system that optimizes quality, access, and cost for all beneficiaries. .... SGS, FY99
- 3.4.2 Build healthier AMC communities. .... SGP, FY05
- 3.4.3 Achieve Five Star Fitness Program certification at all AMC bases. .... SVP, FY99
- 3.4.4 Increase effectiveness and availability of support programs for all AMC members, as well as families, to ensure mission accomplishment. .... DPP, FY01

3.5 Upgrade the living and working environments to enhance quality of life.
- 3.5.1 Complete the Squadron Operations/Aircraft Maintenance Unit Facility program. .... CEP, FY02
- 3.5.2 Complete the quality of life facility upgrades. .... CEP, FY01
- 3.5.3 Complete the FOCUS DORMS program. .... CEH, FY10
- 3.5.4 Upgrade en route facilities to meet command standards. .... CEP, FY20
- 3.5.5 Complete the FOCUS LOGISTICS program. .... CEP, FY07
- 3.5.6 Complete the FOCUS HOMES program. .... CEH, FY30

GOAL 4:
Lead the Air Force in environmental excellence

4.1 Identify, investigate, and clean up contamination associated with past activities.
- 4.1.1 Clean up to lower level of risk, or have remedial systems in place for high risk sites by FY07, medium risk sites by FY10, and low risk sites by FY14. .... CEV, FY14

4.2 Enhance and maintain a sense of environmental responsibility.
- 4.2.1 Upgrade all underground storage tanks to Environmental Protection Agency (EPA) standards. .... CEV, CY98
- 4.2.2 Prevent future enforcement actions. .... CEV, FY01

4.3 Minimize adverse environmental impacts from all air mobility processes.
- 4.3.1 Reduce purchases of EPA-17 toxic chemicals by 50 percent from CY92 baseline. .... CEV, CY96
- 4.3.2 Reduce solid waste 50 percent from CY92 baseline. .... CEV, CY97
- 4.3.3 Reduce hazardous waste 50 percent from CY92 baseline. .... CEV, CY99
- 4.3.4 Reduce volatile air emissions by 50 percent from CY93 baseline. .... CEV, CY99
- 4.3.5 Reduce pesticide use by 50 percent from FY93 baseline. .... CEV, FY00

STRATEGIC PLANNING PROCESS

AMC's model for strategic planning is an adaptation of the Quality Air Force strategic planning process and the DoD modernization planning as depicted in Figure 1-1. The planning model is an annual process, now in its fourth cycle, emphasizing constant improvement built on the previous year's success. A team of over 100 functional experts in AMC Headquarters guides this effort, with USTRANSCOM, Air Staff, numbered air forces' and air mobility wings' involvement at key steps along the way. The result is the Air Mobility Master Plan (AMMP), AMC's strategic plan incorporating a detailed, logical framework for successful programming and budgeting actions. It gives a vision of the future, explains how air mobility happens--*Operations*, and provides a future roadmap for our *People, Infrastructure*, and *Equipment.*

Planning begins with mission area assessment (MAA) during which our senior leadership reexamines the vision, mission, and goals and contemplates air mobility's future. Their outlook is based on their own experience and incorporates future thinking from both within and outside AMC. We examine the President's National Security Strategy (NSS), Chairman of the Joint Chiefs of Staff's National Military Strategy (NMS), Defense Planning Guidance (DPG), and Air Staff and USTRANSCOM strategic guidance to determine what America expects from air mobility and why. MAA is equivalent to the Quality Air Force values assessment, mission analysis, and envisioning the future. The result is a definition and understanding of AMC's missions, tasks, and key processes.

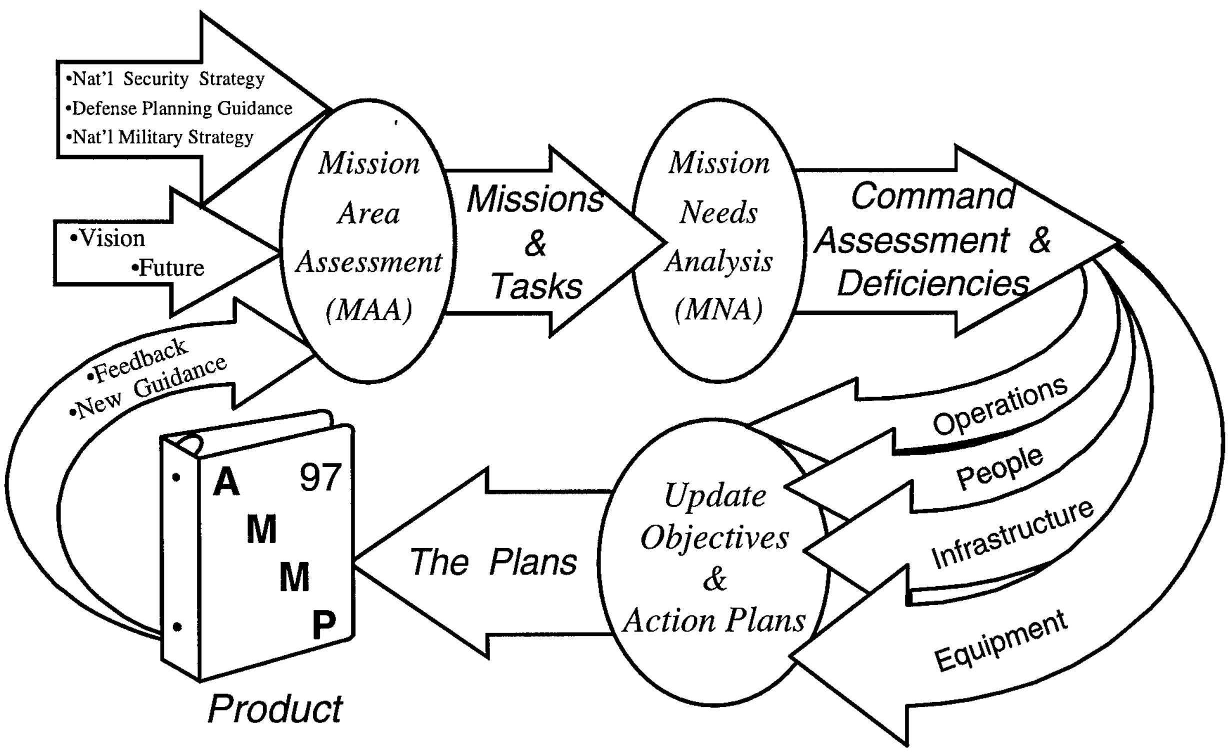


Figure 1-1. Strategic Planning Process

Mission needs analysis (MNA) then evaluates the command's ability to accomplish these missions, tasks, and associated key processes. MNA identifies and quantifies deficiencies needing action. This is equivalent to the Quality Air Force assessment of current capability and gap analysis. The MNA evaluation, or Commander's Assessment, is quantified by green, yellow, or red "stoplights."

Green:	represents good capability to meet mission needs. Minor problems may be identified, but funding or solutions are secure.
Yellow:	represents partial capability to meet mission needs. There are significant problems and proposed solutions identified, but only partial funding secured.
Red:	indicates poor capability to meet mission needs. Serious problems are identified, and with only limited/no solutions or funding assured.

Air mobility's people, infrastructure, and equipment are rated in the time periods of:

Today	--	FY97,
Short Term	--	FY98-03,
Mid Term	--	FY04-12,
Long Term	--	FY13-21.

Key assumptions are:

- The requirement to support two nearly simultaneous, major regional contingencies will remain.
- The strategic airlift buy of 120 C-17s will continue.
- Current plans and programs are funded and acted upon. If this does not occur, these assessments will be reevaluated with the next AMMP annual planning cycle.

If any of these three assumptions change, the next MNA will reflect the change in color and capability. The complete Commander's Assessment is shown in the preceding Executive Summary. Subsets of the Assessment introduce and set the stage for the subsequent People, Infrastructure, and Equipment sections.

The third major step in AMC's strategic planning is setting objectives which support the four Air Mobility Total Force Goals. Objectives are specific statements of a desired shorter-term condition or achievement. They include measurable end results to be accomplished by specific teams of people within time limits. The objectives, and their supporting action plans, are the "how, when, and who" for achieving the goal. The top level are the "lead objectives" which help define the goal and, taken together, address the full spectrum of air mobility. "Supporting objectives" are specific areas or opportunities needing particular attention and hold us accountable for real, consistent, quality improvement. The lead and supporting objectives set the direction and specific steps AMC will follow to achieve the Air Mobility Total Force Goals.

The final step in AMC's strategic planning is effective communication to the programming/budgeting community and the process owners who can translate these plans into actions and real improvements. At the same time, the planning team reviews the past successes and failures to pass on lessons learned for the next planning cycle. A command wide strategic planning conference is held soon after the new AMMP is released each year. Its purpose is to help AMC units understand the new issues, better link their plans to the AMMP, and gather ideas and feedback for the next AMMP and AMC strategic planning. Historically, each AMMP has shown significant improvement and growth in understanding air mobility and strategic planning. This is a result of a strong planning team, senior leadership involvement, and the continued growth and understanding of Quality by the men and women of AMC.

AIR MOBILITY'S CONTRIBUTION TO NATIONAL SECURITY

Air mobility supports the national security strategy and the national military strategy across the spectrum of conflict, from peacetime operations for American global interests to major regional contingencies and nuclear deterrence. It is the synergy of combining airlift and air refueling capabilities which provides the speed and flexibility in deploying, employing, and sustaining our combat forces. With America's post-Cold War force primarily CONUS based, rapid power projection is essential to establishing or reinforcing a secure US or multinational presence. Air mobility delivers the bulk of the initial time-critical forces, supplies, and is the cornerstone of America's security strategy for the foreseeable future.

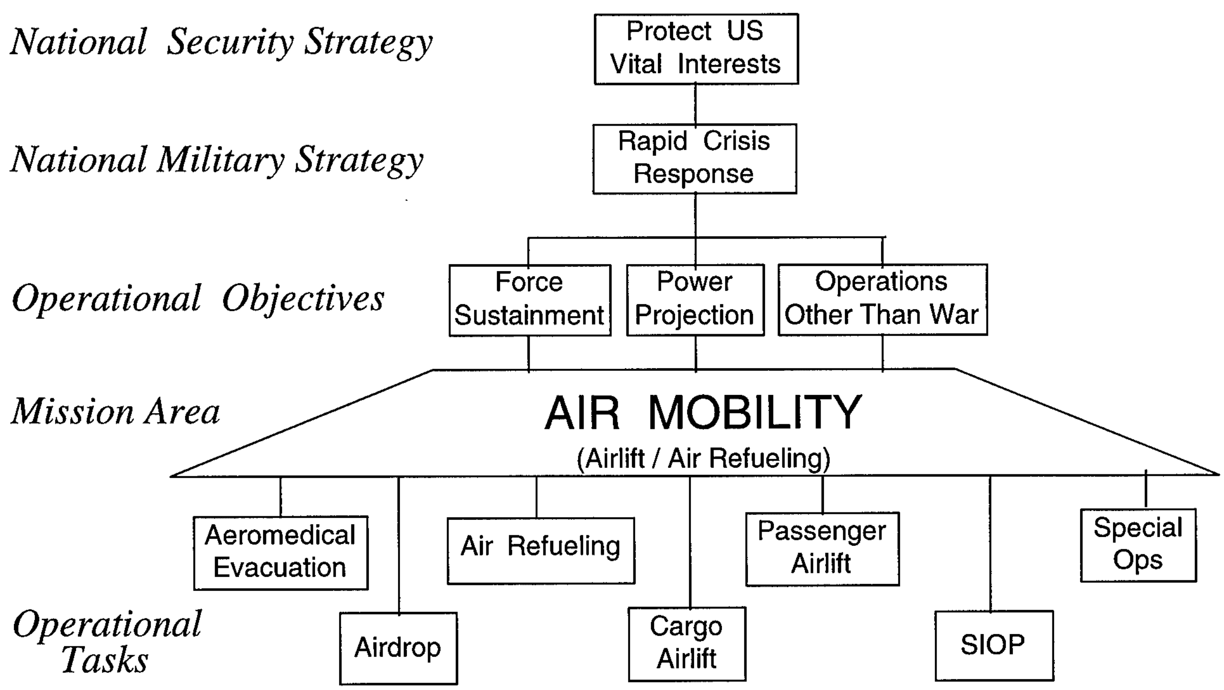


Figure 1-2. AMC's Services for America

Air mobility is an integral part of power projection, force sustainment, and operations other than war (OOTW). Figure 1-2 illustrates air mobility's seven operational tasks or services for America. These seven tasks have associated processes and are AMC's reason for existence and are described in the following pages. Their associated key processes are critical aspects of our operational capability and are explained in the Operations Section.

AIR MOBILITY CUSTOMERS

The Unified Commands (USEUCOM, USPACOM, USSOCOM, USACOM, USSOUTHCOM, USCENTCOM, USSPACECOM, USSTRATCOM) through USTRANSCOM, are air mobility's primary customers. Our customers are also the Services for training, other nations and multinational organizations like the United Nations (when tasked by the National Command Authorities (NCA)), our own states and US territories when disaster strikes, aeromedical evacuation patients, and opportune travel for our people around the world. No other nation has the breadth and depth of air mobility resources that America has available in AMC. History clearly demonstrates this wide range of our customers' needs results in a 24 hours a day, 365 days a year demand for air mobility, whether America is at peace or war.

AIR MOBILITY SERVICES FOR AMERICA (OPERATIONAL TASKS)

AEROMEDICAL EVACUATION (AE)

AE is the rapid worldwide transportation of ill or injured personnel to appropriate medical care. The AE system provides aeromedical airlift of casualties between echelons of medical care. A byproduct of peacetime training enables DoD and other designated beneficiaries to be moved to most appropriate medical treatment facilities. This movement of patients in peacetime is currently an integral part of the total DoD health care system. Movement of patients normally requires specially qualified aeromedical crewmembers to be in place with the patient prior to movement. During contingency operations, a capable AE system complements and supports theater medical infrastructure. Reductions in the theater medical footprint drive a need for this system to move a "stabilized" versus a "stable" patient. This "stabilized" patient requires enhanced care which must be provided by specialized personnel and equipment. AE missions frequently require special air traffic control considerations to comply with patient driven altitude/pressurization restrictions as well as special aircraft systems for medical equipment.

AIRDROP

Airdrop is the unloading of personnel or material from aircraft in flight. This combat employment and resupply of forces is used when the airland option is not available. Strategic brigade airdrop includes airdrop and airland insertion of a mix of equipment and combat personnel over great distances. Formation operations are essential for adhering to the principles of mass and security. The airdrop capability directly supports the JCS requirement for an immediate response capability to deploy airborne forces throughout the world. Many of the Army forced entry concepts rely heavily on airdrop capabilities. While airland is the preferred method of deploying forces, the airdrop of troops and equipment is a crucial capability that remains an integral part of joint warfighting doctrine. Airdrop aircraft must be able to conduct formation air refuelings and participate in formations of up to 100 aircraft. Finally, airdrop crews and the airborne troop commanders need near real-time situational awareness of the battlefield and assured communications with ground forces in order to react to the dynamic character of combat operations.

AIR REFUELING

AMC's tanker force allows for rapid deployment of fighters, bombers, and combat support aircraft. This force extension capability enhances force projection by decreasing reliance on staging bases and host nation support while accelerating the deployment of combat forces to the theater of operations. Additionally, air refueling increases payload capability for long-range missions by minimizing cargo/fuel load trade-offs. These missions may have to be conducted in a strict emissions control (EMCON) environment.

Combat air forces rely heavily on air refueling during employment operations. Air refueling is a force multiplier, expanding both the reach and power of combat forces. This support may include long-range air refueling of strike forces coming from outside the theater or to enable in theater aircraft longer range, loiter, or multiple mission capabilities. Operations may require nonstandard formations and be conducted in an EMCON environment. It is this employment role which generates the majority of today's air refueling requirements.

The air refueling of joint, multinational, or special operations aircraft is distinguished by the customers' unique requirements. Successful mission completion requires special equipment, specialized crew training, and modified operational procedures. Examples of this task are refueling support for allied aircraft of a multinational coalition or the evolving Navy requirement for land based tankers to support carrier task forces. Increasing USAF air refueling support of naval fighters allows DoD savings through reduced need for carrier-based tankers while increasing the combat radius of carrier task forces. USSOCOM requires that aircrews be special operations air refueling qualified, able to work within a nonstandard C2 network, use special operations forces peculiar mission planning systems, operate under EMCON conditions, and use nonstandard night operations.

CARGO AIRLIFT

This task is the airlift of supplies and equipment whose urgency or nature cannot wait for surface transportation. This includes hazardous materials, equipment too large for normal civilian aircraft, and the time critical equipment and supplies that must be available to the warfighters before the first ships arrive. Air cargo is categorized as follows:

Bulk: General cargo, typically preloaded on 463L pallets (104" by 84") or containers and transportable by common cargo aircraft.

Oversize:	Cargo exceeding the usable dimensions of a 463L pallet loaded to the design height of 96" but is equal to or less than 1,090" in length, 117" in width, and 105" in height. This cargo is transportable on the C-5, C-17, C-141, C-130, and KC-10.
Outsize:	Cargo which exceeds the dimension of oversize and requires the use of a C-5 or C-17.
Rolling Stock:	Equipment that can be driven or rolled directly into the cargo compartment.
Special:	Items requiring specialized preparation and handling procedures, such as space satellites or nuclear weapons.

PASSENGER AIRLIFT

This task provides the airlift of combat and support personnel, unit rotations, and movement of the President and senior government or executive personnel. During contingencies, troop movements must be carefully synchronized to arrive in theater with their prepositioned or sealifted equipment. Special Air Missions (SAMs) use specially configured aircraft with extensive air-to-ground communications to support the President and Vice President of the United States, cabinet and congressional delegations, and other senior statesmen. These missions are time critical, often classified, and frequently require operations at civilian airports. In addition to SAMs, Operational Support Airlift (OSA) provides wartime movement of priority cargo and passengers in support of operational requirements as well as peacetime training for new pilots and priority airlift of key decision makers.

AIR REFUELING FOR THE SINGLE INTEGRATED OPERATION PLAN (SIOP)

Today's air refueling fleet was originally developed to support strategic nuclear bombers under the SIOP as a key element in America's nuclear deterrence. AMC tankers continue to support SIOP with air refueling for bomber force generation, execution, employment, and subsequent bomber survival, recovery, and reconstitution. SIOP-committed tankers also refuel USSTRATCOM command and control aircraft. During increased readiness conditions, SIOP-committed units generate KC-135 aircraft and, when on alert, must be ready for immediate launch. These missions may be conducted in a nuclear detonation environment, leading to electromagnetic pulse, flash blindness, and routing problems. Aircrews must be able to perform large cell departures and rejoin maneuvers.

SPECIAL OPERATIONS

This task provides specialized strategic airland/airdrop support to special operations forces for joint/combined training, contingencies, operations other than war, and other missions as directed by the NCA. Special operations missions may be covert, clandestine, or overt. AMC maintains a limited capability to augment special operations missions through the insertion, resupply, or extraction of special operations forces augmenting USSOCOM with greater range, speed, or lift capabilities than inherent in their own organic aircraft. Aircrews receive special training in mission planning and tactics, and they must be capable of operating in a self-sustaining mode for extended periods if necessary. A limited number of crews (Special Operations Low Level--SOLL II qualified) receive training in night vision goggle operations and unique procedures that enhance their ability to conduct special operations (landings, tactical onloads and offloads, forward air refueling, and airdrop) at night in a minimum illumination environment.

CORE SUPPORT PROCESSES

Core Support Processes, as depicted in Figure 1-3, are those activities which endure, cut across every operational task regardless of the mission, and are essential for air mobility operations.

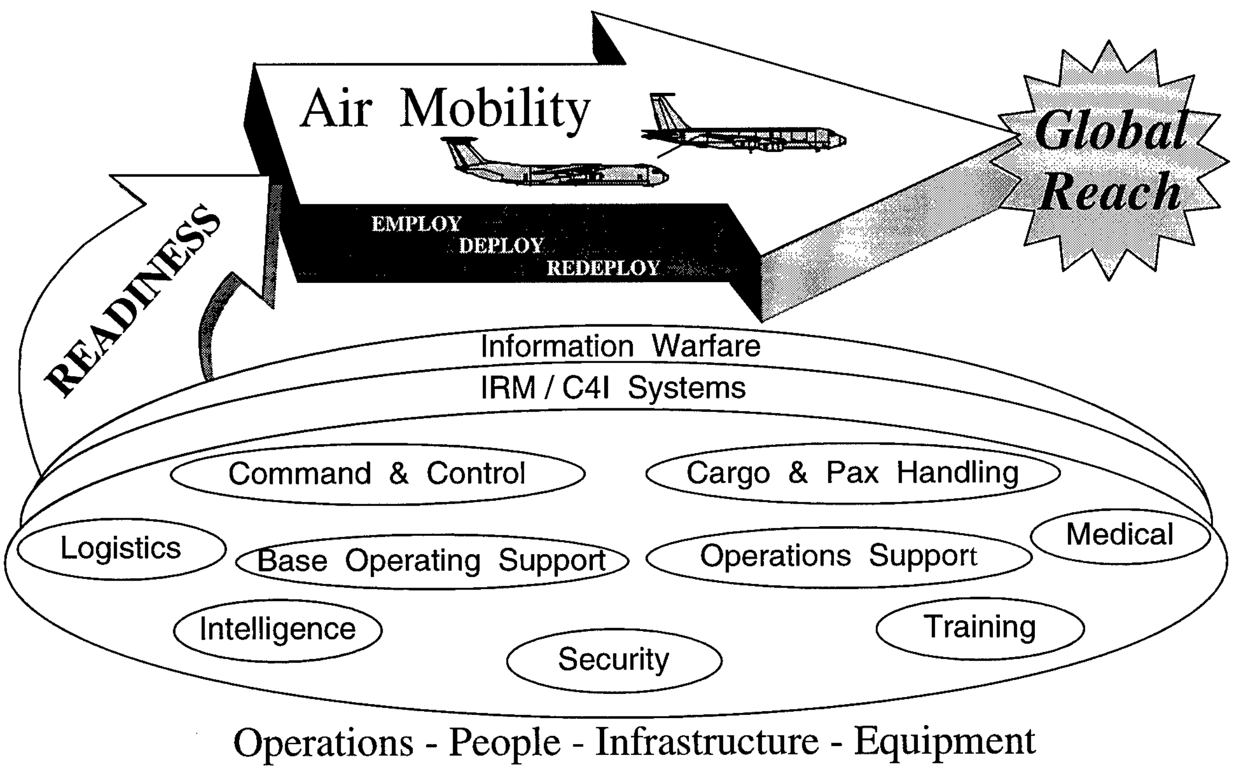


Figure 1-3. Core Support Processes

INFORMATION RESOURCES MANAGEMENT (IRM) and COMMAND, CONTROL, COMMUNICATIONS, COMPUTER & INTELLEGENCE (C4I) SYSTEMS

Information links every aspect of air mobility operations. IRM ensures that information is available when and where needed to all who require it, provided only in the amount that is needed, and is cost effective. IRM is central to the ability to carry out operational tasks effectively and is absolutely essential for the proper management of resources worldwide. At a time when technological advances give us tremendous information-gathering capabilities, a significant challenge remains to make information relevant, accurate, timely, complete, concise, and in a format easily read and understood. IRM needs to retain key information for historical review and analysis to assist policy developers and decision makers. This historical information provides continuity and perspective on organizational and operational issues.

AMC must continue to develop and maintain a superior and effective C4I system. This system must be pervasive throughout all functions at every echelon of command, cut across the entire spectrum of conflict, and provide a flexible, responsive, secure, survivable, integrated global information infrastructure. AMC is moving toward its transition C4I systems, and afterward, its target architecture. Today's systems provide the information required by C2, logistics, transportation, intelligence, aeromedical evacuation, and all other mission areas vital to the success of AMC's mission -- Global Reach. Tomorrow's systems will do all this and more-- cheaper, faster, smarter, and better.

INFORMATION WARFARE (IW)

IW is defined as any action taken to deny, exploit, corrupt, or destroy the enemy's information and its functions; protecting ourselves against those actions; and exploiting our own military information functions. Its ultimate goal is information superiority with preeminent situational awareness to seize and maintain the tactical and operational initiative, influence the enemy's actions, and induce operational paralysis while denying an adversary the ability to do the same. The Air Force mission dedicated to controlling the information realm is known as Counter Information, which has offensive and defensive components. Offensive Counter Information (OCI) enables us to use the information realm and impedes the adversary's use of the realm, while Defensive Counter Information (DCI) protects us from an adversary's IW actions. OCI and DCI will employ the following IW operational concepts:

- security measures (communications, computer, emissions, information, and operations security as well as information protection)
- psychological operations (PSYOP)
- military deception
- electronic warfare (EW)
- physical attack
- information attack

These IW operational concepts are meant to safeguard our C4I capabilities while degrading, destroying, or corrupting the enemy's. Effective employment of these tools depends on a thorough understanding of the enemy's C4I systems, intelligence structure, intent, and capabilities. The AMC role in IW is primarily defensive but will include an offensive capability.

COMMAND & CONTROL (C2)

C2 gives decision makers force management capability by providing two-way connectivity between customers, AMC, and its global forces executing worldwide missions. C2 systems collect, analyze, and disseminate aircrew, mission planning, and execution data, as well as information on maintenance and logistics, passenger and cargo loads, intelligence, weather, and other support requirements. This information is obtained from global sources ranging from en route bases and aircraft in flight, to small teams operating in remote, austere locations. The global nature of air mobility, and the need to provide USTRANSCOM adequate visibility over AMC operations defines C2 requirements.

INTELLIGENCE

Intelligence is information of potential hostile capabilities, activities, or intentions. It is collected, interpreted, and disseminated to assist the planning and execution of Global Reach missions in peace and war. Intelligence products and services come in varied forms and are delivered by face-to-face briefings, published material, secure voice, and electronic dissemination. Intelligence analysts blend data into daily assessments to determine or anticipate global "hot spots" and humanitarian relief situations. They also provide in-garrison and deployed unit intelligence personnel with the situational awareness required to support mission planning, execution, and battle management. The headquarters intelligence staff plans, sources, and coordinates intelligence support for deployed AMC units. The command's unit intelligence personnel perform debriefings and produce mission reports (MISREPs) to ensure aircrews and staff have all the threat information needed to plan and conduct air mobility operations.

LOGISTICS (DIRECT MISSION SUPPORT)

Logistics directly support all air mobility operations. Aircraft maintenance activities keep aircraft in operational condition by inspecting, repairing, and servicing airplanes before and after flight operations. In addition to aircraft generation, routine and preventative maintenance is critical to the long-term viability of aircraft expected to be in front-line duty. These actions include periodic inspections and modifications by local units and programmed depot maintenance and major modifications by air logistics centers and contractors.

Supply

Aircraft generation requires ready access to spare parts and petroleum, oils, and lubricants (POL). Supply organizations track inventory and customer demand, so that required peace and wartime ops tempo can be maintained. Regional supply supports direct mission requirements with the stock control functions centralized at regional centers. The concept is called "Lean Logistics." Overall inventories are reduced by combining stocks and applying "just-in-time" inventory practices. The Defense Fuel Supply Center provides POL stock levels for all DoD installations.

Transportation

The availability of reliable support vehicles is critical to AMC operations. Transportation provides efficient and reliable support in a full range of general and special purpose vehicles for ground transportation. Operations, maintenance, and aerial port depend on a wide variety of vehicles to perform flight line operations, including MHE, tow vehicles, passenger transports, and crew buses. Transportation units manage and maintain these vehicles, ensuring the right type is available and in commission.

TRAINING

Air mobility depends on mission-ready crews and support forces current and qualified to accomplish mission tasks and related activities. Aircrew training includes initial, upgrade, requalification, and recurring training using aircraft, simulators, and part task trainers. Core supporting activities also depend on initial, upgrade, and recurring training to gain and maintain necessary skill levels. In addition, AMC personnel require professional military education for career growth and development.

SECURITY

Security forces provide safe and secure operating locations for AMC personnel and resources around the world. Security's responsibilities fall into four major areas:

- Weapon Systems Security
- Airfield Security
- Contingency Support
- Law Enforcement

To protect weapon systems and airfields, security police must be able to detect and respond to a wide variety of threats ranging from unauthorized entry to an overt attack. Advanced technology will enable security police to more accurately assess potential threats to mobility operations and employ effective defenses against them. As part of Global Reach Laydown, security police maintain rapidly deployable force modules to protect contingency operations at onload, en route, tanker task force, and austere locations. Law enforcement at AMC bases will continue to ensure the safety of people and resources while maintaining law and order.

OPERATIONS SUPPORT

Operations support encompasses activities that directly impact air mobility operational missions: Combat Control, Airfield Operations, Weather, Life Support, Operations Resource Management, Inspections, Safety, Force Protection, and Criminal Investigations.

Airfield Operations

Airfield operations include airfield management and air traffic control. Airfield management supports any aircraft departing from the airbase with services like domestic and international flight plan processing and diplomatic clearance coordination. Air traffic control supports all aircraft arriving or departing from the airbase or transiting the airspace under its control. Airspace managers and controllers work closely with the US Federal Aviation Administration (FAA) and the International Civil Aviation Organization (ICAO) for ingress or egress routes, flight procedures, and with host nations for clearance authority, instrument approach capability, inspection of navigational aids, and airfield assessments. These controllers can operate from fixed bases, using in-place or deployed equipment to augment theater and host nation controllers, or at austere airfields using mobile air traffic control and landing systems (ATCALS) equipment to provide both visual and instrument landing capability. They depend heavily on communications links, HF, SATCOM, and land lines to coordinate the air traffic control of air mobility missions.

Weather

All phases of air mobility operations are affected to some degree by environmental conditions. Accurate and timely weather forecasts are critical in the planning and execution of virtually every air mobility mission. AMC weather services are part of a DoD-wide network of weather support activities that collect and analyze atmospheric and space environmental information and forecast worldwide environmental conditions. During peacetime, fixed locations provide support using dedicated equipment and communications. Wartime, exercise, and contingency operations may require support from tactical locations using portable equipment and mobile communications capabilities. Weather observers prepare and disseminate reports of their local conditions for current operations and as a starting point for future weather forecasts. Forecasters predict future weather conditions for en route and terminal operations, including weather warnings and advisories, plus air refueling and drop zone forecasts.

Life Support

Life support prepares aircrews for their full range of missions by maintaining and issuing life support equipment, and training aircrews in its use. It provides life sustaining equipment, subsystems and associated procedures used by aircrews and passengers during emergencies inflight, for safe aircraft escape, and while awaiting rescue. Responsibilities include all associated maintenance of, and training for, individual issue equipment such as aircrew chemical defense equipment, parachutes, survival vests, night vision and nuclear flash goggles, helmets/oxygen masks, as well as aircraft installed equipment such as life rafts and passenger oxygen masks. Sufficient equipment and trained personnel must be available at home station as well as at deployed locations to assure aircrew combat readiness and survivability.

Operations Resource Management

Responsible for tracking the continuation and additional training of aircrew members for global reach. Provides the commanders and operation officers with real world qualification on aircrew members. To provide optimum aircrew training, key information is given to scheduling, training and standardization evaluation sections during peacetime. Two key reports include the Higher Headquarters Reporting on Status Of Resource and Training System (SORTS) and the Headquarters Operations Resource Information System (HORIS) Report. The Horis Report reflects the accurate aircrew status to the Pentagon.

Inspections

All people in AMC are empowered to identify problems, correct them if able, or make recommendations to those that can resolve them, in order to continuously improve air mobility for our customers. The Inspector General (IG) continually assesses AMC mission capability and readiness. Under peacetime operations, quality assessments look at a unit's readiness in terms of operating efficiency and mission effectiveness related to their key processes. Under simulated wartime operations, readiness is evaluated in joint and multinational exercises supporting a variety of taskings. Evaluations are designed to validate air mobility through simulated major regional conflicts scenarios to challenge a unit's ability to execute required wartime taskings.

Safety

Safety's charter is to preserve combat resources and mission capability through mishap prevention. Prevention occurs through investigating mishaps and analyzing trends to establish mishap prevention programs and initiatives. Areas of responsibility include: nuclear surety, flight, ground, and weapons safety, and adherence to the Occupational & Safety Health Administration Act. Safety personnel also work closely with civil engineers on Environmental Protection Agency compliance. System safety engineering plays a key role as well in the development of weapon systems and procedures.

Force Protection and Criminal Investigations

The Air Force Office of Special Investigations (AFOSI) performs force protection and criminal investigative services. They identify, investigate, and neutralize espionage, terrorism, fraud, and other major criminal activities targeting air mobility resources. Since collecting threat information and providing commanders with threat assessments enables them to develop countermeasures in deployed areas and adjust operations accordingly, force protection support is crucial. To ensure optimum threat assessment capability, it is essential for force protection advisors to arrive with the initial deployment of AMC personnel.

MEDICAL

Medical support encompasses providing or arranging high quality health care for authorized beneficiaries through a network of community-based medical treatment facilities or providing transportation to appropriate care if required medical care cannot be obtained in the local area. Active duty medical care focuses on ensuring personnel are medically able to respond to global requirements--every day. This support includes promoting wellness, emphasizing preventive medicine, and maintaining a safe workplace. It also integrates realistic wartime medical capability into operational and contingency plans. An important by-product of this readiness responsibility allows AMC to provide, or arrange for, medical treatment for dependents and retirees.

CARGO & PASSENGER HANDLING

Cargo and passenger handling is a key component of air mobility. An integral part of AMC's peacetime and wartime mission, aerial port forces are trained and equipped to support air mobility operations by processing and loading passengers and cargo for movement throughout the world.

Aerial port squadrons, detachments, and operating locations process passengers and perform cargo-related operations for organic and contract aircraft as part of the Defense Transportation System (DTS). Special emphasis is placed on hazardous material movements. A critical element includes timely updates to the cargo, passenger, patient; and personal property status and location for effective real-time in-transit visibility (ITV) from origin to consignee or destination throughout the DTS. Selected aerial ports also prepare airdrop cargo loads and perform recovery operations of supplies and equipment at drop zones.

In an equally important role, aerial ports provide rapid deployment of specially trained and equipped personnel in times of war and contingencies. The Global Reach Squadrons within the Air Mobility Operations Groups (AMOG) and Aerial Port Mobility Flights (APMFs) at three CONUS Aerial Port Squadrons provide AMC the capability to support cargo and passenger processing at bare base locations worldwide. They train for operations in austere conditions, air base defense, tactical communications, combat survival, and individual weapons proficiency.

BASE OPERATING SUPPORT

Base Operating Support (BOS) activities are those that contribute indirectly to operational missions by supporting the people or bases that are essential to air mobility operations. Examples of BOS activities include: Base Level Supply, Civil Engineering, Transportation, Contracting, Comptroller, Chaplain, Judge Advocate, Services, and Public Affairs. Shortages of BOS for deployed air mobility personnel during Operations SUPPORT HOPE (Rwanda) and UPHOLD DEMOCRACY (Haiti) highlighted the importance of BOS for deployed operations.

Base Level Supply

All AMC activities require supplies. Indirect mission requirements depend heavily on base supply's ability to determine stockage levels. To achieve this, the supply system records demands for particular items, coordinates with customer activities to determine appropriate stockage levels, orders and receives the items, and stores those items until a demand is established by the customer. A much greater percentage of these, and nonrecurring requirements, will be supported outside the normal supply channels with credit card or blanket purchase agreement type purchasing instruments.

Civil Engineering

Civil Engineers plan, program, design, construct, operate, and maintain the facilities necessary to accomplish our peace and wartime missions. These facilities range from aircraft and operations facilities to service support facilities for child care and recreation. In addition, civil engineers provide housing for AMC people and their families. Civil engineers also protect our people, equipment, and facilities by coordinating fire protection, explosive ordnance disposal (EOD), and disaster preparedness. Disaster preparedness establishes and executes the plans and procedures used prior to and after natural and man-made disasters. These include detection, protection, and decontamination from nuclear, biological, and chemical (NBC) agents. During natural disasters, humanitarian relief, or major regional contingencies, engineers lay down the mobile infrastructure and restore damaged facilities to provide the support infrastructure for Global Reach. Finally, civil engineering protects the environment by preventing pollution; complying with local, state, and federal environmental laws and regulations; and where necessary, cleaning up past contamination.

Contracting

Contracting provides support through constant customer interface from the acquisition planning stage through contract close-out for the procurement of commodities, services, and construction. Additionally, they ensure the timely award of quality contracts at fair and reasonable prices that comply with federal regulations and statutes.

Comptroller

The Comptroller budgets and funds operational requirements; administers the airlift portion of the Defense Business Operations Fund-Transportation (DBOF-T); accounts for assets; disburses and collects funds; provides analysis of Nonappropriated Funds finances; and analyzes financial data as a basis for management and operational decisions.

Chaplain

The Air Force provides chaplain service personnel and resources to military members and their families. Chaplains meet the religious needs at fixed, en route, and deployed sites with ministries of worship, religious education, pastoral care, counseling, and visitation.

Judge Advocate

Staff Judge Advocates manage civil and criminal law programs; advocate and litigate to preserve AMC prerogatives; and educate, advise, and counsel commanders and their personnel. Specific services include counsel on governing law, rules of engagement, law of armed conflict, and personal legal services.

Services

Services is focused on combat support and community service. They contribute to readiness and improve productivity through programs promoting fitness, esprit de corps, and quality of life for Air Force people. Services ensures wartime and peacetime capability for food service, lodging, physical fitness, and mortuary affairs. Additionally, Services provides for quality of life programs including child development, youth activities, skills development, and a wide range of leisure activities. These programs are accomplished through management and oversight of appropriated and nonappropriated fund operations.

Public Affairs

Public Affairs keeps the civilian and military communities informed about air mobility operations and issues with internal information, community relations, and media relations programs. Activities support the Department of Defense's policy to make available timely and accurate information to the public and Congress so they may understand and assess facts about national security and defense strategy.

Personnel

Personnel organizations provide human resource management as well as personal assistance and personal growth opportunities for their assigned members and families. This includes administering personnel programs for the training, education, career progression, motivation, effective human relations, equitable treatment, and effective utilization of military and civilian members.

READINESS

Objective 2.4.1
Ensure current assessment approaches fully and accurately evaluate mission capability, and are integrated. IGC, FY98

Objective 2.4.2

Ensure current assessment approaches fully and accurately evaluate the leadership and management system of AMC, and are integrated. IGC, FY98

Readiness is the evaluation of an organization's ability to accomplish assigned peacetime and wartime tasks. Readiness answers these questions: Are there enough resources to do the job? Are the right resources available for the assigned tasks? Is the infrastructure and equipment in good condition? Are the people fit, trained, and qualified?

Our future readiness depends on today's ongoing investments. Readiness is a perishable commodity, decaying over time as a result of loss of job skill currency, personnel turnover, wear and tear on equipment, and obsolescence. Investments in recruiting, quality of life, realistic training, sufficient spare parts, and reliable, capable equipment are just some of the costs of future readiness.

Measures of air mobility readiness cover the wide spectrum of capabilities, capacity, and operations. The broadest measure is the Commander's Assessment stoplight which introduces the People, Infrastructure, and Equipment resource sections. These charts are a top-level summary of Mission Needs Analysis (MNA) reflecting the health of air mobility, today through 2021. Quantified in "green," "yellow," or "red"--these stoplights are ultimately the commander's measured judgment supported by experience and specific indicators of system health, capability, and requirements.

UNIT READINESS

For air mobility units, key result areas (KRA) are used to measure readiness. KRAs are a summation of key processess that allow units to effectively focus resources.

- Initial Response
- Employment
- Mission Support, and
- Resource Protection

A unit's readiness in these KRAs is the primary indicator of their potential contribution to the overall air mobility system. These four areas deal directly with mission execution. Other unit responsibilities include the development and care for people as well as care for the environment. Ultimately, each unit's readiness to execute its designated tasks is how we ensure air mobility is ... *Responsive Global Reach for America ... Every Day!*

Formal readiness reports, metrics, and force structure planning measures such as million tons miles per day for airlift, deployment closure, and million pounds of fuel per day for air refueling complete the measures of air mobility readiness.

STATUS OF RESOURCES AND TRAINING SYSTEM (SORTS)

SORTS reports on each unit's readiness to support its assigned wartime tasking. The "C" ratings reflect the commander's subjective and objective evaluation based on specific criteria for manning, qualification and training, spare parts, and equipment. Units report their status up the chain of command through the MAJCOM and Air Staff to JCS.

METRICS

Metrics provide facts related to customer satisfaction, process improvement, and the organization's readiness. They help us realize how our efforts contribute to air mobility, while maintaining focus on those critical few processes which are vital to the organization's success. Ideal metrics are measurements taken over a period of time, communicate vital information about a critical process or activity, and assist process owners in their day-to-day decisions. Properly constructed metrics address mission-customer-product-process relationships and can drive process improvements to ultimately allow us to achieve our goals and objectives. The use of metrics provides feedback to all levels to gauge how well their processes are performing and their products and services are satisfying customer needs and expectations.

Air mobility metrics continue to mature. We now include metrics or milestones with each supporting objective's action plan. Other metrics are also being developed by the process owners in conjunction with our customers for key decision makers to regularly guide and manage the command. The challenge is identifying the critical few metrics at the appropriate decision-making level.

FORCE STRUCTURE PLANNING MEASURES

Quantifying requirements and assessing capability is the first step in evaluating force structure. A simplistic method to measure airlift capability or requirements is million ton miles per day (MTM/D). Using MTM/D allows for a quick comparison; however, recognizing its limitations is critical. MTM/D ignores the wide range of potential contingencies and the requirements for timing, unit integrity, system interactions, infrastructure constraints, and the differences between bulk, oversize, and outsize cargo. MTM/D is an aggregate, unconstrained measure of airlift capacity used as a top-level comparative metric.

The equation for MTM/D for one aircraft is:

$$\frac{\text{(Objective utilization rate)} \times \text{(Blockspeed)} \times \text{(Payload)} \times \text{(Productivity factor)}}{\text{1,000,000 nautical miles}}$$

"Objective Utilization Rate" (UTE) is the average number of hours per day the primary aircraft inventory (PAI) fly, and is measured over two periods: "surge" and "sustained." The surge period is the first 45 days of a contingency and the sustained period is the time thereafter. During the surge period, every effort is made to maximize aircraft utilization and deliver the maximum cargo and troops during the critical early days. After 45 days at the surge rate, the flying rate decreases to a sustained rate--allowing for logistics to catch up on repairs and inspections deferred during the surge. The objective surge UTE rates are used for MTM/D calculations.

Although UTE rates are highly dependent on scenario characteristics such as contingency location, en route servicing capability, air traffic control restrictions, ramp space, crew ratio, active/Air Reserve Component (ARC) mix, and a multitude of other factors--each weapon system is assigned an objective UTE rate for planning and programming. The objective UTE rate is based on the inherent reliability, maintainability, performance, ground handling, and loading characteristics of each particular aircraft. These factors account for aircraft availability and capability, en route flight time, and ground times for initial, en route, and destination onload/offload/servicing. Note: objective UTE rates are the basis for maintenance manpower, spare stock levels, and aircrew programming.

Active duty and ARC unit equipped (UE) full-time maintenance manpower levels are based on the aircraft's peacetime UTE rate. Additional manpower necessary to support the higher wartime rate is more cost effectively placed in the ARC. Very similarly, aircrews are split between active and ARC forces and limit aircraft UTE rates until the ARC forces are mobilized. ARC volunteers are needed in the early days of the conflict prior to mobilization; however, the entire pool of aircrews and maintenance manpower is critical to reach the wartime UTE rates.

Aircrew manpower assumes:

- Aircrew availability - 86 % (14 percent duty TDY, emergency leave, illness, etc.).
- Flying hour limitations - waived to 150/400 (any 30 day period/any 90 day period). It is further assumed that the average crewmember will achieve 90 percent of this limit, or 135/360 hours.
- Crew augmentation rate of 50 percent for first 7 days, 10 percent thereafter, to extend allowable crew duty day.
- ARC volunteer rate prior to mobilization: 25 percent (Note: UTE rates assume ARC mobilization which is dependent on the active/ARC mix.)

"<u>Blockspeed</u>" is calculated in nautical miles per hour (kt) and is the average ground speed from takeoff to block-in assuming a 2,500 NM average leg distance.

"<u>Payload</u>" is based on the maximum payload from range-payload charts reduced by a "stuffing" factor to account for non-optimal loading and a limiting critical leg distance of 3,200 NM. The stuffing factor for organic aircraft is 70 percent and for CRAF aircraft is 86 percent (reflecting the denser loads associated with typical CRAF bulk cargo).

"<u>Productivity Factor</u>" takes into account the aircraft returning empty from the theater and positioning legs to onload locations. The productivity factor varies with scenario distance. For a 7,500 NM scenario distance, for example, CONUS to Southwest Asia or Korea, the productivity factor is 47 percent.

Table 1-1
SUMMARY OF AIRLIFT PLANNING FACTORS

	UTE rate[c] (Surge)	UTE rate (Sustained)	Blockspeed (kts)	Payload (short-tons)	Productivity Factor	MTM/D (per PAI)
C-5A	10.87	8.39	423	65	.47	.1405
C-141 [a]	12.1	9.7	410	23	.47	.0536
C-17	15.15	13.9	410	45	.47	.1314
KC-135	10.0	10.0	440	10	.47	.0207
KC-10	12.5	10.0	445	40	.47	.1046
CRAF [b]	10.0	10.0	465	78	.47	.1705

Notes:

a. Based on FY96/4 Active/ARC split and force structure, UTE rate will decrease as PAI are transferred to the ARC resulting in a lower overall C-141 crew ratio.
b. CRAF blockspeed assumes 3,500 NM leg distance. CRAF payloads are based on bulk/sustainment cargo with a 3,500 NM critical leg length length and measured in B747-100F equivalents.
c. Objective surge UTE rates are used for MTM/D calculations.

STRATEGIC AIRLIFT CAPABILITY VERSUS REQUIREMENT

Cargo Airlift

The maximum strategic cargo airlift capacity shown in Figure 1-4 is a notional depiction of the entire system capability, under optimum conditions, measured in million ton miles per day (MTM/D). AMC can produce at this level only after full ARC mobilization and CRAF Stage III activation. Figure 1-4 shows the overall contribution of each weapon system and incorporates the modernization plan for the airlift forces.

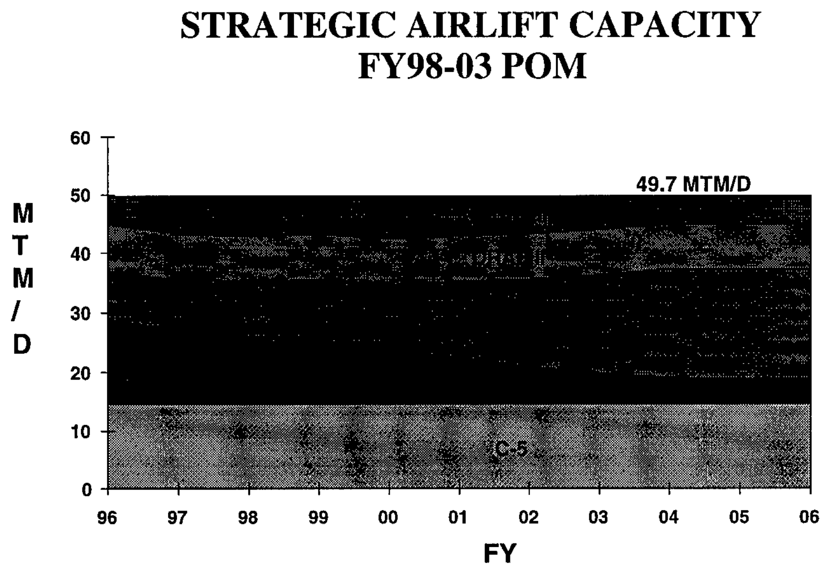


Figure 1-4. Strategic Cargo Airlift Capability

The Mobility Requirements Study Bottom-Up Review Update (MRS BURU) and follow-on Army analysis of their ability to preposition set the cargo airlift requirement at 49.7 MTM/D after extensive wargaming, modeling, and simulation. The analysis models aircraft loading, movements and cargo delivery on a Time-Phased Force Deployment Data (TPFDD) timeline established by JCS to meet the needs of supported theater CINCs. The warfighting models were used to determine force closure requirements for maintaining an acceptable level of risk. Then mobility models were used to examine the capability to meet these timelines.

The MRS BURU recommendations are based on a 2 nearly simultaneous Major Regional Contingencies (2 MRC) scenario. **However, AMC force structure is based not only on requirements for MRC support but also on military unique requirements such as Strategic Brigade Airdrop (SBA), outsize and oversize cargo requirements, and special operations. The MRS BURU study took advantage of the mobility force's tremendous capability to swing from one theater to another in a dual MRC scenario, and this efficient use of our forces resulted in only a small increase to the number of forces needed for the critical phase of a single MRC. Therefore, the force structure required for the 2 MRC requirement is similar to that needed for a single MRC concurrent with an LRC or other potential mobility operations.**

Airlift is most significant early in the scenario, during the halting phase, before sealift arrives. This assessment of delivered forces' ability to achieve their objectives at an acceptable level of risk and confidence was an iterative process and established the airlift requirement for the foreseeable future. AMC uses 49.7 MTM/D as the airlift requirement for broad force structure planning purposes assuming sufficient levels of prepositioning and regeneration of warfighting materials from the first to the second MRC.

Another measurement of cargo airlift capability and requirements is "closure" or cumulative, daily, "tons delivered" to a theater. Its advantage is it shows actual results of sophisticated scenario simulations. It is limited to that one scenario, fleet, and point in time, but is very illustrative of a particular airlift fleet's capability to support that warfighting commander. Figure 1-5 shows the tons required (jagged line) by the warfighter's TPFDD and the capability available from a particular fleet (middle line). The gap between the TPFDD and capability is "risk." The capability shown by the far right line is actual capability, assuming full mobilization and CRAF activation.

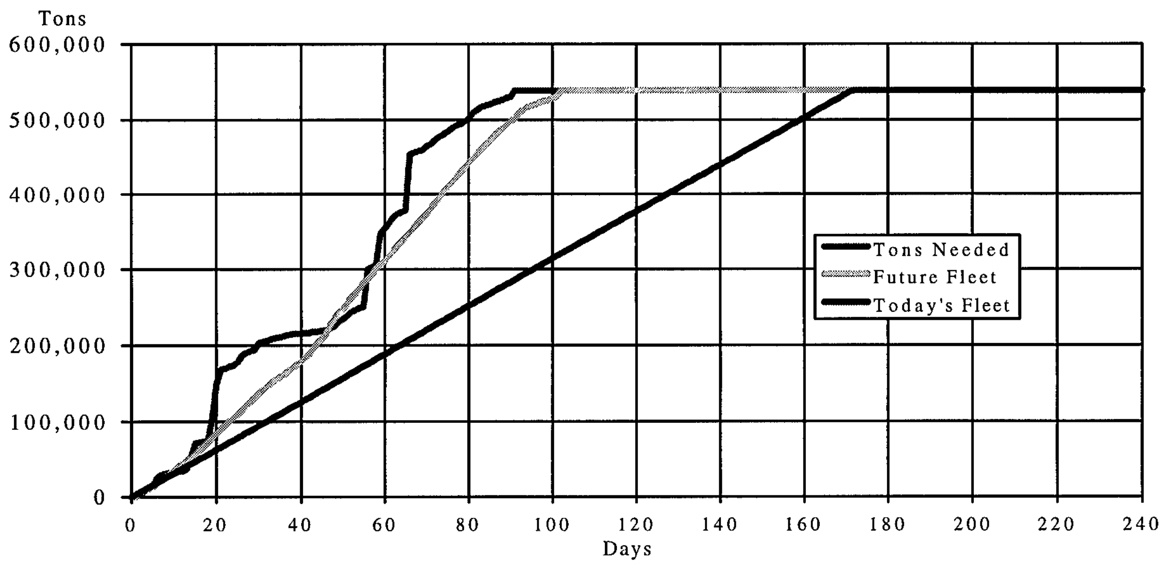


Figure 1-5. Notional Cargo Closure Requirement versus Capability

Passenger Airlift

USTRANSCOM analysis supporting MRS BURU set the strategic passenger airlift requirement at 136 B-747-100 Wide-body Equivalents (WBE). This was a decrease from the previous Cold War requirement of 210. In the analysis, troop delivery was constrained to a 2-day window prior to the arrival of their equipment. The CRAF provides over 90 percent of the total DoD passenger airlift capability. FY96 Stage III Long-range International passenger capability is approximately 160 WBE.

Aeromedical Evacuation (AE)

The JCS CRAF Stage III AE requirement is currently being reviewed. Based on a recent Joint Medical Readiness study, OSD (PA&E) is currently reviewing the Joint Requirements Oversight Council (JROC) recommendation to decrease the JCS CRAF Stage III AE requirement from 44 to 31 B-767ER aircraft. FY97 air carrier commitments of B-767 aircraft to CRAF AE will meet the anticipated JCS lift requirment; however, carriers find it difficult to commit B-767ERs because they are very profitable to their commercial operations and because of perceived problems with the AE shipset (AESS) kits. Commitments for FY98 and beyond cannot be guaranteed. Total AE capability remains affected by the lack of a viable patient loading system.

Strategic Brigade Airdrop

The airborne division ready brigade (DRB) medium force package is the airdrop requirement for force structure planning. Today's C-141 formation-capable fleet cannot meet all of this requirement. Furthermore, war planners need the flexibility, with the follow-on airland forces, to be able to use austere airfields not suitable for C-5 or C-141 operations. Currently, formation-capable C-141s are reaching the end of their service life and retiring. Analyses have determined that a future fleet of 120 TAI C-17s, coupled with 50 TAI modified C-5Bs, is needed to meet the strategic brigade airdrop requirement. Testing and modification programs are under way with the goal of certifying the C-17 by FY97 and C-5B by FY98 for their requisite roles in a strategic brigade airdrop.

AIR REFUELING CAPABILITY VERSUS REQUIREMENT

The tanker fleet dedicated for air refueling is shown in Figure 1-6. The requirement is based on FY97-01 DPG scenarios and War Mobilization Plan commitments. This most stressful scenario for the number of tankers available is 1 MRC in addition to recalled tankers for SIOP alert. (The most demanding scenario for tanker crews is 2 MRCs.) The total air refueling capability is based on projected mission capable rates and assumes the KC-135's primary role is air refueling with only 26 KC-135s withheld for airlift missions. Fifteen KC-10s are dedicated for air refueling, 37 allocated to airlift tasks, and 2 for schoolhouse training. The KC-135s and KC-10s can swing between air refueling and airlift as the warfighting commander's requirements vary. Shortfalls occur in these scenarios during the height of combat employment operations and can be overcome by recalling the KC-135s and KC-10s from airlift and training commitments to free them for air refueling.

Total air refueling capability is based on projected mission capable rates for the entire PAI fleet and assumes that, as the Air Force's “core” tanker, the KC-135's primary role is air refueling. KC-135s and KC-10s are flexible, however, in that aircraft may swing between air refueling and airlift roles as operational priorities dictate. Additionally, the KC-10 provides a significant dual role capability which may be exploited during deployment operations. With the current fleet size, shortfalls in tanker availability which occur during the height of combat operations can be overcome by reallocation of KC-135s and KC-10s supporting other operational tasks for use as air refuelers.

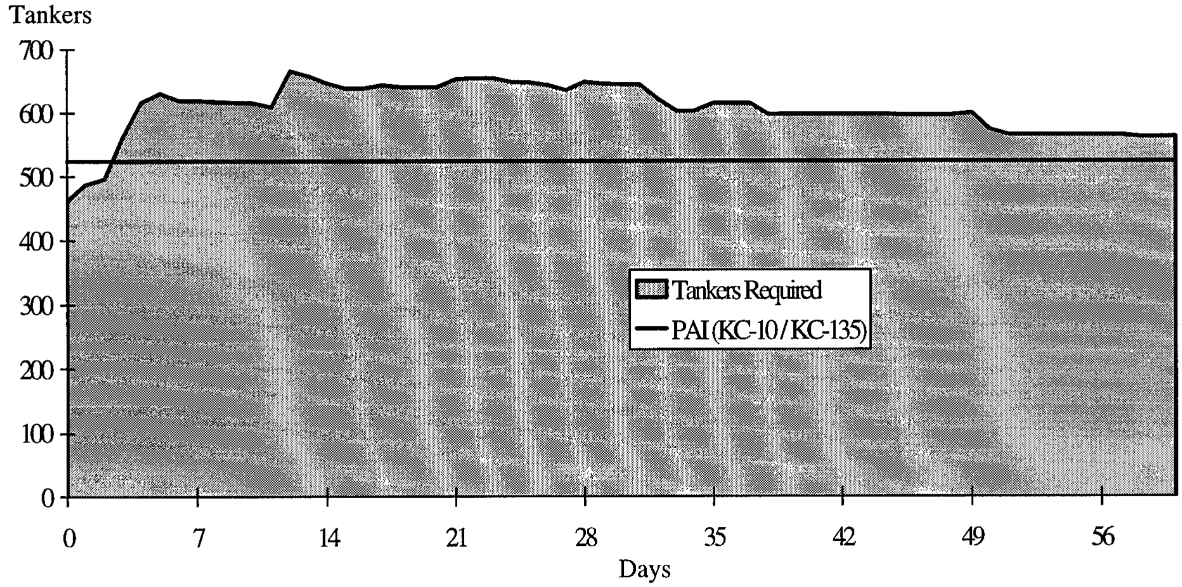


Figure 1-6. Air Refueling PAI (FY97 PB) versus Notional Requirement

The peak air refueling requirement occurs around day 13 in this notional scenario. This peak requirement, when measured in million pounds of fuel per day (MPF/D), is shown as the solid horizontal line in Figure 1-7. Likewise, the projected capability of the fully mobilized tanker fleet through 2020 is shown by the shaded areas. The shortfall is 9 MPF/D or 14 percent of the total air refueling requirement.

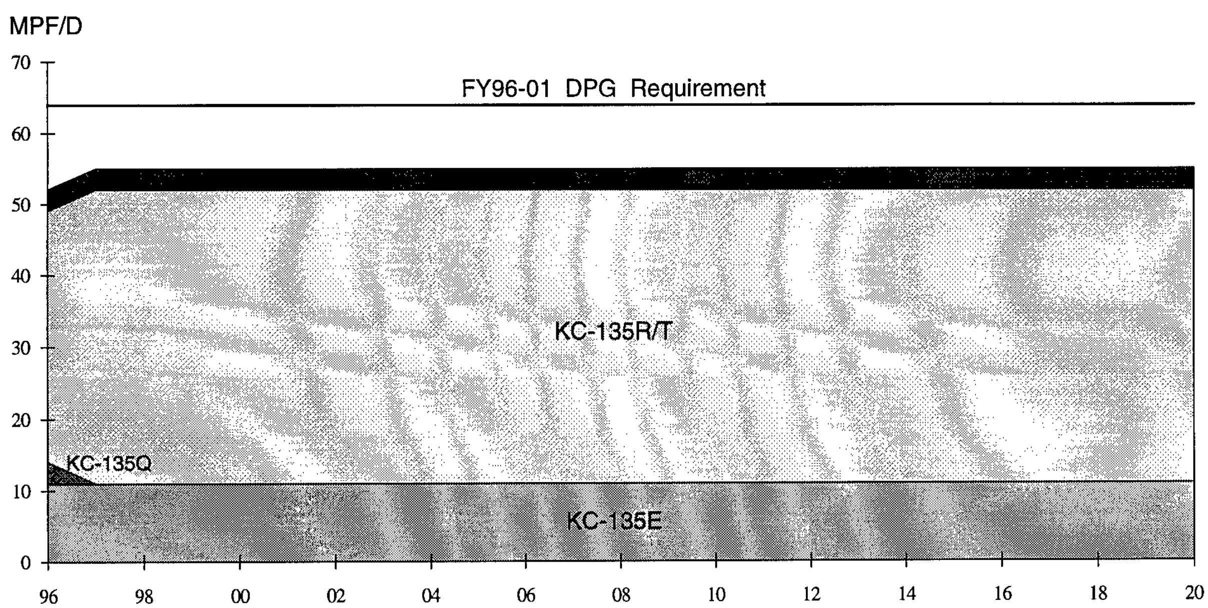


Figure 1-7. Notional Air Refueling Capability versus Requirement

CORE STRATEGY

Air mobility operations and force structure rely on our core military airlifter and core military tanker. National security strategy depends on decisive air mobility forces to protect America's vital global interests. As the term implies, "core aircraft" are the mobility workhorses: flexible, reliable, efficient, and possessing the full range of military capabilities. The core and other organic forces rely on the CRAF and mobilized ARC forces as the vital strategic reserve during a major regional contingency. When fully mobilized, ARC forces provide a significant increase in capability. In addition, peacetime civil airlift augmentation provides a vital capability to meet routine airlift requirements. This synergistic combination, capitalizing on the strengths of each component, makes up the mobility team structure as depicted in Figure 1-8.

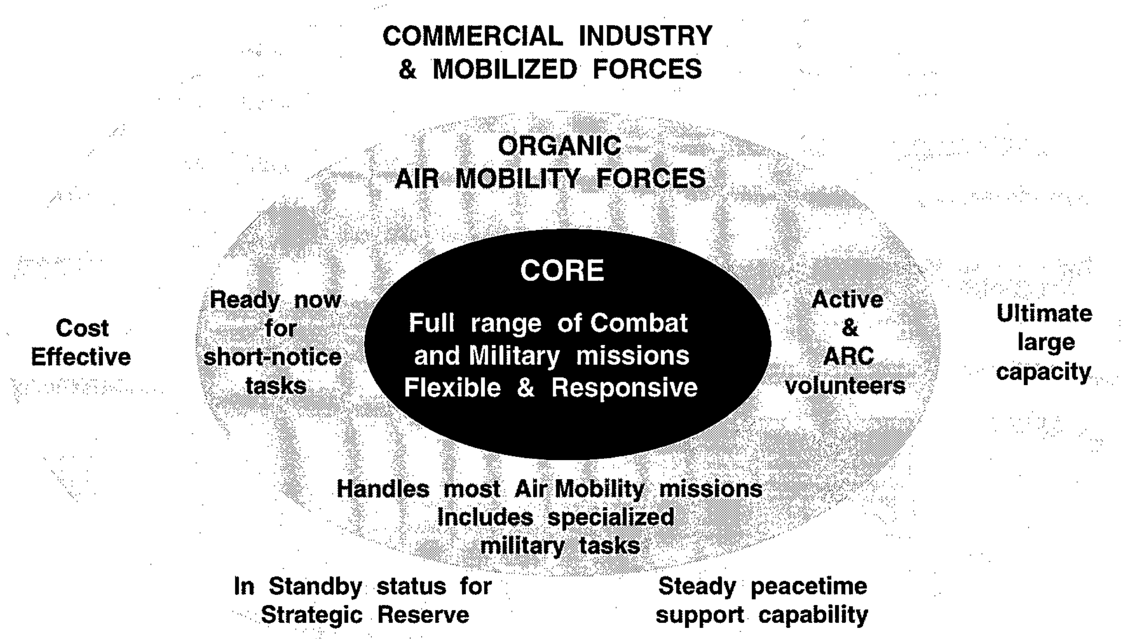


Figure 1-8. Air Mobility Team

The core military airlifter must be capable of the following:

- Delivering a large payload over a long distance while being reliable and cost effective
- Direct delivery from the CONUS into a forward, overseas location characterized as an austere environment with minimum airport infrastructure, small runways or parking areas
- Carry all oversize and outsize cargo in the TPFDD
- Roll on and roll off operations
- Survivable in a low threat environment on a routine basis

- All weather formation airdrop and extraction delivery of heavy equipment, supplies, and troops
- Air refuelable

Today, the core military airlifter, the C-141, cannot meet all of these requirements, limiting the NCA's options. We are restricted to large international airports for the strategic delivery of forces. Core aircraft lead the response in the delivery of troops, supplies, and equipment, often before diplomatic clearances or en route refueling/servicing agreements can be negotiated with our allies. Therefore, AMC must be capable of projecting combat forces nonstop anywhere, by air refueling. After establishing our alliances and main operating bases, the core aircraft become a force multiplier, projecting a broad spectrum of combat and sustainment forces. These operations require a flexible aircraft capable of a full range of combat and military missions.

The C-17, our follow-on core airlifter and number one acquisition priority, is the key to AMC meeting national security strategy and the nation's mobility requirements. Also, considering the age and limitations of the C-141, the C-17 greatly enhances the NCA's employment options. In a constrained environment, the C-17 improves throughput significantly. With the C-17's capabilities of operations into austere airfields and its enhanced survivability and reliability, America possesses the ability to deliver a decisive force at a point of our choosing.

AMC relies on other aircraft by capitalizing on their unique capabilities and economies. The C-5 can deliver large quantities of over and outsize cargo to main operating bases quickly and efficiently.

An airlift system is only as capable as the materials handling equipment (MHE) supporting it. Our current MHE fleet's inventory, age, and reliability hinder our ability to fully support 2 MRCs. The acquisition of the 60K loader is AMC's number two acquisition priority. It will replace the aging 40K loaders and begin to alleviate the Wide-body Elevator Loaders (WBEL) shortfall. The 60K is absolutely essential for efficient operations with the KC-10, widebody commercial derivative aircraft, and CRAF widebody aircraft. Another key MHE acquisition will be the wide-body capable Next Generation Small Cargo Loader (NGSCL) replacing the 1960s vintage first generation 25K loaders and remaining WBELs.

Just as the core airlifter is vital to future capability, so the core military tanker must meet the following requirements:

- Deploy, employ, and redeploy the full range of US and allied aircraft in support of joint, multinational, and special operations
- Fulfill the SIOP role
- Survive in a wartime threat environment
- Provide a large fuel offload with maximum flexibility

The KC-135 is our core military tanker which meets these requirements today. The dual role KC-10 tanker is an organic aircraft that performs missions outlined for the core military tanker, yet can deliver significant quantities of bulk and some oversize cargo. The very flexible and capable KC-10 may be employed as either a tanker or airlifter depending on customer requirements. With the addition of roller kits for the KC-135, this primary tanker has the flexibility, when air refueling requirements permit, to fulfill some niche airlift missions.

An essential part of the mobility team is the synergism achieved between active duty and ARC units. This team forms the most effective total force union in today's military. The ARC provides both reserve associate units, located with and flying active duty aircraft, and unit equipped (UE) units, flying ARC-owned aircraft. The active duty component also provides most initial qualification training and manages the logistical support system for active and ARC aircraft. Maintenance of these aircraft is also a shared responsibility. Active and ARC forces therefore complement each other, providing a proven capability, both in peace and war.

CRAF forces complete the mobility team. They are an integral part of our strategic military capability, providing a third of the total cargo lift capability, half of our patient lift, and 90 percent of our wartime passenger lift. These aircraft are efficient bulk cargo, passenger, and patient carriers. Set up in three stages to respond to different levels of conflict, these aircraft are critical during the deployment phase of any large contingency operation.

THE FUTURE OF AIR MOBILITY

Objective 1.1.1
Foster innovative new mobility concepts and aggressively investigate new technological opportunities. XPD, FY03

The future challenges are many. Threats to national interests may come from any point on the globe, often unexpected and violent. Because of America's acknowledged leadership role in the international community, it will continue to call upon air power to respond to global crises. As we approach the 21st century, the high level of conflict, tension, and turmoil continues with more than 70 flash points worldwide.

In such an environment, the non-lethal application of military power, embodied by air mobility, will continue to be America's first weapon of choice for both peace and war. In such cases, air mobility becomes an instrument of policy enforcement and even a warfighting tool. Air mobility achieves political objectives through the movement of international peacekeeping forces, the removal of refugees from danger, or the delivery of disaster relief goods and services. The arrival of America's mobility aircraft signals US resolve, restores stability, and warns aggressors to reconsider their actions. The mere capability to rapidly project force is a powerful deterrent to aggression, allowing America to influence world events.

AMC is well prepared for its role as an instrument of national power. It is addressing many difficult challenges including:

- Increasing transportation requirements as overseas basing shrinks and CONUS basing becomes the norm
- High ops tempo as operations other than war (OOTW) continue along with normal airlift and air refueling requirements increase. The NCA will continue to use air mobility forces as non-lethal applications of air power to deter aggression and conduct humanitarian/ peacekeeping operations
- Limited resources to train, operate, and modernize while maintaining readiness

These challenges can only be met by a combination of flexibility, ingenuity, new technologies, and America's continuing commitment of resources for air mobility.

In DESERT SHIELD/STORM America had ample time to deploy forces to Southwest Asia. Future adversaries may not allow us that luxury. Clearly, the ability to project a sizeable, decisive force quickly gives our armed forces a tremendous strategic advantage as well as delivering a clear message to any opponent. Air mobility provides one of our nation's most powerful deterrents--conventional power projection to any point on the globe in just hours.

In light of the continuing demand for efficient and cost effective air mobility, emerging technologies present many opportunities over the next 25 years.

In 1994, on the eve of the Scientific Advisory Board's (SAB) 50-year anniversary of Dr. Theodore VonKarman's report, *Toward New Horizons* (1945) to General Hap Arnold, the Secretary and Chief of Staff of the Air Force requested that the SAB advise the Air Force on science and technology that would provide the air and space superiority for the United States for the 21st century. Termed *New World Vistas* (1995), the study encouraged "free thinking" from universities and the commercial sector, then addressed how the Air Force would apply the resulting concepts and technology. When compared to the Air Force's *2025* study, *New World Vistas* was more near-term and technologically feasible while the former was more visionary. Of particular value to AMC were the following observations:

- There will be a mix of inhabited and uninhabited aircraft
- We must extend airlift capabilities
- The future force will become efficient and effective through the use of information systems to enhance US operations and to confound the enemy
- Space and space systems will become synonymous with effective operations
- Sensors and information sources will be widely distributed
- Affordability restrictions demand caution at this point
- The operational components of the Air Force must plan together, function together, command and be commanded, exchange information, and assess results collegially with each other, other services, and allies.
- Planning and directing must be done in parallel rather than in series.
- We must be prepared to change requirements and operating procedures to agree with commercial practices if we are to make efficient use of commercial technology.

- Uninhabited combat aircraft (UCA) would, by the elimination of the human cockpit, reduce the radar cross section. The possibility of an UCA performing in the hypersonic range would enable strikes from the CONUS to high value targets within minutes. Small UCAs could be carried aboard and launched from large airlifters to provide intercontinental standoff capability. As an aside, launches of combat aircraft had been envisioned and tested from airships in the 1920s.
- One of the intrinsic capabilities highlighted for study was the ability to transport and supply armies from the CONUS to all parts of the world.
- The study recognized that there would not be enough airlift capability in the future if the current generation of military airlifters were simply provided evolutionary upgrades. The study regarded the current generation of military and commercial transport aircraft as only useful for the next 30 years. The future airlifter should possess a takeoff gross weight of 1,000,000 pounds, an efficiency of 1.3 to 1.5 times current aircraft, a cargo delivery of 150,000 pounds, a range of 12,000 nautical miles, and the capability of precision airdrop as a routine delivery mode. Such ranges would eliminate the logistics intensive air refueling. The Air Force would be limited by logistical considerations. Rapid tempo of operations would require rapid resupply.
- A "point of use" delivery system that delivered cargo directly to the user would reverse the ratio between ground time awaiting shipment and air time and eliminate the need for many K -loaders, warehouses, handling equipment, and airports. Point of Use delivery relied on the concept of precision airdrop as a routine delivery system.
- It was unlikely that the speed of ships, trucks, or aircraft would increase significantly during the next 30 years. While it was possible to increase the size of the vehicles by 50 and even a 100 percent, the cost per unit delivered would not decrease by as much. Technologies should be sought, which would reduce the en route times. Wing and engine research indicate promise of great improvements in aircraft efficiencies.
- Accompanied by airlifters carrying UCAs and directed energy weapons for self defense, the airlifter will be a survivable offensive weapon system in high threat areas.

The Air Mobility Warfare Center hosted the Future Operating Environment Symposium (FOES) to assist in developing a plausible picture of future operations in order to prepare Global Reach forces for the 21st century. Information obtained from FOES is sysnthesized and used tin developing AMWC curriculum and Air Mobility Doctrine.

These applications and concepts may not be achieved in the next quarter century, but clearly, the visionary use of future technologies and concepts coupled with prudent use of commercial off-the-shelf systems will be keys for continued air mobility success in the 21st century and beyond.

Section Two
OPERATIONS

"Establish a fully integrated, efficient, effective and customer-focused DTS with continuous quality improvement....."

USTRANSCOM Strategic Guidance

INTRODUCTION

This section begins with an overview of AMC's global operations and intense operations tempo. Air mobility organization and the roles and responsibilities of key players are then discussed. The focus is on each organization's contribution and how it supports global reach. Global air mobility is further explained by examining how peacetime and contingency missions are planned, scheduled, and executed. The emphasis of this section is on "how" we do our business, expanding on "what" air mobility is as discussed in Section One. Section Two concludes with an explanation of AMC's current and future operational standards and the steps necessary to achieve them.

AMC'S GLOBAL OPERATIONS

The entire globe is Air Mobility Command's area of responsibility. During calendar year 1995, the men and women of the command flew into all but seven nations of the world. Command aircraft during the year flew over 72,000 missions and delivered over 1.8 million passengers and 720,000 short tons of cargo. Tankers offloaded 137 million gallons of fuel. Even on a slow day, AMC personnel can anticipate flying between 175 and 200 airlift and air refueling missions.

In recent years, AMC airlifters and tankers have been called upon to perform their combat mission to project power and to display national resolve. Examples include transport aircraft loaded with troops en route to Haiti when the invasion was called off. In Operation SOUTHERN WATCH, airlift and air refueling helped impose a no-fly zone over southern Iraq. For Operation VIGILANT SENTINEL, which augmented SOUTHERN WATCH, air mobility ensured a timely response to political turmoil in Iraq and the potential of Iraqi military aggression against the states of Southwest Asia.

The command has supported implementation of many varied national objectives. In support of arms limitations, for example, air mobility aircraft have airlifted nuclear inspectors in compliance with the Strategic Arms Reduction Treaty. Transport and tanker aircraft have flown in support of the campaign to stop illegal drug trafficking.

Efforts to build bridges to the former Soviet Bloc have been supported by Air Mobility Command. Through an on-going program called PROVIDE HOPE, AMC airlifts humanitarian cargo to the former Soviet republics. In COOPERATIVE NUGGET, the command transported representative army units from 14 nations of the former Soviet Union and Warsaw Pact to the United States for an exercise with US forces; the exercise was part of the Partnership for Peace program designed for nations of the former Soviet Bloc seeking closer ties with NATO. During PEACE SHIELD '95, AMC airlifted American soldiers to the Ukraine for a joint exercise with Ukrainian troops. In an exercise of US and Russian troops in the United States called PEACEKEEPER '95, Russian and AMC mobility aircrews conducted joint maneuvers.

AMC flies humanitarian missions virtually every day of the year. An airlift of relief supplies to Bosnia known as PROVIDE PROMISE surpassed the Berlin Airlift as the longest sustained humanitarian airlift, while at home, command aircraft brought medical supplies, equipment, and investigators to Oklahoma after a terrorist bomb destroyed a federal office building in Oklahoma City. Humanitarian missions have also evacuated noncombatants as well as seriously ill or injured patients. In Operation ASSURED RESPONSE, foreign nationals were extricated from Liberia as factional fighting produced anarchy. Emergency medical evacuations involved people from all stations in life, from an ill President of Fiji, to shark-attack victims, to children who ingested poison. Additional recent operations which show the scope of AMC's global reach mission include:

PROVIDE COMFORT	Relief to Kurds and no-fly zone in northern Iraq.
DENY FLIGHT	No-fly zone over Bosnia.
SAFE HAVEN	Support move of Cuban refugees to Panama.
PROJECT SAPPHIRE	Airlift weapons grade uranium from Kazakstan to the United States for safekeeping.
VIGILANT WARRIOR	Augment Southern Watch forces to defend Kuwait in response to Iraqi troop movements.
UNITED SHIELD	Support redeployment of last UN forces from Somalia.
SAFE PASSAGE	Repatriate Cuban refugees in Panama.
SAFE BORDER	Support peacekeeping mission following a border dispute between Peru and Ecuador.
CARIBBEAN EXPRESS	Relief to U.S. Virgin Islands following Hurricane Marilyn.
JOINT ENDEAVOR	Deployment and support of NATO forces in Bosnia.
ASSURED RESPONSE	Noncombatant evacuation (NEO) operation of Americans and others from Monrovia, Liberia, following the civil war.
DECISIVE ENDEAVOR	UN peace implementation effort in Croatia.

While the command flew real world operations on a daily basis, its members constantly flew training missions, practicing for both conventional warfare and the execution of the Single Integrated Operation Plan (SIOP). During 1995 and 1996, the command participated in over 113 JCS exercises, including air refueling support for B-1 and B-52 intercontinental bombing exercises and multinational and joint exercises with former Warsaw Pact nations.

OPERATIONS-RELATED GOALS & OBJECTIVES

GOAL 1:
Champion, field, and operate world-class air mobility for our customers

1.2 Operate an air mobility system which delivers patient, passenger, cargo, and air refueling services which exceed customer expectations.
  - 1.2.1 Optimize use of the air mobility system. .... DOT, FY01, pg 2-8
  - 1.2.2 Maximize successful mission performance in degraded operating environments. .... DOT, FY06, pg 2-19

1.3 Provide an air mobility fleet and support equipment capable of meeting customer requirements across the spectrum of operations.
  - 1.3.2 Reduce the air mobility footprint necessary for deployed operations............................ .... DOO, FY03, pg 2-8

1.4 Provide a responsive air mobility C4 system.
  - 1.4.5 Integrate information warfare into all aspects of command operations. .... DOO, FY02, pg 2-9

ORGANIZATION, ROLES, AND RESPONSIBILITIES

UNITED STATES TRANSPORTATION COMMAND (USTRANSCOM)

USTRANSCOM is one of nine unified commands in the United States military structure. Established in 1987 to manage transportation in wartime, USTRANSCOM took on increased responsibilities when, in February of 1992, it was designated as the single manager for air, land, and sea transportation for the Department of Defense (DoD), both in time of peace and time of war. As a functional unified command, USTRANSCOM has global responsibility to support combatant commanders' requests for intertheater lift. These movement requirements are established as Time-Phased Force Deployment Data (TPFDD) which is a listing of the supported CINC's needs. This TPFDD is sent to supporting commanders via the Global Command and Control System (GCCS). Each CINC reviews this data base, validates requests, and establishes or revises detailed transportation requirements.

USTRANSCOM's service components--Military Traffic Management Command (MTMC), Military Sealift Command (MSC), and Air Mobility Command (AMC)--employ USTRANSCOM forces to satisfy DoD's worldwide transportation needs. USTRANSCOM integrates all transportation resources while its three components execute the missions. MTMC, the land component, orchestrates movement of equipment, vehicles, weapons systems, supplies, ammunition, and troops to their area of operation. It uses surface transportation assets to accomplish its mission. To enhance its future operations, MTMC is pursuing the single port management concept, similar to the Tanker Airlift Control Element (TALCE) employed by AMC. The sea component of USTRANSCOM, MSC, provides ocean transportation for DoD cargo supporting US forces around the world. Using more than 145 ships organized in four major area commands, MSC fulfills over 90 percent of DoD's total transportation requirements during both peace and war.

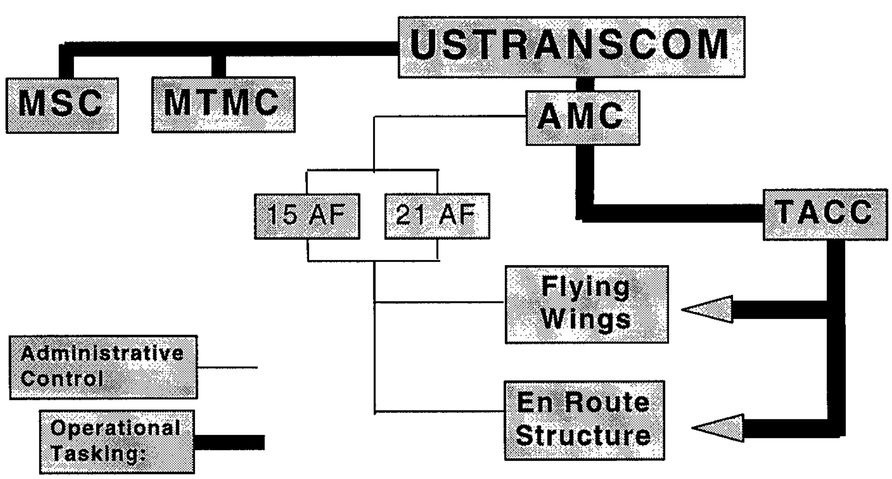


Figure 2-1. USTRANSCOM Structure

AIR MOBILITY COMMAND (AMC)

USTRANSCOM's air component, AMC, employs its tanker and airlift assets to meet the fast-paced requirements expected of the Defense Transportation System (DTS). When USTRANSCOM receives transportation requests from another unified command or the NCA, it first determines the appropriate transportation mode. If it must go by air, USTRANSCOM's Mobility Command Center (MCC) relays requirements to the AMC Tanker Airlift Control Center (TACC).

NUMBERED AIR FORCE (NAF)

As an Air Force major command, AMC trains, organizes, and provides operationally ready forces to the unified commanders. The NAFs play a vital role in AMC's overall ability to accomplish this important service function. Both 15th and 21st Air Force aid AMC in unit evaluation, assessment, communication, customer service, and force management. The NAFs help focus their units on readiness and performance. As liaisons, the NAFs voice the concerns of their units, reporting information vital to continuous improvement and support of customers. In an advocacy role, the NAFs reinforce the command's goals, acting as a conduit to transmit command policy, guidelines, and instructions. By training and evaluating their units to established standards, both 15th and 21st Air Force ensure that AMC organic forces--active and ARC--are ready to perform their assigned missions.

TANKER AIRLIFT CONTROL CENTER (TACC)

Air mobility command and control is based on the principle of centralized control and decentralized execution as described below. The TACC is AMC's primary command and control agency. It is the central planning, scheduling, tasking, and execution agency for all operations involving AMC. Structured to respond effectively to routine and contingency operations, the TACC provides the AMC Commander with the flexibility to quickly respond to time-sensitive deployment, employment, sustainment, and redeployment efforts of United States forces, coalition units, and civilian agencies.

Contingency, exercise, and wartime operations require increased attention and timely reaction to air mobility movement requirements. The TACC, along with HQ AMC's Crisis Action Team (CAT), are the key components of the command's air mobility team. The CAT provides the AMC Commander with a corporate approach to time-sensitive operations being planned and executed by the TACC. Augmentation of the TACC by the AMC staff provides the functional expertise needed to develop a workable concept of operations. Actual composition of the CAT and augmentation required by the TACC vary depending on the type and tempo of air mobility operations.

This air mobility team concept allows the TACC to develop the initial AMC response to any contingency with inputs from the staff functional experts who assist in plan development and resolve roadblocks to plan execution. With a plan approved by the AMC Commander, the TACC initiates execution and directs it until completion.

The TACC is the single link between customers and operational units, and its 700 professionals execute more than 1,000 air mobility missions in over 40 countries weekly. The TACC's efficiency depends on its major divisions:

- Operations Management: The TACC's customer service experts, "range riders," are available to respond to real-time problems identified by users and aircrews throughout the AMC system.

- Current Operations: Plans, schedules, and assigns missions to units up until 24 hours of launch. Supports worldwide air mobility requirements for the movement of all DoD and non-DoD cargo and passengers.

- Global Readiness: Integrates global reach--airlift, tanker, and mission support forces through the use of total force assets in response to directives and taskings from the National Command Authority. Projects these mobility forces to achieve national goals and objectives in support of wartime needs, contingencies, exercises, and humanitarian efforts. Responsible for sourcing and tasking all theater augmentation and mission support forces as AMC's single source tasking agency.

- Command and Control (C2): The largest division in the TACC, it concentrates on mission execution 24 hours prior to launch until mission completion. Provides diplomatic clearance, flight planning, and Global Decision Support System (GDSS) training support.

- Directors of Operations: An integral part of C2, these colonels are the direct representatives of the AMC commander and are the immediate supervision to active mobility operations worldwide. They work daily with Unified Commands to facilitate the timely, efficient, and effective use of both Air Force and contracted mobility assets in response to scheduled, contingency, and short-notice requirements. All taskings, however, go through TRANSCOM.

- Weather: Manages operational weather support for AMC operations. They keep AMC and TACC decision makers aware of conditions that could impact AMC operations worldwide.

- Aerial Port Operations: Directs global aerial port activities, including airlift scheduling, personnel management, and MHE requirements. Monitors port backlogs and shippers' requirements to effectively manage channel airlift flow. Provides transportation support for all mobility missions. Provides decision makers with visibility over cargo and passenger movements from Aerial Port Of Embarkation (APOE) to Aerial Port Of Debarkation (APOD).

- Logistics Operations: Assigned to the AMC/LG structure, this unit is collocated with the TACC and provides logistics command and control for operating missions. It is the focal point for recovery of broken aircraft away from home station as well as the command's single manager for the sizing, sourcing, tasking, and sustainment of deployable logisitics resources.

- Communications and Computers: Also an organization matrixed to the TACC, the Communications and Computer unit reports to the AMC/SC. They manage TACC communications, computer systems, and visual information documentation. They identify, track, and resolve system deficiencies while managing system compliance by functional users. They also provide direct communications and computer support for AMC deployed forces, including assignment of contingency communication frequencies.

In order to effect successful air mobility operations, the TACC must respond quickly to the needs of the multiple users of the DTS. The TACC tasks operational air mobility units to execute the missions to meet peacetime and contingency requirements.

WINGS

AMC wings consist of airlift, tanker, or combination of resources and are called core wings. These are in both the active and ARC forces located throughout the CONUS. The number of core wings include 10 active duty, 14 Reserve, and 20 Air National Guard.

A maturing concept within Air Mobility Command is that of the Air Mobility Wing (AMW). There are two active duty and three Reserve AMWs located at Travis AFB CA; McGuire AFB NJ; and March AFB CA. Integrating tankers and airlifters into a single unit provides maximum flexibility and responsiveness. These AMWs bring together diverse airlift and air refueling expertise which results in enhanced mobility.

AMC wings have recently been tasked to provide theater airlift augmentation by providing additional personnel to the Air Mobility Operations Groups (AMOGs).

EN ROUTE SYSTEM (ERS)

Large-scale air mobility operations require a system of support forces in place to ensure aircraft are maintained, crews are rested, and passengers and cargo are properly handled. The ERS is a global network of manpower, materiel, and facilities that provides command and control, logistics, and aerial port services to air mobility forces performing USTRANSCOM worldwide missions. These elements are essential for ensuring smooth, continuous operations of air mobility forces. The ERS is the conduit for DoD's rapid global power projection capability.

Currently, 14 key locations serve as permanent waypoints to efficiently move aircraft and aircrews through the air transportation system. An additional 18 locations support AMC through service contract operations. Each location is sized to support only peacetime activities. During contingency operations or other times of increased ops tempo, AMC must augment the permanent locations' capability with additional manpower and/or equipment. When operations must transit or terminate at locations where little or no support capability exists, a deployable en route support structure is used to fill the gap, and is referred to as Global Reach Laydown (GRL). Under this strategy, additional forces and assets are positioned at appropriate locations deemed essential for expanded air mobility operations. These deployed mission support forces establish aerial port operations and replicate the capability that en route Air Mobility Support Squadrons (AMSSs) normally provide.

AIR MOBILITY OPERATIONS GROUPS (AMOG)

Objective 1.3.2 *Reduce the air mobility footprint necessary for deployed operations.* DOO, FY03

Air mobility is a system, and the Air Mobility Operations Groups (AMOGs) are vital cogs in that system. AMOGs are aligned under each NAF at McGuire AFB and Travis AFB. The AMOG coordinates the deployment of resources from its in-garrison units, with possible augmentation from other active duty resources or ARC organizations. Four squadrons comprise the AMOG; three will carry the designation of Global Reach Squadrons (GRS). Two GRSs can support two locations requiring a Tanker Airlift Control Element (TALCE) and one requiring a Mission Support Team (MST). The third squadron has manpower sufficient to create one TALCE and three MSTs. The fourth squadron, the Air Mobility Operations Squadron (AMOS), provides the core personnel to man the Air Mobility Element (AME). The AME is a deployed extension of the TACC. The AME's mission is to coordinate the interface between the strategic air mobility system and the theater air logistics system.

The TACC tasks the AMOGs to provide C2, aerial port, logistics, combat camera, C4I, civil engineering, security, weather, intelligence, and other assets needed to meet mission support requirements. The AMOGs are the heart of the GRL concept and are key to expanding the fixed en route system.

The TACC, in conjunction with the AMC staff and mobility units, tailors GRL packages to the requirements of each specific en route location. The TACC tasks the AMOG to lay down an optimized en route structure within the first 3 to 5 days of a contingency. In addition, TALOs deploy to support the link with Army users and drop zone operations, and appropriate tanker units deploy to form a Tanker Task Force (TTF) to establish an air bridge. Some of these organizations may require augmentation by personnel and/or equipment from throughout AMC.

The AME communicates and coordinates with the TACC for airspace management, diplomatic clearances, logistics requirements, flow control, and any "show stoppers." The AME also monitors and coordinates air refueling missions with the TACC and TTFs. The end result is an effective contingency ERS established where none previously existed, specifically tailored to the mobility needs of the contingency.

Objective 1.2.1 *Optimize use of the air mobility system.* DOT, FY01

COMMAND RELATIONSHIPS

Formulating sound and comprehensive command relationships early in a contingency is vital to the success of military operations. In recent years, United States Armed Forces have participated in an impressive and unprecedented number of contingencies and humanitarian operations around the world. In almost every case, AMC forces have been required during the earliest stages of the operation. Without exception, command relationships became an issue of significant interest. Public law and joint doctrine create a sometimes complex and often dynamic framework for establishing appropriate lines of authority. Despite this, planners should strive to develop lines of command and coordination that are simple, clear, and understood by all force participants.

As the air component to United States Transportation Command, Air Mobility Command forces are assigned under the combatant command (COCOM) of USCINCTRANS. When deployed, AMC airlift forces normally do not change operational control (CHOP) to the supported command but remain under the operational control (OPCON) of AMC/CC. This differs from AMC air refueling forces deployed in direct support of the supported CINC's aerial employment operations, which typically do CHOP. Due to the global nature of AMC's strategic responsibilities, it is vital that USTRANSCOM and AMC retain the necessary authority to employ finite air mobility forces in accordance with established priorities of the Defense Transportation System, in accordance with joint doctrine.

Objective 1.4.5	
Integrate information warfare into all aspects of command operations.	DOO, FY02

COMMAND AND CONTROL (C2) INFORMATION REQUIREMENTS

To be responsive to the airlift requirements of today, AMC Commanders need the situational awareness to command and the communication to control our forces commensurate with AMC's global responsibilities. This process of Command and Control proceeds through three key phases of functionality: planning, scheduling, and execution.

- Planning identifies and assesses air mobility needs, develops strategies to satisfy these needs, and publishes the plans. Planning may be long-term Deliberate Planning or near-term Execution Planning.

- Scheduling identifies specific resources needed to fulfill a specific plan or mission, and develops a timetable of activities. Scheduling develops the Concept of Operations, the Global Reach Laydown package, macro airlift schedules, and individual airlift mission itineraries.

- Execution implements previously developed plans and schedules. Commanders monitor execution to control the initiation, redirection, and support of scheduled mission events.

Current AMC planning and scheduling is achieved through the use of two separate systems: the AMC Deployment Analysis System (ADANS) and the Combined Mating and Ranging Planning System (CMARPS). ADANS provides automated tools for long-term Deliberate Planning and near-term channel, Special Assigned Airlift Missions (SAAMs), exercise, and contingency/crisis missions. CMARPS allocates and schedules tanker assets to satisfy air refueling requirements. It optimizes tanker asset allocation to support the deployment and employment of over 35 types of Air Force, Navy, and Marine Corps aircraft. In the future, the functionality of ADANS and the functionality of CMARPS will be combined into a new system called Consolidated Air Mobility Planning System (CAMPS), which will provide AMC with a single system for the planning and scheduling of AMC assets in support of peacetime, crisis, contingency, and wartime operations.

Mission execution is accomplished by units dispersed throughout the world. This execution is centrally controlled by the Tanker Airlift Control Center (TACC) through the use of the Global Decision Support System (GDSS) and the Command and Control Information Processing System (C2IPS). GDSS provides TACC decision makers with the global C2 situational awareness needed to initiate, redirect, and support mobility missions.

Monitoring execution is a highly complicated process requiring vast amounts of data from sources widely dispersed throughout the world. C2IPS is the wing level interface for this data. Wing or en route agencies extract arrival and departure schedules from C2IPS. Aircraft crews receive mission planning data through mission itineraries in C2IPS. Wing and en route controllers input key event completion times into C2IPS. Through this medium, data is collected and communicated to the decision makers at all echelons of command. To make the data useful, automation is used to collect, sort, and prioritize data into C2 information.

The need for automation is increasing. Aircraft reliability and maintainability problems, aircraft retirements, and the high cost associated with acquiring new aircraft mean that we expect fewer assets will be available to accomplish an expanding mission. As this occurs, the change from a substantial overseas fixed base structure to a CONUS-based deployable structure means that our C2 capabilities must also be highly mobile. AMC must be prepared to move en route support on short notice, anywhere in the world. Command and control (C2) automation is allowing AMC to more efficiently allocate air mobility assets, to increase the utility of our assets, and to decrease our overseas support infrastructure for these assets. However, with this automation, C2 personnel must have many basic and advanced computer skills to perform their day-to-day duties. To maximize their efficiency, new computer systems must be interoperable, user-friendly, mobile, and adaptable to new technologies.

OPERATIONS ACROSS THE SPECTRUM OF CONFLICT

Air mobility is absolutely essential across the spectrum of conflict. In fact, air mobility has been increasing dramatically in importance since the end of the Cold War because of its key role in Operations Other Than War (OOTW). These operations include peacekeeping, peacemaking, peace enforcement, humanitarian and disaster assistance, counterdrug activities, security assistance, counterinsurgency, and assistance to domestic authorities, among others.

In Section One, we describe the range of operations that air mobility provides the NCA. A variety of airlift and air refueling tasks has helped make air mobility the first weapon of choice during peace and war. These tasks include cargo and passenger airlift; airdrop of troops, supplies, and equipment; aeromedical evacuation (AE); support for special operations, air refueling, and the Single Integrated Operation Plan (SIOP). Section Two contains expanded descriptions of these airlift and air refueling tasks.

PEACETIME OPERATIONS

Air mobility taskings during peacetime are a streamlined yet thorough process designed for maximum customer satisfaction. Requests flow from the user, to USTRANSCOM, and then to AMC. As previously discussed, the TACC works the mission from that point until completion. No matter what type of mission it is, the following sequence of events occur:

- USTRANSCOM validated requirements are identified to AMC via the TACC.
- Missions are routed to the appropriate TACC planning cell (channel, Joint Airborne/Air Transportability Training (JA/ATT), Coronet, etc.).
- Validated and prioritized requirements are scheduled by strategic airlift directors, also called "barrel masters," who then task individual wings. Missions are scheduled based on priority, sensitivity, and urgency.
- The missions are then executed and directed by the TACC until completion. Missions are sometimes changed during execution to respond to unforeseen taskings such as aeromedical evacuation, state department requests, etc. These are identified as "in-system selects."

In the event of tanker SIOP taskings, US Strategic Command (USSTRATCOM) tasks the air refueling wings and TACC simultaneously, bypassing USTRANSCOM. USSTRATCOM either continues tasking individual wings directly, or it directs the TACC to schedule and execute SIOP missions under USSTRATCOM's guidance. With the advent of the USTC/MCC, this could very well change. The MCC will have its own Emergency Action (EA) function and will no doubt have visibility over the SIOP taskings.

The exception to this flow is for Special Air Missions (SAM)s, where requests flow from the user to HQ USAF/CVAM (SAM scheduling), then to the 89th Airlift Wing. More specialized procedures for each mobility mission type are described below:

Airlift and Air Refueling

- Exercises: CJCS sponsored exercises are conducted year round to maintain the fighting edge of American forces and involve both airlift and air refueling aircraft. These are centrally scheduled in the TACC following planning conferences attended by all players and sponsored by the supported CINC.

- Training: Missions for aircrew proficiency and upgrade training are scheduled by the individual wings based upon an allotment of aircraft and flying time from AMC.

- Air Expeditionary Force (AEF): A force designed to provide CINCs with wide-ranging airpower options which meet specific theater needs and are capable of spanning the spectrum of military response options from humanitarian relief to actual combat. This force includes not only airlift and tankers but also fighters, bombers, special operations, and other assets as required.

Airlift

- Channel service: A channel is a regularly scheduled mission over a fixed route with capacity available to all customers. Either organic (military) or civilian aircraft are used. Most intertheater sustainment missions fall in this category. The two types of channel service, requirements-based and frequency-based, are validated through the appropriate service organization to USTRANSCOM and ultimately to the TACC. A schedule is then published monthly for both passenger and cargo movement. Because requirements invariably exceed capacity, a priority system is used to allocate resources.

- Aeromedical Evacuation (AE): All AMC aircraft maintain some capability to support AE. Air mobility aircraft provide timely airlift of seriously ill or injured military personnel, military family members, and other DoD patients to medical treatment centers worldwide. The Global Patient Movement Requirement Center (GPMRC) at USTRANSCOM validates and coordinates patient movement requests from military hospitals and clinics. Movement precedence is then classified as either urgent (ASAP), priority (move within 24 hours), or routine (72 hour move). Using either established aeromedical evacuation missions, special launches, or opportune missions, patients are picked up and delivered to military treatment facilities (MTFs).

- Special Assignment Airlift Missions (SAAMS): These missions provide airlift to satisfy unique customer requirements that, due to constraints of time, geographic location, and /or type of cargo, preclude the use of surface transport or established airlift channel service. Mission requirements are validated to USTC/MCC which in turn tasks AMC to plan and execute. The same priority system used for channel missions applies to SAAMs.

- Operational Support Airlift (OSA): On 1 Oct 96, USTRANSCOM assumed all scheduling and execution responsibilities for these missions. The Joint Operational Support Airlift Center (JOSAC) TCJ3-OJ, performs these functions while all the services validate the OSA mission requests.

- Joint Airborne/Air Transportability Training (JA/ATT): This is a CJCS-directed, AMC-managed program to provide basic airborne and proficiency/continuation training for airdrop, assault airland, aircraft static loading, and air refueling conducted in a joint environment. Monthly JA/ATT conferences conducted by AMC are attended by both customer and air mobility wing representatives. Users establish their requirements for airlift which are supported based on their training priority. Wing representatives then "buy" missions and identify additional support needed.

Air Refueling

The TACC also centrally manages air refueling missions for tankers assigned to AMC. Each quarter the TACC hosts a "horse blanket" air refueling scheduling conference. Here schedulers from air refueling units and customers such as Air Combat Command (ACC) meet to match available sorties with requests. Flexibility is built into the system by implementing a priority system outlined in AFI 11-221. The following types of air refueling missions are included in this quarterly schedule:

- Recurring Receiver Air Refueling Training: These missions fill the major portion of the schedule and support schoolhouse, currency, and proficiency needs of the receiver community.

- Coronets: Deploying combat units overseas is a crucial requirement of CONUS-based power projection. Requests are prioritized using a similar system as airlift requests.

- Tanker Task Force (TTF): TTFs form in response to peacetime or contingency activities when concentrated air refueling support is critical to the mission and an established tanker presence does not exist. Examples are: fighter deployments, air mobility operations, intercontinental bomber operations, or training and exercise requirements.

- Business Effort: When air refueling support is needed for a short time to support a specific unit's air refueling requirements, a Business Effort is scheduled. Normally a tanker and one crew is deployed for a week.

Contingency operations are tasked in a similar manner, frequently combining several of the above processes.

CONTINGENCY OPERATIONS

Operations UPHOLD DEMOCRACY (Haiti), SUPPORT HOPE (Rwanda), and JOINT ENDEAVOR (Bosnia) demonstrate how the previously outlined mobility concepts, organizations, and tasks integrate into the total mobility system.

UPHOLD DEMOCRACY

In Operation UPHOLD DEMOCRACY, Air Mobility Command supported US objectives of fostering democratic institutions and reducing the flow of illegal immigrants to the United States. Despite the pledges of a military-backed regime in Haiti to return power to the democratically elected government it had ousted, the regime did not relinquish authority but became increasingly repressive and presided over a deteriorating economy. As the result of deteriorating conditions, tens of thousands of impoverished Haitians fled the country, many attempting to enter the United States. In September 1994, the United States responded with Operation UPHOLD DEMOCRACY, the movement of forces to Haiti to support the return of Haitian democracy. In preparation for this contingency, the Air Mobility Command simultaneously planned for an invasion and for the peaceful entry of forces into Haiti. The command executed portions of both scenarios. For the invasion, an airdrop was planned involving 3,900 paratroopers. Most of this force was airborne when Haitian officials agreed to a peaceful transition of government and permissive entry of American forces. The US peace negotiation team, led by former President Jimmy Carter, had been transported to Haiti by an AMC passenger plane. Following the agreement, the command switched strategies and began airland operations to deploy ground forces. Through March 1995, when the United States transferred the peacekeeping responsibilities to United Nations functions, strategic and tactical airlifters flew 1,779 missions carrying 51,000 passengers and 22,600 short tons of cargo. AMC contract civil carriers flew 74 passenger missions, moving 19,330 US troops to Port-au-Prince and Roosevelt Roads. Seven civil air cargo missions moved 126 pallets to Port-au-Prince and three cargo missions delivered ballots for the Haitian national election. Two additional missions moved the outgoing head of state, his family, and household staff to Panama and Miami. UPHOLD DEMOCRACY succeeded both in restoring the democratically elected government of Haiti and in stemming emigration.

UPHOLD DEMOCRACY was an example of a "near-shore" operation that had many aspects of an intercontinental contingency. Air refueling was used extensively for reconnaissance and combat air patrol missions, with 297 sorties and 1,129 flying hours logged by KC-135 and KC-10 tankers. To transport personnel and materiel from the continental United States to the Caribbean basin, strategic airlift relied on three stage bases close to onload locations: C-5s staged at Dover AFB, Delaware, primarily, and also at Griffiss AFB, New York, while C-141s staged at McGuire AFB, New Jersey. In Haiti, Port-au-Prince was the destination of the strategic airlifters. Airfield conditions at another offload site, Cap Haitien, precluded its use by C-5s and C-141s. C-5s and C-141s delivered troops and cargo to Roosevelt Roads, Puerto Rico, where the personnel and supplies were transloaded to C-130s for movement to Cap Haitien and other Haitian locations. The international aspect of UPHOLD DEMOCRACY was evident at Roosevelt

Roads, since strategic airlifters transported forces to Roosevelt Roads from Bangladesh and Nepal, who were subsequently airlifted to Haiti. An Air Mobility Element (AME) and Director of Mobility Forces (DIRMOBFOR) deployed to Pope AFB, North Carolina, the principal launch site for the air invasion of Haiti. They were incorporated into the Air Operations Center. The DIRMOBFOR with a support staff then moved to Port-au-Prince soon after the arrival of the first American forces in Haiti. At various points during the operation, Tanker Airlift Control Elements were established at Cap Haitien and Port-au-Prince, Haiti; Roosevelt Roads and Boringquen, Puerto Rico; and Homestead and MacDill AFBs, NAS Cecil Field, and Opa Locka, Florida. AMC contract civil air carriers flew 78 missions, returning 17,914 US troops to their duty stations.

UPHOLD DEMOCRACY was a true total force operation. Air Force Reserve (AFRES) forces flew 112 sorties and 348.5 hours by the end of FY94. The National Guard (NGB) responded by involving 1,250 Army and Air Guard volunteers, including 22 combat communications specialists.

SUPPORT HOPE

Ethnic hatred intensified in Rwanda in 1994 leading to mass slaughter and the subsequent flight of two million Rwandans who settled in refugee camps in several central African locations. With over one million refugees, the camp at Goma, Zaire, was the largest. Conditions in the camps were appalling with starvation and disease exacting a tremendous toll. By July 1994, 3,000 refugees a day died at Goma. The United States spearheaded a humanitarian operation to stop the dying called Operation SUPPORT HOPE. Mobility operations from July through September 1994 consisted of 871 missions to carry 8,100 passengers and 16,200 short tons of cargo. The success of SUPPORT HOPE could be measured quantitatively: within the first month of the operation, the death rate in Goma fell below 500 per day, and the rate continued to diminish.

Tanker air bridges proved critical to getting relief supplies to the refugees. Due to the danger of epidemics spread by contaminated water, the immediate deployment of a water purification system was essential. A C-5, carrying an outsize load consisting of a portable water supply system made up of water purification units and fire trucks used to pump water flew non-stop from Travis AFB, California, to Goma in 22 hours. The 10,000-mile mission was made possible by three air refuelings. Most missions to central Africa flew via Europe. CONUS-based missions transiting the Atlantic for Moron AB, Spain, or Rhein Main AB, Germany, were air refueled as necessary. Flights from these bases were refueled over the Mediterranean to overcome the lack of fuel on the ground in central Africa. Delays preventing landing at Goma increased fuel consumption by aircraft aloft, necessitating establishment of a refueling orbit in the region, which was covered by KC-10s based at Harare, Zimbabwe. Because of the low fuel supply at Entebbe, the KC-10s also offloaded fuel into storage tanks there for use by US European Command C-130s. After delivering cargo and personnel in Zaire, Rwanda, or Uganda, airlifters proceeded to Mombasa, Kenya, to stage before returning to Europe. The DIRMOBFOR was located at Entebbe, Uganda, while TALCEs were established at Entebbe; Mombasa and Nairobi, Kenya; Goma, Zaire; Harare, Zimbabwe; Addis Ababa, Ethiopia; and Kigali, Rwanda.

AFRES provided 18 medical personnel and various airlift units flew medical supplies and equipment and food into Rwanda. In less than 72 hours from notification, NGB volunteers from four states deployed a 160 person provisional squadron with 6 aircraft to Mombasa, Kenya. They flew 414 sorties and delivered 2,000 tons of relief supplies.

JOINT ENDEAVOR

Following a surge of violence in the three-year conflict in Bosnia-Herzegovina among ethnic groups, international pressure on the warring factions led to the Dayton Peace Accords in 1995. Beginning in December 1995, the United States and allied nations deployed peacekeeping forces to Bosnia and neighboring states of the former Yugoslavia in Operation JOINT ENDEAVOR to implement the peace settlement. As of the end of May 1996, intertheater airlift consisted of 444 missions, which carried nearly 13,000 personnel and over 13,500 short tons of cargo. Commercial aircraft played an important part in this intertheater move, flying 42 passenger missions and transporting over a third of the passengers delivered. As of July 1996, AMC contract civil air carriers flew nearly 150 cargo charter missions in support of the operation. The intratheater shuttle involved 4,025 sorties, carrying over 20,000 passengers and 42,000 short tons of cargo.

These statistics reflect the presence of the C-17, which was systematically employed in a major contingency for the first time. The numbers demonstrate the ability of the C-17 to carry large payloads into small airfields: the limited airfield at Tuzla, was the major port of debarkation in Bosnia-Herzegovina. During the first critical month of operations, the C-17 flew slightly more than 20 percent of the missions into Tuzla but delivered over 50 percent of the cargo. The aircraft provided the only means to airlift outsize cargo into some of the remote locations in Southeastern Europe and carried such cargo as the M-2 Bradley fighting vehicle and the M-109 self-propelled 155mm Paladin howitzer. The C-17 also provided the critical link necessary for the main American ground force to move into Bosnia. Flooding on the Sava River prevented the Army from completing the pontoon bridge that would span the route needed to move 20,000 troops from the north. The components necessary to complete the bridge could not be transported expeditiously over land or water routes, but could be quickly lifted by C-17s. Only 3 C-17s were needed to pick up 25 bridge sections and the flatbed trailers that would carry the sections once the aircraft landed. The C-17s delivered the cargo to Taszar, Hungary, where the parts were immediately driven to the bridge site and installed, permitting the movement of the troops.

AMC personnel deployed to seven European countries during this contingency. Strategic airlift aircraft departing the CONUS that would not arrive at their European destinations during the crew duty day flew from on-load stations to stage bases: Dover AFB, Delaware, for C-5s; McGuire AFB, New Jersey, for C-141s and KC-10s; and Charleston AFB, South Carolina, for C-17s. Air refueling permitted air bridge operations over the Atlantic, with fuel supplied by aircraft from the Northeast Tanker Task Force or European Tanker Task Force. The primary offload location was Rhein Main AB, Germany, which was the hub for intratheater airlift and a stage base. Ramstein AB, Germany, primarily used for C-130 missions down range, also became a destination for flights from the CONUS and eventually took over hub responsibilities from Rhein Main.

Some intertheater missions flew direct to Italy and Eastern Europe. Strategic aircraft joined C-130s to fly shuttle missions from Germany: C-17s and C-141s carried cargo and personnel to locations in Italy, Hungary, and states of the former Yugoslavia, Tuzla being the hub for American operations in Bosnia. (Eventually, some C-5s flew into Tazsar, Hungary.) The Director of Mobility Forces (DIRMOBFOR) deployed to Vecenza, Italy, where he became the defacto single manager for theater airlift. The AME; NATO's Regional Air Movement Coordination Center, for which the DIRMOBFOR was dual-hatted as commander; and the Airlift Coordination Cell function were collocated and essentially integrated into one organization, serving as the DIRMOBFOR's staff. TALCE locations included Tuzla, Bosnia; Zagreb, Croatia; Ramstein AB and Rhein-Main AB, Germany; Budapest and Taszar, Hungary; Aviano, Brindisi, and Pisa, Italy; Belgrade, Serbia; and Gulfport, Mississippi.

To provide US troops an opportunity for rest and recuperation (R&R), between 15 April and 30 September 1996, an AMC contract civil air carrier flew 118 missions (five missions per week) between Tuzla or Taszar and Germany. During approximately the same period, two other carriers flew 23 weekly missions between Philadelphia and Frankfurt, Germany in support of JOINT ENDEAVOR.

During JOINT ENDEAVOR, deployed intelligence personnel provided aircrews and staffs at several locations with critical threat information and airfield data. Taking advantage of the Combat Intelligence System (CIS) capabilities and an emerging global connectivity to military networks and databases, intelligence personnel provided the best and most timely support ever to air mobility forces. This improvement was particularly evident during the Mission Report (MISREP) process, when intelligence analysts used CIS to provide MISREP data very quickly to aircrews and staffs, ensuring the people in need of this intelligence received it while the data was still useful.

Air Force Reserve airlift units flew more than 502 sorties while transporting more than 662,300 pounds cargo and 993 people. As of 28 May 96, 1238 reservists have been on active duty in support of the Bosnia peacekeeping efforts. About 154 Individual Mobilization Augmentees (IMAs) have volunteered for active duty since December 1995, with about 30 currently in support. The NGB had 10 air refueling wings participate in the Northeast Tanker Task Force which provided fuel for strategic airlift aircraft headed to the Southeastern European theater. In addition, Guard units airlifted over 975 tons to Bosnia in December 1995 alone.

Operation JOINT ENDEAVOR was the first large-scale contingency test of the C-17, and its success clearly validated its airlift and air refueling concept of operation. However, it was not a risk-free operation from the perspective of aircrews who flew into Bosnia and surrounding areas. They faced various threats including small arms fire, small rockets, and other hazards. It is in this operational environment with all its dangers that national military strategy is implemented by AMC personnel.

Objective 1.2.2
Maximize successful mission performance in degraded operating environments. DOT, FY06

The three major threat categories air mobility forces may experience are described below. Planners must accept the potential for these threats to challenge operations and build air transportation systems that can survive and operate in such environments. Operations such as JOINT ENDEAVOR, UPHOLD DEMOCRACY, and SUPPORT HOPE show the dangers that AMC personnel can face on a daily basis.

Threat recognition and avoidance are crucial to mobility aircraft survival. Threats are classified in terms of intent and capability. The associated categories are based on relative sophistication and are largely determined by the effectiveness of adversary weapon systems, support systems, level of training, and employment doctrine that can be encountered.

THREAT CRITERIA

EXISTENCE: Hostile group(s) present, assessed to be present, or able to gain access to given country or facility; includes military/paramilitary/irregular armed forces, radical terrorist factions, or rogue elements.

CAPABILITY: Acquired, assessed, or demonstrated capability to target strategic lift assets; includes capability to target assets en route (AAA, SAMs, fighter aircraft) and at aerial port of embarkation/debarkation (conventional military threat, SAMs, small arms, chemical/biological warfare, sabotage, terrorism, medical, criminal).

HISTORY: Demonstrated hostile intentions over time.

INTENTIONS: Recent demonstrated anti-US activity, or stated or assessed intent to conduct such activity.

THREAT LEVELS

NEGLIGIBLE: Airfield/air operations safe/secure; existence and/or capability may or may not be present; no reports demonstrating or expressing intent to target US interests or personnel.

LOW: Unlikely airfield/air operations will be targeted; existence, capability present; history may or may not be present; no confirmed reports demonstrating or expressing intent to target US interests.

MEDIUM: Possibility exists that airfield/air operations could be targeted; existence, capability, history must be present; unconfirmed reports indicate intent to carry out hostile actions which could directly or indirectly impact US operations.

HIGH: Likely airfield/air operations will be targeted; existence, capability, history, and intentions must be present; **key determination of HIGH threat: confirmed reports demonstrating or expressing intent (with capability) to target US interests or personnel**.

CRITICAL: Airfield/air operations actively/effectively targeted on an ongoing basis.

THREAT CATEGORIES

CATEGORY I: Small numbers of relatively unsophisticated, man-portable air defense (MANPAD) surface-to-air missiles (SAM)s; small arms/automatic and light to heavy optically aimed anti-aircraft machine guns up to 12.7mm (.51 cal). The potential adversary is unable to respond due to limited weapons systems and/or a poorly integrated air defense network. Aircraft may require evasion or avoidance tactics, although there is little or no probability of enemy reaction directly or indirectly affecting the mission or operation.

CATEGORY II: Category I weapons augmented by optically aimed anti-aircraft artillery (AAA) heavier than 12.7mm, older vehicle-mounted infra-red (IR)-guided SAMs, more sophisticated MANPADs, early-generation radar-guided SAMs, and fighter aircraft lacking effective look down-shoot down and/or all-weather capability. Reflects a wider variety of more sophisticated enemy weapons systems in a moderately-integrated air defense network, but the weapons systems are insufficient in number or poorly deployed. Friendly operations may require independent suppression of enemy air defenses (SEAD), as well as avoidance tactics, threat evasion maneuvers, and on-board defensive systems.

CATEGORY III: Categories I and II weapons augmented by all types of advanced generation SAMs, fighter-interceptor aircraft with true lookdown/shootdown and all-weather capability, helicopters with air-to-air capability, and directed energy weapons. Weapons are densely concentrated and/or part of a highly integrated air defense network. Without suitable defensive countermeasures, tactics, and force protection, penetration into this environment results in a high probability of detection and attrition.

The Air Mobility Threat Environment Description, produced by the National Air Intelligence Center, provides threat information for command strategic planners and systems acquisitions personnel to use as they determine future AMC requirements for countering these threats.

CURRENT AND FUTURE STANDARDS

Objective 1.2.2	
Optimize use of the air mobility system.	DOT, FY01

Standards describe how we must perform particular tasks to ensure successful mission completion and ultimate customer satisfaction. To achieve this operational standard AMC must effectively use its resources--both in the air and on the ground. To act as a road map to heightened efficiency, AMC established standards for 2015. These standards set goals for improvement to operations from current standards (Table 2-1) to those standards envisioned for 2015 (Table 2-2). In an effort to continually upgrade AMC's performance of airlift and air refueling, these future goals serve as benchmarks to the way we acquire, train, equip, and maintain our forces and assets.

Table 2-1 on the following page depicts AMC's exacting standards for its major weapons systems.

Table 2-1
FY97 OPERATIONAL STANDARDS

	Airland Ops			Air Refuel Ops	Air Drop Ops	
	C-5/141	**C-17**	**KC-135/10**	**KC-135/10**	**C-5/141**	**C-17**
Preparation						
Time (Show to Go)	≤3.25/ 2.25 Hr	≤ 2.25 Hr	≤ 3.25 Hr	≤ 3.25 Hr	≤ 3.25 Hr	≤ 3.25 Hr
Mission Planning [1]	I	I	I	III	III	III
Route Study Time	45 Min	45 Min	45 Min	Prior day (60 Min)	45 Min	45 Min
Crew Alert	1 Hr	1 Hr	1 Hr	1 Hr	1 Hr	1 Hr
Ground Ops						
Loading Times	≤ 60 Min ≤ 120 C-5	≤ 60 Min	≤ 120 Min	≤ 120 Min	≤ 90 Min	≤ 90 Min
Aircraft Preflight Time	≤ 75 Min	≤ 75 Min	≤ 75 Min	≤ 75 Min	≤ 75 Min	≤ 75 Min
Taxi Time	≤ 15 Min	≤ 15 Min	≤ 15 Min	≤ 15 Min	≤ 15 Min	≤ 15 Min
Crew Support Delay [2]	≤ 15 Min	≤ 15 Min	≤ 15 Min	≤ 15 Min	≤ 15 Min	≤ 15 Min
Takeoff						
Time	+ 14 Min	+ 14 Min	+ 14 Min	+ 14 Min	+ 14 Min	+ 14 Min
Weather (RVR)	≥ 1000'	≥ 1000'	≥ 1000'	≥ 1000'	≥ 1000'	≥ 1000'
Runway Characteristic [3]	147 x 6K[4]	90' x 4K	150' x 7K	150' x 7K	147' x 6K	90' x 6K
En route						
Threat Categories	I	II	II	II	II	II
Formation	No	Yes	No	Yes	Yes	Yes
Visibility	IMC	IMC	IMC	IMC	IMC	IMC
Corridor [5]	10 Min	10 Min	5 Min	5 Min	60 Sec	60 Sec
Nav Equip Performance	2.5 nm/Hr	2.5 nm/Hr	2.5 nm/Hr	2.5 nm/Hr	2.5 nm/Hr	2.5 nm/Hr
Altitudes (minimum)	1000'	300'	3000'	3000'/10,000' [6]	300'	300'
Time of Day	D / N	D / N	D / N	D / N	D / N	D / N
Delivery						
Threat Categories	I	II	I	II	II	II
Formation (V/IFR)	No	2000/4000'	No	3000' [7]	2000/4000'	2000/4000'
Time	+/- 2 Hr	+/- 2 Hr	+/- 2 Hr	+/- 5 Min	+/- 60 Sec	+/- 60 Sec
Runway Characteristics	147 x 6K[4]	90' x 4K	150' x 7K	n/a	n/a	n/a
Approach Nav Aids	CAT II	CAT II	CAT I [8]	n/a	n/a	n/a
Accuracy [9]	n/a	n/a	n/a	n/a	300 Yds	300 Yds
Weather (RVR)	≥ 1200'	≥ 1200'	≥ 2400'	≥ .5 mi / 1mi [10]	300'/.5 mi	300'/.5 mi

1 Quality of Mission Folders: (I=Airway Ops; II=Low Level Ops; III=Ops w/i Threat Range)
2 Crew Support (Inflight Meals, Crew Transport, Ops Admin)
3 Minimum required, standard day, takeoff gross weight. May be restricted
4 C-141 requires 98' x 6k
5 Corridor-A stream of aircraft flown at specific intervals within an altitude reservation
6 KC-135/KC-10
7 Assumes 500' altitude separation
8 KC-10 aircraft is Cat II capable (RVR ≥ 1200') if necessary FAA certifications are obtained
9 Accuracy based on drop altitudes up to FL250
10 Fighter/non-fighter air refueling operations

Reaching future standards will require command-wide actions to improve upon operations, people, equipment, and infrastructure issues; most of which are highlighted throughout the AMMP. The following discussion exemplifies these interrelationships.

- Preparation--The goal is to cut the amount of time aircrews require in preparation, and thus increase the time for executing mobility missions. Improvements require automated flight planning systems and integrated C4S systems which will reduce manual tasks. The Air Force Mission Support System will provide those enhanced "mission planning" and "route study time" capabilities.

- Training--The Air Mobility Warfare Center (AMWC) directly enhances Global Reach. AMWC educates and trains at all levels, from junior enlisted to Major General, on the full spectrum of the air mobility process. It stresses achievement of national objectives through en route support, airlift and air refueling support, sustainment and survivability. AMWC, fulfilling General Fogleman's original vision, combines the functions of developing, writing, reviewing, testing and teaching air mobility doctrine and its associated processes under one roof.

- Ground Ops--Future MHE and improved procedures will help meet the changes to "loading times." "Aircraft Preflight Time" will be enhanced through technological advances to aircraft systems which will automate systems checks and improve maintainability and reliability. Consolidation of support activities to minimize travel time will help eliminate "crew support delays."

- Takeoff--Improvement to the ability to takeoff under more stringent time criteria for airdrop operations reflects the critical nature of the mission and the overall importance of making time over target requirements.

- En route--Changes in "threat levels" and "minimum altitudes" are necessary based on changing world situations, especially in light of the proliferation of weapons to third world countries. Real Time Information in the Cockpit (RTIC) and other C4I improvements will allow aircrews to react more effectively to these developments. "Corridor" operations will be improved with acquisition of high tech navigation and formation station-keeping equipment. "Nav Equipment Performance" reflects reliance on state-of-the-art navigation systems currently available or expected in the near future.

- Delivery--Potential operations in high threat environments increase each day as world events unfold. Aircraft defensive systems, near real time information to the cockpit, and a strengthened C4I system will go a long way to meet these challenges. "Formation," "Time," "Approach Nav Aids," and "weather" criteria support maximizing throughput at the objective area and require improved MHE as well as navigation and formation station keeping equipment. "Accuracy" improvements will result from precision airdrop systems and improved navigational equipment.

In an effort to continually upgrade AMC's performance of airlift and air refueling we are striving to improve our standards. Table 2-2 depicts the expected standards for the year 2016.

Table 2-2
FY16 OPERATIONAL STANDARDS*

	Airland Ops			Air Refuel Ops	Air Drop Ops	
	C-5	C-17	KC-135/10	KC-135/10	Strat	C-17
Preparation						
Time (Show to Go)	≤ 2.0 Hr	≤ 1.5 Hr	≤ 2.0 Hr	≤ 2.0 Hr	≤ 1.5 Hr	≤ 1.5 Hr
Mission Planning [11]	II	III	I	III	III	III
Route Study Time	30 Min	30 Min	30 Min	30 Min	30 Min	30 Min
Ground Ops						
Loading Times	≤ 30 Min	≤ 30 Min	≤ 60 Min	≤ 60 Min	≤ 60 Min	≤ 60 Min
Aircraft Preflight Time	≤ 45 Min	≤ 30 Min	≤ 45 Min	≤ 45 Min	≤ 45 Min	≤ 30 Min
Crew Support Delay [12]	≤ 10 Min	≤ 10 Min	≤ 10 Min	≤ 10 Min	≤ 10 Min	≤ 10 Min
Takeoff						
Time	+14 Min	+14 Min	+14 Min	+14 Min	+5 Min	+5 Min
Weather (RVR)	≥ 1000'	≥ 1000'	≥ 1000'	≥ 1000'	≥ 1000'	≥ 1000'
En route						
Threat Categories	II	III	II	II	II	III
Formation	No	Yes	No	Yes	Yes	Yes
Corridor [13]	5 Min	1 Min	5 Min	5 Min	30 Sec	30 Sec
Nav Equip Perform	.25 nm/Hr	.25 nm/Hr	.25 nm/Hr	.25 nm/Hr	.25 nm/Hr	.25 nm/Hr
Altitudes (minimum)	300'	300'	3000'	3000'/10,000' [14]	300'	300'
Delivery						
Threat Categories	II	III	II	III	II	III
Formation (V/IFR)	No	1500'	No	1500/3000' [15]	1500/3000'	1500/3000'
Time	+/-15 Min	+/-15 Min	+/-15 Min	+/- 5 Min	+/- 15 Sec	+/- 15 Sec
Runway Characteristics	147' x 6K	90' x 4K	150' x 7K	150' x 7K	n/a	n/a
Approach Nav Aids	CAT II	CAT II	CAT II	n/a	n/a	n/a
Accuracy [16]	n/a	n/a	n/a	n/a	50 meters	50 meters`
Weather (RVR)	≥ 1200'	≥ 1200'	≥ 1200'	≥ .5 mi	300'/.5 mi	300'/.5 mi

***VARIANCES FROM FY97 STANDARDS HIGHLIGHTED IN SHADED BOXES.**

[11] Quality of Mission Folders: (I=Airway Ops; II=Low Level Ops; III=Ops within Threat Range
[12] Crew Support (Inflight Meals, Crew Transport, Ops Admin)
[13] Corridor-A stream of aircraft flown at specific intervals within an altitude reservation
[14] KC-135/KC-10
[15] Assumes 500'altitude separation
[16] Accuracy based on drop altitudes up to FL250

Section Three
PEOPLE

INTRODUCTION

People are AMC's greatest asset and its highest priority. They are the heart and soul of the organization, the very foundation of our warfighting and readiness capability, and the key to our ability to provide effective Global Reach for America. This section generally follows the organization of the Personnel Life Cycle starting with Accessions, then Education and Training, followed by Career Development, Quality of Life, and finally Retirement and Separations. It addresses the Total Force concept and how the various components contribute to AMC readiness.

AMC people are a winning Total Force team comprised of the active duty force, the Air Reserve Component, DoD civilian employees, and commercial industry. Each plays a unique role in the success of the command. To ensure we can accomplish AMC's challenging mission we need to bring high quality people to AMC and provide them with the skills and training necessary to be productive team members. We also have to apply an effective utilization strategy which meets mission requirements, develops the work force, provides career opportunities, and meets individual needs. By recognizing the inherent value and dignity of the individual, we can ensure our people are treated with respect in a professional environment and granted the quality of life they deserve. This "life cycle" process provides a framework within which we can build an even more productive, capable total force while providing a system that strives to satisfy its members needs.

These challenging times heavily impact morale and lifestyles. Many command housing and working facilities no longer meet Air Force standards. A high ops tempo is demanding greater sacrifices from our people. More than ever, they need high quality support in areas from medical care and chapel programs to family support centers. AMC is committed to supporting its people through these programs and is dedicated to maintaining a strong, motivated force.

Quality Air Force Human Resources Development (HRD) threads throughout the entire personnel life cycle and should be aligned with our strategic plan. HRD is the practice of creating a high performance workplace. It's accomplished in an integrated way and is concerned with how well the human resource practices are aligned with the organization's strategic directions.

This chapter begins with an assessment of the people issues that impact our operational tasks and core activities. Next, the specific deficiencies are listed followed by our people-related goals and objectives.

PEOPLE TASKS ASSESSMENT

AIR MOBILITY ASSESSMENT

OPERATIONAL TASK	PEOPLE				INFRASTRUCTURE				EQUIPMENT			
	T	S	M	L	T	S	M	L	T	S	M	L
Aeromedical Evacuation					See Applicable Section				See Applicable Section			
Airdrop												
Air Refueling												
Cargo Airlift												
Passenger Airlift												
SIOP												
Special Operations												

CORE SUPPORTING ACTIVITY ASSESSMENT

CORE SUPPORTING PROCESSES	PEOPLE				INFRASTRUCTURE				EQUIPMENT			
	T	S	M	L	T	S	M	L	T	S	M	L
IRM / C4I Systems					See Applicable Section				See Applicable Section			
Command and Control												
Intelligence												
Information Warfare												
Logistics												
Training												
Security												
Medical												
Cargo / Pax Handling												
Operations Support												
Base Operating Support												

T: TODAY (FY97)
S: SHORT TERM (FY98-03)
M: MID TERM (FY04-12)
L: LONG TERM (FY13-21)

GREEN: GOOD CAPABILITY
YELLOW:PARTIAL CAPABILITY
RED: POOR OR NO CAPABILITY

PEOPLE DEFICIENCIES

Deficiency:

PEOPLE-RELATED GOALS & OBJECTIVES

GOAL 2:
Ensure and sustain air mobility readiness.

2.1 Man the total force with the right people in the right numbers.
- 2.1.1 Maintain sufficient manning levels in each Air Force specialty to meet mission requirements for all AMC bases/units........................ DPA, FY01, pg 3-12
- 2.1.2 Meet the civilian drawdown challenge.. DPC, FY01, pg 3-9

2.3 Provide a trained, responsive, and sustainable air mobility system capable of rapid deployment to operate in a joint environment.
- 2.3.1 Maximize logistics training resources to maintain 75 percent trained /experienced level workforce for each weapon system and specialty code. .... LGQ, FY01, pg 3-20

GOAL 3:
Provide quality support to people.

3.1 Provide education, training, and professional development opportunities.
- 3.1.1 Support programs that develop and broaden air mobility experts to increase mobility presence in Air Force and joint leadership positions.. .... DPA, Continuous, pg 3-31

3.2 Advocate compensation and benefits programs to retain a quality, trained force.
- 3.2.1 Support AF and DoD efforts to close military - private sector pay gap, maintain retirement benefits, close BAQ gap, and support commissary benefits.. DPX, FY03, pg 3-38

3.3 Achieve an atmosphere that embraces human dignity and encourages full development of each individual's potential.
- 3.3.1 Eliminate improper or unlawful discrimination or harassment.. .... DPP, Continuous, pg 3-37
- 3.3.2 Increase awareness of recognition programs for air mobility personnel...DPP, FY01, pg 3-35

3.4 Provide care and support for our people.
- 3.4.1 Facilitate implementation and maintenance of a managed health care system that optimizes quality, access, and cost for all beneficiaries. ....SGS, FY99, pg 3-40
- 3.4.2 Build healthier AMC communities. ....SGP, FY05, pg 3-43
- 3.4.3 Achieve Five Star Fitness Program certification at all AMC bases...SVP, FY99, pg 3-42
- 3.4.4 Increase effectiveness and availability of support programs for all AMC members, as well as families, to ensure mission accomplishment...DPP, FY01, pg 3-42

TOTAL FORCE

This section describes the impact of Air Force accessions and the various components of our total force with an emphasis on what to expect in the future. It covers our various manpower and manning concerns and force mix strategies for air mobility.

ACCESSIONS

Before looking at the AMC force mix, it's worthwhile to look at some demographics and trends relating to the accessions resource pool, then consider possible impacts. While accessions is a broad Air Force issue, it directly impacts AMC and must be considered when developing retention and human resource development strategies.

The propensity among American youth to join the Air Force declined from 15.3 percent in 1990 to 12 percent in 1995, according to the Office of Assistant Secretary of Defense 1994 Youth Attitude Tracking Study. This is attributable to two forces. First, youth are being pushed away by such factors as base closures, defense industry cutbacks, declining defense budgets, pay disparity, and involuntary separations. Second, youth are being pulled away by college. In 1983, 53 percent of high school graduates entered college within 12 months of graduation; today, 63 percent go to college. As a result, the pool of qualified and interested 18-to 21-year-olds is about 60 percent less than in the early 1980's.

This decline in interest to join the Air Force decreased applications 32.6 percent for the United States Air Force Academy and 32.1 percent for Air Force Reserve Officer Training Corps (AFROTC) during the period FY90-95. Also, during the period Mar-May 95, Air Force recruiting missed enlistment goals substantially for the first time in 10 years. (This trend was reversed recently and the Recruiting Service now expects to achieve the FY96 enlistment goal. Expectations for the near term are positive as more recruiters are being put on the streets.

Up to now, quality has not been sacrificed for quantity. More than 99.2 percent of our recruits are high school graduates, and 83.7 percent of the enlistees score in the top half of the Air Force Qualification Test. Data demonstrates that those with higher scores complete basic military and technical training at higher rates and perform better on the job.

While the Air Force Recruiting Service intends to maintain the quality of our enlistees, it may be dependent on successful budgeting and programs such as "We Are All Recruiters." Otherwise, AMC may have to develop and retain a lower quality recruit.

AIR MOBILITY AS A TOTAL FORCE

Four categories of people combine to make up the air mobility team--active duty military, Air Reserve Component (ARC) military, in-service civilian employees, and civilian contract service workers. Active duty military fill positions directly contributing to the conduct of war (combat or direct combat support). They are subject to overseas rotation or are required by law to be military. ARC personnel traditionally fill wartime surge positions with part-time guardsmen and reservists and full-time Guard Technicians, Active Guard Reserve (AGR), and Air Reserve Technician (ART) personnel. ARTs are responsible for peacetime training and management of ARC units. All other functions may be performed by military personnel, in-service civilian employees, or contract services workers, depending on factors such as wartime requirements, legal considerations, management responsibilities, and cost. In addition, the Civil Reserve Air Fleet (CRAF) is called upon to augment AMC's organic fleet during both peacetime and wartime.

The AMC total force is shown below. AMC-gained ARC assets are 49 percent of AMC's total force. Civilians are employed by both the active and ARC components. This does not include the thousands of people who make up the contractor portion of the total force or CRAF.

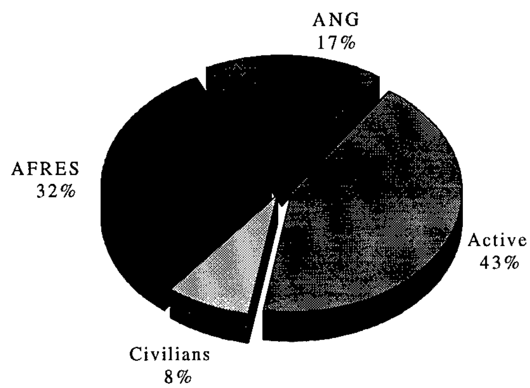


Figure 3-1. AMC Total Force

The following chart shows projected AMC active duty manpower force trends from FY96 to FY02. By FY01, AMC will number approximately 50,000 people.

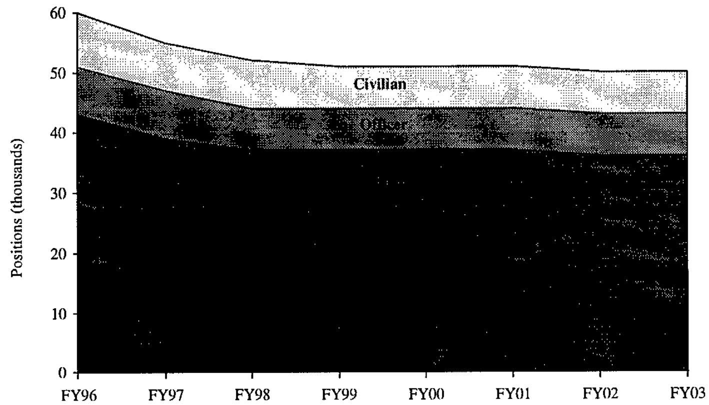


Figure 3-2. AMC Active Duty Manpower

Active Duty Military

Active duty force end strengths are at their lowest levels since December 1947. The current mix of 43 percent active and 49 percent ARC personnel will likely change, with an even greater percentage of ARC personnel performing AMC missions and duties in the future.

Air Reserve Component (ARC) Military

As the ARC contribution to the total force increases, it will be the continue to represent a substantial portion of AMC capabilities. The majority of C-5, C-141, and KC-135 aircrews, as well as aeromedical and aerial port personnel, now reside in the ARC. The C-141 fleet is currently programmed for transition to the ARC by FY03 prior to complete retirement in FY06. This transfer of force structure to the ARC increases the command's non-mobilized contingency response time, and continuing mobility requirements will result in a greater demand for ARC personnel. As the ARC role increases, new operational concepts and employment issues will be explored to further maximize the ARC's day-to-day contributions.

The following figure depicts the current percentage of ARC aircrew and maintenance personnel by major weapon systems. For example, approximately 62 percent of C-5 and 58 percent of C-141 aircrews are ARC personnel. The percentage of C-141 ARC aircrews will increase over the next 10 years as the drawdown of C-141s in the active force continues.

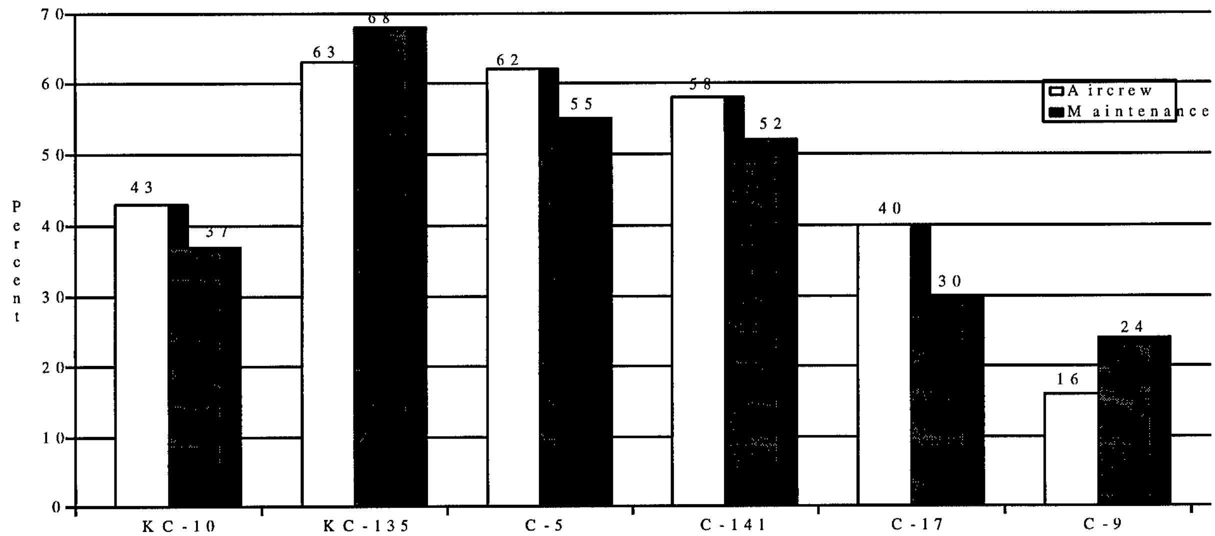


Figure 3-3. ARC Contribution to Weapon Systems

AMC is also very dependent on the ARC for mission support personnel. More than 90 percent of aeromedical assets, 77 percent of intelligence personnel, and over half of AMC's aerial port personnel currently reside in the ARC.

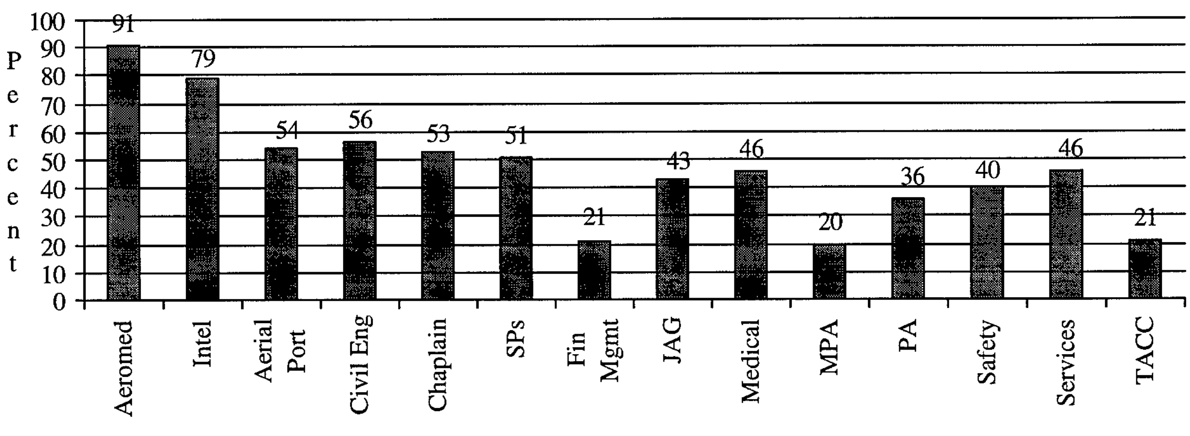


Figure 3-4. ARC Contribution to Support Assets

ARC Participation

In addition to our wartime surge requirements, AMC relies on the ARC to support our day-to-day peacetime operations. The ARC is assuming entire missions in air refueling in addition to augmenting the active duty force as they have done in the past. For example, the DENY FLIGHT mission at Pisa, Italy, will be assumed by the ARC. Most recently, the ANG stood up a Northeast Tanker Task Force (TTF) at Bangor, Maine and Pease, New Hampshire to replace the Plattsburgh east coast TTF which was closed. ANG will continue supporting NATO AWACS and Icelandic alert requirements. The

ARC covers a substantial portion of the SIOP requirements and is increasing its share of the AMC CONUS Business Efforts (see definition in the Operations section).

The ARC, working closely with the TACC, continues to increase its availability and participation for strategic airlift. Historically, the ARC provides a minimum of 25 percent of the strategic airlift aircrews flying on a daily basis during peacetime operations and is ready to surge through volunteerism for a short duration if a contingency requires. The ARC has demonstrated the ability to support contingency operations in the past and has forecast availability against contingency time lines for planning in future contingency operations. As the ARC becomes a larger share of air mobility, this availability will be key to AMC mission planning.

In-service Civilian Employees

Objective 2.1.2	
Meet the civilian drawdown challenge.	DPC, FY01

Civilian employees are a great source of stability and continuity, but many challenges lay ahead for civilian personnel in AMC. The President's National Performance Review (NPR) and the Federal Restructuring Act of 1994 mandate significant reductions in the number of federal civilian employees. The NPR also mandates specific reductions of employees in the accounting and finance, acquisition, and civilian personnel functions; reductions in GS-14, GS-15, and Senior Executive Service (SES) positions; and a shift from the ratio of one supervisor for seven employees, to one for fourteen. The AMC goal is to meet its share of these reductions with minimum adverse impact on the people or mission. Voluntary Separation Incentive Pay (VSIP) has been an effective management tool for reducing the number of involuntary separations as the AMC civilian workforce has been reduced. Continued VSIP funding is essential if the adverse impact of downsizing is to be minimized. Efforts should be initiated to secure DoD authorization of VSIP beyond FY99 when its authorization expires.

These reductions may erode traditional career paths, constrict career progression, and require more frequent geographical relocation. All of these can add to attrition among early and mid-career employees. Civilian relocation services need to be more effective in home-owner assistance (particularly at closure locations) and spouse placement if these corporate assets are to be geographically mobile. The "spouse preference" program for DoD employment should be extended to the civilian employee spouse accompanying the federal employee who voluntarily relocates and not simply restricted to involuntary relocations.

As the specialized civilian work force transitions into more generalized employment categories, training requirements in a wider variety of technologies and/or administrative specialties will increase. The need for retraining will vary among functional areas. The greatest requirements will arise from base operating support (BOS) areas which have taken the majority of reductions to date. The future work force will contain less supervisory layers, requiring subordinates to be more empowered in their jobs. However, if requisite training is absent, the quality journey may be derailed.

An improving economy and the emerging perception that federal employment is no longer a secure long-term employment contract can also increase turnover among experienced employees, especially if civilian pay and benefits do not keep up with the private sector. This, coupled with the conversion of some military jobs into civilian positions, can increase entry and apprentice/trainee level recruiting. Such factors contribute to a less skilled and experienced work force, increasing training requirements. Efforts must be marshaled to avoid further erosion of provisions of the Federal Employees Pay Comparability Act of 1990 and reverse or stop attempts to: (1) increase employee contributions to their retirement program, (2) reduce annuities by altering retirement formulas, (3) reduce the government's portion of matching funds to the Thrift Savings Plan, and (4) reduce health benefits provided through the Federal Employees Health Benefits program, if attrition is to be curtailed among the most recently hired workers, those who have been expensively recruited and trained into specialty skills.

Unless these issues are resolved, the civilian work force may eventually transition into a "portable" force, with employee careers averaging only 5 to 10 years and fewer workers remaining until retirement. This will erode traditional civilian contributions to stability and continuity and hurt the reputation of the Air Force as an employer of choice, while increasing recruiting and training costs.

Civilian Contract Service Workers

As the military downsizes to reach end-strength goals, the commercial industry is projected to provide a greater portion of AMC's future capability. Contracted services include aircrew training, aircraft maintenance, air terminal services, and base upkeep. Installation commanders must conduct periodic reviews of required services to determine the most appropriate type of workforce (i.e., government employees or contract). When there is no compelling reason to retain a service in-house, the installation commander may conduct cost comparison analyses to determine the cost effectiveness of alternatives and, if appropriate, convert it to contract services. Additionally, the AMC/CC may direct command wide reviews of specific areas.

MANPOWER RESOURCES

AMC Manpower Net Worth

The Manpower and Organization Division is responsible for the optimal use of AMC manpower resources in both peace and war. We do this through manpower requirements determination, allocation of manpower resources, and management of productivity programs. This has been particularly challenging given the pace of change caused by the creation of new MAJCOMs, base realignments, weapon system transfers, and the creation and subsequent elimination of DBOF-AMC. Currently, AMC has more manpower authorizations on its Unit Authorization File (UAF) than are actually funded by Air Force in the Future Years Defense Program (FYDP). This difference between FYDP and UAF is best described as a manpower net worth deficit.

Aggressively working the challenge, AMC's net worth deficit presents has been XPM's number one priority. In conjunction with the AMC Council, we have worked to decrease the manpower net worth deficit by eliminating workload and functions vice a simple pro rata approach. To date, command initiatives have included reducing AMC HQ/FOAs, shifting Combat Camera wartime requirement to AFRES, restructure of the AMOGs, and review and implementation of over 70 initiatives submitted as reduction candidates by the AMC Program Evaluation Group (PEG). Included in the game plan is an aggressive outsourcing and privatization effort through the A-76 program. The A-76 program will allow AMC to garner an average 20 percent manpower savings for contracted functions while retaining functionality.

Funded Manpower

AMC's mission requirements (Operations and Maintenance) are funded at 100%. However, overall, only 95.9% of AMC's manpower requirements are funded. Areas less than 95% at base level are listed below:

Intelligence	- 94.9%	Info Management	- 92.4%
Transportation	- 93.5%	Morale & Welfare	- 92.1%
Chaplains	- 93.3%	Civil Engineer	- 91.8%
Supply	- 93.1%	Family Support Center	- 87.9%
Personnel	- 92.7%	Manpower Office	- 85.7%
Financial Management	- 92.6%	Judge Advocate	- 76.7%
Safety	- 92.5%		

Budget pressure will continue to constrain manpower resources at a level less than requirements. Along with outsourcing and privatization, AMC will continue to meet the challenge to live within allocated manpower resources by mission prioritization, reengineering, and reduction or elimination of lower priority processes.

Manpower areas of interest in AMC

We are currently experiencing a shortage of KC-135 crews. Historically, the number of KC-135 crews were based on Single Integrated Operational Plan (SIOP) requirements. As the mission of the KC-135 shifted to one of primarily conventional support, the number of crews required increased. Currently, the AMC KC-135 crew ratio is 1.36, with the remainder of the active duty and ARC at 1.27 (AETC is 1.00). Fiscal constraints limit the Air Force's ability to increase to the required AF-wide crew ratio. The establishment of the first of two reserve associate squadrons at McConnell and the second squadron scheduled for FY98 will ensure AMC has the required crew ratio to meet it's wartime requirement. However, the Air Force will still experience a shortage of KC-135 crews for certain wartime planning scenarios.

Current aerial port manpower standards may contain inaccuracies. The current standards were developed by a team that was constrained by an AF projected reduction bogey. In addition, no time-motion studies or other measurement methods were used, nor was a scientific process used to validate the manpower standards. The AF Audit Agency recommended AMC revalidate the standards and the AMC staff began the revalidation initiative. Thus far, AMC has defined the core processes and is currently reengineering the overall aerial port organization. Once reengineering is complete, we will select pilot units for implementation, then collect and analyze the data for the new organization structure and processes. The final step will be to implement the new standards.

The command Inspector General identified inadequate unit-level intelligence manning as an AMC systemic issue. This results from insufficient wing manpower authorizations. Compounding the issues are inadequate funding for Individual Mobilization Augmentees (IMAs) and a continuing shortage of 7-level intelligence NCOs. The latest AF objective wing intelligence manpower standard recognizes the problem but provides only 14 unfunded positions in response to our request for 49 additional unit-level billets. To have an adequate number of trained and experienced personnel to convey comprehensive intelligence to aircrews as well as commanders and staffs, a more comprehensive manpower standard for intelligence personnel is essential. AMC will pursue appropriate changes to the manpower standard. In the meantime, however, active-duty manning authorization for unit-level intelligence positions is 26 percent of the wartime requirement. To make up for this shortfall, AMC relies on IMAs. Yet only 35 percent (83 of 234) of the required IMA positions are currently funded. These problems highlight a "spaces" shortfall.

Another shortage that may impact AMC is AFOSI's agent allocations. These are divided into two main categories: criminal investigations (funded by the Air Force) and foreign counterintelligence (funded by DoD). AFOSI's projected loss in criminal investigator authorizations is approximately 15 percent through FY99. Such a loss may have an adverse effect on the investigations of criminal activities impacting air mobility resources. As a customer, AMC has concerns for the AFOSI manpower requirement.

PERSONNEL (FACES)

> Objective 2.1.1
> *Maintain sufficient manning levels in each Air Force specialty to meet mission requirements for all AMC bases/units.* DPA, FY01

The goal of AMC's Directorate of Personnel is to ensure commanders have adequate personnel resources in each Air Force specialty to accomplish their mission. Our strategy is to equitably distribute AMC's fair share of Air Force personnel resources to ensure every installation and unit has the personnel needed to meet mission taskings. Action will be taken to balance manning levels or request additional personnel from Air Force-wide resources to preclude shortfalls. Two areas of concern highlighted are:

Personnel areas of interest in AMC

Currently, there is a 7-level MSgt Command & Control personnel deficiency. The Command Post controller officer-to-enlisted conversion was directed by CSAF in Dec 93 due to the USAF officer to enlisted ratio. From the beginning, AMC has expressed concern regarding the availability of sufficient 7-level enlisted controllers. The Air Staff has initiated mandatory cross-training and other personnel actions to address the shortage but project that sufficient 7-level enlisted controllers will not be available until 2 years after mandated elimination of the officer positions.

A 7-level MSgt/SMSgt personnel shortage in Intelligence highlights the command's lack of experienced intelligence senior NCOs. Currently, there are 47 percent of 7-level MSgt/SMSgt authorizations filled (9 of 19 active-duty positions). This underscores the need for additional 7-level MSgt/SMSgt intelligence personnel.

TRAINING & EDUCATION

Air mobility depends on mission-ready crews and support forces current and qualified to accomplish mission tasks and related activities. In addition, air mobility personnel require professional military education and other on-and off-duty education for career growth and development. Air mobility education and training programs are necessary to ensure skilled and motivated people are available to carry out all tasks and functions necessary to accomplish AMC's mission. These programs, as a whole, provide a foundation for air mobility readiness.

TRAINING

AMC continuously assesses its training programs in today's environment of emerging technologies, downsized crew forces, and limited budgetary buying power. From AETC formal training, through unit training and career development courses, military and civilian personnel receive initial qualification and advanced technical and mission training to meet operational requirements across the spectrum of conflict. A major focus for training, testing, and evaluating the command's operational concepts and capabilities is the Air Mobility Warfare Center, established in 1994.

HQ USAF Chief of Staff, Gen Fogleman, recently stated: "I am convinced modeling and simulation technologies available today will enable us to significantly change the way we train in the future." He tasked all commands, under the leadership of HQ USAF/XO, to take a hard look at how modeling and simulation technologies will change our training philosophy as well as how we develop future weapons systems. AMC will undoubtedly be involved in this effort over the next year or so.

Recently, AMC has experienced shortages in experienced and qualified personnel in several functions as a result of the mandated drawdown of the active duty Air Force. Many of the unprecedented early separation and retirement programs implemented by the Air Force during the early 90s had a particularly heavy impact on the mid-grade technicians. The loss of 5- and 7-level technicians spanned the Air Force and left the entire force short on skilled, available resources. The only solution to this problem is to train new personnel. While it may seem that this is a manning/procurement problem, its "training" solution requires its inclusion in this section. This problem is only one of our training challenges. As the next few pages demonstrate, the overall training challenge and vision is much broader.

Formal Training

AMC annually screens its units to identify formal course requirements for officer, civilian, and enlisted personnel and forwards these requests to AETC for follow-on, advanced technical training allocations. During the screening process, wing commanders determine their priority requirements. AMC allocates AETC-funded training quotas to ensure that all training priorities determined by the wing commanders are met. In FY95 over 4,127 AMC personnel attended advanced technical training at AETC installations. For FY96, AMC projects over 8,000 training requirements.

Technical Training

The Air Force "Year of Training" policy released in June 1993 drastically changed technical training and skill level requirements for AMC personnel. All enlisted members entering the Air Force will now attend a 3-skill level awarding course (unless waived by AFPC under special circumstances), and members will serve a 3-month, job-experience period to sharpen the skills they learned in the technical schools. At the end of the 3-month period, trainees officially enter 5-level upgrade training and are enrolled in mandatory career development courses (CDCs) for their Air Force Specialty Codes (AFSCs). After promotion to senior airmen, trainees become eligible for upgrade to the 5-skill level and remain a 5-level until promotion to staff sergeant. At that time, each individual serves 18 months of on-the-job training, completes all mandatory requirements at the 7-skill level (CDCs, core tasks), and then attends the mandatory 7-level school in his/her AFSC for skill level award. All 7-level schools are projected to be operational by FY 97/1.

Command-Unique Training

In an era of constrained resources and smaller forces, this command must capitalize on emerging technologies and cost-effective training methods to ensure its personnel are prepared to meet the mission challenges of tomorrow. AMC is taking an integrated approach in developing weapon systems training programs by emphasizing commonality and decreasing duplication among different programs. AMC/DO and AMC/LG are in the final phases of producing System Training Plans (STPs) for each AMC major weapons system. STPs include operational, maintenance, and support considerations necessary to ensure continued training programs meet current and future requirements involving acquisition of and modifications to major weapons systems. The AMC Maintenance Training Plan supports a restructured maintenance force by reducing the number of personnel required to accomplish a task and minimizing the number of technicians required for deployment.

Personnel Support for Contingency Operations (PERSCO) Training

Global events will continue to influence AMC's operations throughout the world. AMC personnel are called upon to deploy in support of numerous operations each year. PERSCO teams keep track of deployed people, report casualties, and perform a myriad of other personnel actions to support deployed commanders and their people. PERSCO training prepares personnelists for such duties and is both formal and informal. Formal training (held at Keesler AFB) teaches the use of the Manpower-Personnel Base-Level (MANPER-B) system, the primary instrument used at home station and in the field to ensure personnel accountability information is provided to all levels of command. Additionally, Keesler dispatches a Mobile Training Team (MTT) to different bases in an effort to train more MANPER-B users. Informal training allows experienced PERSCO members to train others within the Military Personnel Flight. PERSCO members also take the opportunity to work with other agencies (e.g., Security Police, Civil Engineering, and Services) to learn new skills and develop working relationships used in local exercises and in real-world deployments.

Air Mobility Warfare Center (AMWC)

The AMWC consolidates air mobility activities previously located at seven geographically separated units. This achieves economies of scale through shared facilities and administrative staffs. The synergy created from centralized operations allows for the best standardized training possible, impacting a variety of functional areas. Aircrews develop aerial combat employment tactics for composite and joint force operations. Aerial port specialists deliver standardized technical and managerial training through classroom and Computer Based Training to achieve smoother interface with a myriad of mobility customers. Logistics personnel service, support, and dispatch aircraft faster through redefined logistics procedures. Ground support personnel receive invaluable training in how to conduct effective operations in austere environments. In addition to imparting knowledge to these personnel, the AMWC tests and evaluates new and modified, mobility aircraft and equipment under real world conditions.

AMWC's focus is mission-accomplishment-oriented training. The center is well on its way to world class status, with the goal of becoming the premier warfare center in the Air Force. A wide variety of courses is designed to meet student's needs. The

AMWC will take the training provided by AETC a step further. Over 6,000 graduates annually are prepared to lead, employ, and support all aspects of the air mobility system. Much of the AMWC's training is directed toward operations in degraded environments when threats are high for conflict or attacks. The center's courses are geared toward improving AMC performance in these environments with the foal of maximizing successful mission performance by building, protecting, sustaining, and restoring mission capability when it is degraded by hostile threats, disasters, or major accidents. AMWC graduates are participating in every current US military operation, applying their newly acquired knowledge to solve tough mobility problems. Senior officer Director of Mobility Forces (DIRMOBFOR) graduates have found themselves responsible for air mobility operations in remote locations as far away as Somalia. Stage Manager Course graduates have immediately impacted fixed and non-fixed locations worldwide, directing en route air mobility support. Included in the Center's more than 35-course curriculum:

- Advanced Study of Air Mobility provides intense education in all aspects of the air mobility portion of the Defense Transportation System. Centrally selected captains and majors from throughout the Air Force earn a master's degree in air mobility through the Air Force Institute of Technology. Graduates will receive follow-on assignments to effectively utilize their in-depth understanding of air mobility.

- The DIRMOBFOR seminar prepares senior leaders to monitor, coordinate, and control global mobility forces operating in a theater of operations during a contingency, war, or natural disaster.

- The Contingency Air Base Operations Course prepares group commanders and key personnel to identify, plan, and execute air base operability and support actions for Global Reach during contingency operations.

- The Air Mobility Operations Course exposes hand-picked middle managers to the heart of the air mobility process and provides an opportunity to discuss issues that prepare them for air mobility leadership roles.

- The AMC Maintenance Training Management Course teaches Education and Training Managers the unique responsibilities associated with aircraft maintenance training.

- The Contingency Support Operations Course provides advanced security training for UTC's tasked to provide deployed base support operations. Common combat skills and critical functional tasks are taught. Security Police, Explosive Ordinance Disposal, and Combat Camera students participate in a field training exercise and work together as a team in a realistic bare base environment.

- Mobility Air Reporting and Communications (MARC) training.

- The Aircrew Stage Managers Course prepares individuals to operate and manage a stage operation at a deployed or fixed location.

- Air Transportation Courses train individuals in strategic and tactical aerial port duties to include hands-on computer systems and technical instruction.

- The Tactics Course consolidates the command's efforts to develop and refine tactics for AMC aircraft employment.

- The Maintenance Officer Procedures Courses provides AMC aircraft maintenance lieutenants and captains enrolled in the Aircraft Maintenance Logistics Officers Professional Development Program with a better understanding of AMC's maintenance operations, procedures, guidance, policies, and programs.

- The AMC Instructor Qualification Course trains selected personnel to perform as maintenance training instructors.

- The Maintenance Flight Chief Course and Production Superintendents Course inform senior NCOs on the latest command guidance, policies, programs, and procedures.

- The Command Aircraft System Training Course is designed, developed, produced, and distributed by AMWC/WCOL.

- Contingency engineering courses prepare AMC Civil Engineers to apply base support and operability procedures and techniques to support Global Reach.

- Combat Camera Officers Course is the only Air Force course providing formal training for Combat Camera officers.

- The Fixed Command and Control (C2) Course provides training on mission monitoring concepts for controllers newly assigned to the command or lacking recent AMC experience.

- A Fixed Command and Control Course was developed and established at the Air Mobility Warfare Center to address the critical 1C3X0 shortage within AMC and to provide command core standardized training for newly assigned command and control personnel.

- The AMWC houses AMC's sole operational flight test squadron. The 33d Flight Test Squadron (33 FLTS) conducts operational test and evaluation for air mobility unique weapon systems, subsystems, and mission equipment. It also assesses new tactics and concepts and performs logistics supportability and service tests on airlift and tanker aircraft, mission systems, and support equipment. It participates in Air Force, joint, and allied test programs. The 33 FLTS maintains a detachment at Charleston Air Force Base SC, responsible for follow-on test and evaluation for the C-17 and three operating locations at Natick Labs MA, Yuma Proving Grounds AZ, and Ft Lee VA.

The AMWC applies Air Force Instructional Systems Development concepts, ensuring the proper accomplishment of course needs analysis, data compilation, learning objectives, testing, evaluation, and validation of educational materials. The AMWC also maintains an extensive library and provides media, graphics, and audiovisual support.

Quality Air Force Training

Air Mobility Command's success in improving customer service and overall performance depends increasingly on the skills and motivation of its work force. This depends on AMC personnel having opportunities to learn and to practice new skills. This ensures personnel development is integrated into the overall business planning to ensure comprehensive training and education in Quality Air Force Criteria. These criteria include:

- To assess the linkage of Quality Training to key business results.

- To ensure training promotes high performance, create opportunities, and self directed responsibility, foster flexibility, and rapid response to changing requirements.

- To ensure training addresses key performance objectives including those related to improving customer responsiveness and enhancing high performance work units.

Members should receive, as a minimum, training on the "Quality Approach." This training should include leadership skills, communications, teamwork, problem solving, meeting customer requirements, process analysis, and process improvement.

Just-in-time training for specific needs of Quality Advisors, team leaders, Process Action Team (PAT) members, Unit Self Assessment team members, and strategic planners should be made available for unit Quality Offices, HQ AMC, and contracted sources.

By focusing on our "customers," our personnel will have the opportunity to make continuous improvements for all AMC processes and contribute to employee motivation, progression, and development.

Aircrew Training

Aircrew Training System (ATS) contractors conduct most AMC aircrew training. Contractors teach the academic and simulator phases, while AF instructors teach the aircraft flying phase. Each weapon system training program is currently managed by a separate ATS contract, which defines specific instructional methodologies and outlines desired training media. Pushing routine, unilateral training tasks down into lower training media increases training efficiency and frees up simulators and aircraft for operational mission rehearsal and execution. With the reduction in force and flying hours, it has become difficult to receive the training needed for proficiency. Units will increasingly take advantage of computer-based training as multi-media and virtual reality technologies mature.

Another major area of concern is large formation training. This training must provide a robust environment to train aircrews, tacticians, and mission planners in the employment of formations of six or more aircraft. Following lessons learned from UPHOLD DEMOCRACY, AMC is emphasizing the need for employing aircraft formations in smaller training exercises and JA/ATTs; and advocating continued use of large formations during joint exercise development.

Finally, standardization of aircrew training remains a primary focus at all levels within the command. An ambitious series of Mobility Aircrew Training System Tiger Teams made significant progress toward analyzing how to achieve that goal. Implementation of their recommendations will be applied to the management of aircrew initial, upgrade, and continuation training. This will result in greater standardization and efficiency.

Unit Training

Units are responsible for maintaining mission readiness, to include theater indoctrination and compliance with all applicable directives. The goal is to maintain C-1 readiness levels with 90 percent of total personnel and 85 percent of critical personnel trained to mission ready status. Special qualification training such as Special Operations Low Level (SOLL) II, Primary Nuclear Airlift Force (PNAF), and lead and evaluator upgrade are all completed and certified in unit. Continuation training is conducted using a mix of contractor and AF personnel. AMC will continue to set policy and provide oversight for some initial and all continuation aircrew training, as well as maintain the responsibility for force management, ensuring proper distribution of personnel experience to fulfill assigned unit tasking.

Joint/Multinational Training

The global nature of air mobility operations requires a continuous focus on joint and multinational operations. After AETC and AMC technical training is complete, post-graduate training in joint service and international operations formally integrates the customer into the training equation, ensuring true mission readiness. The JCS-directed exercise program presents unique training opportunities to meet specific wartime customers needs and provides a forum for assessing mobility force readiness and direct feedback through all levels of command.

Maintenance Training

The AMC Maintenance Training Plan identifies the need to restructure maintenance AFSCs and align training to support Production Team Maintenance (PTM). The goals are to reduce the number/variety of technicians required to perform a task and to minimize the number of technicians required for deployment. AMC is accomplishing this through a standardized Maintenance Qualification Training Program (MQTP). The MQTP trains aircraft maintenance personnel to meet AMC needs not currently supported by AETC. It standardizes training through a centrally developed curriculum and formalizes the OJT process with designated instructors. Future plans include expanding into off-equipment AFSCs such as Aerospace Ground Equipment (AGE). AMWC/WCOL provides system schematics and graphics catalogs to enhance the training material used by field MQTPs.

As the Air Force Media Center no longer supports the production of slide tape modules, AMC will conduct a needs analysis to establish training requirements. Computer based training (CBT) is being developed for procedures/operation training (primarily graphics based). Interactive video disk (IVD) technology is also being developed for troubleshooting or simulation of tasks where required. AMWC/WCOL provides direct support by supplementing configuration, installation, and maintenance of the IVD work stations delivered throughout AMC.

AMC is currently acquiring interactive courseware training systems (ICWTS) to enhance the development of interactive courseware to be used at student stations at all AMC operational locations. Students will interact with a computer for the instruction and training of a specifically selected set of tasks instead of requiring a mission capable aircraft for training. The system consists of state-of-the-art system hardware and software and will be capable of upgrade enhancements. AMC is pursuing the use of ICWTS in an attempt to reverse a declining trend in maintenance experience and to expedite a trainee's qualification process. ICWTS' goals are simple:

- Improve the quality of maintenance accomplished by our maintenance personnel.
- Standardize maintenance training command wide.
- Reduce the time necessary to train an individual to a desired standard.
- Support a just-in-time training concept.

Objective 2.3.1
Maximize logistics training resources to maintain 75% trained/experienced level workforce for each weapon system and specialty code. LGQ, FY01

Some locations recently identified reduced experience levels in aircraft maintenance AFSCs. In particular, we have a low number of highly experienced KC-10 maintenance personnel. Several factors contributed to this, including separation incentives (VSI, SSB, and the early retirement program), units relocating to different bases, and base closures, all exacerbating the normal cycle of accessions/rotations/cross-training/separations/retirements. We want to keep at least 75 percent of the maintenance workforce trained/experienced to ensure an adequate number of maintainers is available to meet mission requirements. While accurate measures are not currently available in automated DP or LG information systems, the training and experience levels are generally considered adequate at most AMC bases.

Although we can provide training when needed, we have less direct control over the experience level of our maintenance force. We are working a few initiatives in concert with DP that should increase the percentage of qualified maintainers in some problem areas. We will also ensure units with training problems provide local training promptly, with HQ AMC monitoring and assisting as necessary.

Contracting Training

In 1990, the Defense Acquisition Workforce Improvement Act (DAWIA) was enacted. The Air Force sanctioned the Acquisition Professional Development Program (APDP), a 3-level certification program that combines experience, training, and education. Objectives are to allow for both formal and informal training and provide certification oversight and approval for all AMC contracting personnel. Training and proficiency courses are conducted in two ways:

- Home Station Training: Phased contingency contracting officer training, On The Job Training (OJT), and monthly training to maintain proficiency in this dynamically changing world of acquisition reform.

- Formal Training:

  - • The Defense Acquisition University, Air Force Institute of Technology, and the Air Education and Training Command provide mandatory acquisition courses. Education with Industry (EWI) and the Federal Acquisition Institute (FAI) provide for alternative methods for training.

  - • Contracting participation in the AMC and Air Force TOP DOLLAR programs enhance the home training program and ensures contracting officers are equipped with the necessary skills to effectively operate in any contingency environment. In addition, it provides valuable feedback on the effectiveness of home station training.

  - • Military and civilians are required to pursue and attain specific educational levels through local colleges and universities (24 semester hours in business, a baccalaureate degree, etc.) in order to become certified at each level in APDP.

Security Police (SP) Training

Air Mobility operations cannot be adequately supported if personnel assigned to provide security are not trained and proficient in air base defense tactics, security, and law enforcement duties. Training and proficiency courses are conducted in four ways:

- AETC Formal Training: Ensures SP personnel are highly trained to perform their peacetime mission and provides initial and follow-on ground combat skills, which enhances overall warfighting capabilities.

- Home Station Training: The key to SP readiness is an active home station training program providing hands-on training of perishable skills with assigned weapons and equipment.

- Formal Unit Training: Annual participation at the AMWC enhances the home station training program and ensures unit skill proficiency and integration. It also provides feedback on the effectiveness of home station training.

- Joint Readiness Training Center (JRTC)/JCS Exercises: Provide opportunities for SP forces to integrate with other Air Force specialties and Services to exercise their skills in a joint environment under realistic conditions.

Current SP deficiencies lay in the area of training for airfield security, the ability to conduct convoy security, operations on urban terrain, and counter-sniper capabilities. AMC is committed to preparing our personnel for regional threats and challenges, while improving the quality of law and order at home station. New equipment is not sufficient. Current and future contingencies will require our personnel to develop specialized skills and approaches to deal with a more complex and demanding security environment. Consequently, SP personnel must be highly trained and capable of rapid deployment. Toward this end, the SPs have three training initiatives:

- Increase emphasis on joint and multinational exercises that stress interoperability, joint war fighting doctrine, and rapid deployment to enhance their convoy, military operations on urban terrain, and counter-sniper capability.

- Develop training capability on regional threats and challenges to ensure mobility forces are prepared for unique tasks they are likely to face.

- Utilize the Joint Universal Lessons Learned System (JULLS) in developing the latest concepts of operation and desired training objectives, and expose deployed forces to these scenarios at the AMWC and JRTC.

Force Protection Advisor Training

AFOSI's force protection services are constrained by the number of trained force protection advisors. AMC's high deployment tempo overextended the limited number of trained advisors, resulting in augmentation of AMC deployments with agents unfamiliar with the force protection mission. To correct this problem, 3d Field Investigations Region (3 FIR) will ensure that their detachments are augmented with at least two force protection advisors who are trained in AFOSI war and contingency tactical operations. In conjunction with the TACC and AMOGs, agents will deploy with AMC personnel to locations where there is a threat to AMC resources. In addition, 3 FIR will continue to educate AMWC trainees on the AFOSI force protection mission.

Civil Engineer (CE) Training

Air Mobility operations cannot be supported if the personnel assigned to operate the mobile infrastructure are not trained and familiar with the equipment. The training for the mobile infrastructure is accomplished in three ways:

- Home Station Training: The key to engineer readiness is an active home station training program providing hands-on training with real-world assets. Portions of the mobile infrastructure can be used to promote realistic base training exercises and operational readiness inspections.

- Formal Training: Participation in the SILVER FLAG task certification every 2 years and AMWC's Contingency Support Operations Course (CSOC) and Contingency Base Operations Course programs enhance the home station training program. SILVER FLAG is the only Air Force formal task certification training for CE in existence, and it is located at Tyndall AFB. AMC policy requires EOD personnel attend the CSOC every 2 years, enhancing skills vital to deployment operations and advance EOD procedures.

- JCS exercises: AMC engineer and emergency services forces gain valuable experience by participating in CONUS and OCONUS exercises.

Combat Camera Training

Combat Camera's primary mission is to provide timely and valuable decision-making and communications tool. Combat Camera's Imagery and products provide a means to quickly communicate extensive amounts of information to meet a wide variety of operational related applications across the range of military operations. Products are used in operational decision making and reporting, and provide a historical record of Air Force operations. Training of Combat Camera forces demands realistic participation in JCS exercises and the AMWC's field training courses. The AMWC conducts Combat Camera Officer Training and the Combat Camera field training portion of the Contingency Support Operations Course. The Combat Camera Officer Course prepares Visual Information Officers for leadership of deployed Combat Camera teams. The Combat Camera field training prepares personnel for deployed operations in austere/hostile environments. The AMC Sup to AFI 10-201 identifies the requirement for all Combat Camera personnel to attend these courses. Proficiency in deployment skills is required as well as primary duty skill requirements.

Computer and Communications Training

Operation RESTORE HOPE revealed a deficiency in training for C4I systems personnel in operating computers and maintaining complex networks. In addition, increased emphasis on information warfare/information protection has created training requirements for security monitoring systems. Intelligence systems, with their requirements for large bandwidth in dissemination of imagery-based products, compounds the training problem. For these reasons, and the vast changes in technology occurring today, there are major changes occurring in the 3C0X1 (Comm-Computer Operations and the Comm-Computer Systems Controller) Air Force Specialty Codes (AFSCs). In the fall of 1997, the two AFSCs will merge and become 3C4XXs, Systems Technicians. The Technical Schools for both AFSCs have been changed to begin training with emphasis on the new technologies. The 3C0X1 tech school de-emphasized data processing and telecommunications and has added electronic principles, PC troubleshooting and repair to the LRU (line replaceable unit), network management, and systems administration (SA). The 3C2X1 has de-emphasized long haul circuits and has emphasized network management, digital communications, and systems administration. Air Education and Training Command (AETC) now teaches a new Base Network Control Center (BNCC) Systems Network Support course which is a 7 week supplemental course that covers the entire network arena along with a 4 week course in C2IPS System Administrator (SA) duties (a 1 week deployable C2IPS portion is projected to be added in 1997). AETC also has Mobile Training Teams (MTT) that train UNIX, SQL, ORACLE, and Networking. The Technical School curriculum for the new ASFC is being written along with the new Specialty Training Standard (STS). Air Force Communications Agency (AFCA) is funding the training for Base Information Protect (BIP). AMC has also leased computer based training in networking for the past 2 years for all AMC bases.

All this training is in place for Air Force C4S personnel. However, the number of personnel trained currently is behind the power curve due to the number of quotas available through Keesler AFB. Within the next 4 years, AMC should be able to catch up with training all the personnel required to perform the many duties the C4 AFSC arena is responsible for.

Currently, professional development training for comm squadron personnel is inadequate. Air Force Communications Agency (AFCA) conducts two seminars at Scott AFB. Attendance at at least one of these seminars by wings plan flight 3C3X1 and 3A0X1 personnel is encouraged and is critical to their professional development, however, a shortfall in training dollars continue to affect the wing level communications unit plans flights throughout AMC.

Aeromedical Evacuation (AE) Training

Aeromedical Evacuation Crew Members (AECM) should arrive at their units qualified. Initial qualification should consist of a formal, standardized, and integrated training program. Movement of "stabilized" patients (as opposed to "stable" patients) requires an increase in AECM critical care skills. Aeromedical Staging Squadron (ASTS) personnel require formal, standardized training to support the "stabilized" patient. AE mission support (AEMS) personnel require formal, standardized training to enable them to assume duties in any AE operation. Critical Care Aeromedical Transport Team (CCATT) and AE physicians who will augment AE crews by accompanying the "stabilized" patients throughout both the Tactical and Strategic Theaters require formal, standardized training to support the new Conops for "care-in-the-air" in accordance with the new AF doctrine. AMC is currently pursuing avenues to enhance AECM critical care skills and provide the necessary training needed to support the AE mission. Program Objective Memorandum (POM) packages have been submitted to provide training at centralized locations. A flight qualification program would enable AECMs to arrive at their units fully qualified, create surge capability, provide a dedicated training cadre that can sustain a pipeline of fully trained replacements, and allow for total force interoperability. The AE crew training initiative will allow crewmembers to maintain proficiencies or learn critical care skill to care for the stabilized, critically injured patient. The CCATT and AE physician course will familiarize them with the AE environment and to effectively integrate with the AE system and the personnel assigned to care for these patients. The Aeromedical Evacuation Contingency Operations Training (AECOT) course would standardize training for the AE System total force structure. It would allow training for AEMS, AECM, CCATT, AE physician augmentees, and ASTS personnel and allow for direct interface and assumption of duties in any AE unit or operation. A POM for Civil Reserve Air Fleet (CRAF) training was also submitted in order to provide AECM and ASTS personnel the opportunity to have hands-on-training, which is presently lacking. A level III interactive computer based training program, MENTOR 2010, has been developed for the flight nurse/aeromedical evacuation technician training program. MENTOR 2010 will provide sustainment training after they return to their AE units. Courseware development for the other courses being developed is also a consideration. AMC/SG will continue to explore innovative methods to provide the training necessary to support the care and transport of patients within the AE system.

Tanker Airlift Control Center (TACC) Training

In order to counteract inadequate initial, recurring, and refresher training for headquarters-level command and control personnel, we have developed an extensive training program. Integrating the functions of operations, logistics, intelligence, transportation, communications, and weather into a focused team requires a robust foundation training program. The primary goals of the TACC program are to provide that common core of training for all TACC personnel based on a consistent set of standards and objectives and to develop, then implement courses that focus on internal and external communication, information management, and teamwork. The TACC training program capitalizes on leading-edge technology and innovation to provide its personnel with high-caliber, professional training. From concept to implementation, trainers are directly involved in the development of new command and control systems, ensuring the user's operational and training needs are met. Job-specific training programs within the functional areas of the TACC continuously broaden, strengthen, and reinforce the skills and team concepts learned in foundation training. The establishment of a TACC training facility; development of formal programs for controllers, planners, directors, and transportation managers; and systems and formal course development for GDSS-MLS, the AMC Deployment Analysis System (ADANS), Tanker Airlift Mobility Information System (TAMIS), and Command and Control Communications exemplify our ongoing efforts. Our vision for the future includes dedicated facilities, courseware, and manpower committed to world-class training in all disciplines. That vision came to initial fruition in FY 96, and will grow and mature in succeeding years.

Pre-Command Training and Spouse Orientation

The AMC Pre-Command Training and Spouse Orientation course provides newly selected squadron commanders, and their spouses, with a better understanding of how to deal with the command environment and responsibilities, and how to best use available resources. The eight to nine day course provides a forum to prepare future squadron commanders for the challenges of command, as well as providing the tools necessary to effectively contribute to the wing's mission. The spouse orientation portion is 4 days long and provides them an opportunity to hear some of the same information as their commander spouses. In addition, they receive information through forums and briefings, to better equip them for their role as the commander's spouse. This course is offered at HQ AMC on a quarterly basis, using both core material from Air University and unique courseware developed from within the command. Officers identified to command an AMC squadron will attend this course prior to their assumption of command.

Services Training

AMC quality of life programs are enhanced by specialized training of activity managers in their specific functional area: child development, youth activities, food service, lodging, recreation activities, and mortuary affairs. This formal training is conducted at Services schools located at Lackland AFB or Randolph AFB. The Air Force Institute of Technology (AFIT) at Wright-Patterson AFB also conducts services-unique training. Training focuses on modern techniques and programs for providing quality service to enhance customer satisfaction.

Services field education training focuses on the readiness aspects and Force Beddown of food service, field lodging, recreation and fitness, and mortuary affairs. Initial training is conducted at Lackland AFB while recurring training takes place at Tyndall AFB (SILVER FLAG) or Dobbins ARB. This training is enhanced by continuous home station proficiency training, thus ensuring AMC Services personnel are capable of supporting their worldwide contingency commitments.

Intelligence Training

AMC Intelligence faces a number of training challenges. The first, referred to earlier, is a continuing effort to acquire adequate numbers of 7-level intelligence NCOs.

The insufficient number of trained and experienced personnel continues to hamper intelligence support to air mobility operations. Perhaps most important is the command's Combat Intelligence System (CIS) training shortfall. Because CIS is the Air Force standard intelligence system, all personnel in the career field require formal and in-house training. However, many have yet to receive formal training on the system. AMC is working to ensure all intelligence personnel receive formal training and participate in unit-level internal training programs. The AMWC has developed a "just-in-time" CIS course that will give deploying personnel an intensive period of training. At the same time, AETC has integrated CIS training into the intelligence courses at Goodfellow AFB. The key training concern now is the CIS System Administrators' Course, which provides detailed instruction on CIS management and protocols. The only available course ended in Oct 96 with no replacement yet identified. As JOINT ENDEAVOR made clear, CIS has enormous potential to provide timely and tailored intelligence to aircrews and staff at home and deployed locations. Nevertheless, it requires trained intelligence personnel to take full advantage of its capabilities and trained communications personnel to keep it running. If funded, the Mobility Air Intelligence System (MAIS) initiative will provide for most of this training.

Another training shortfall, and one receiving CINC-level attention during JOINT ENDEAVOR, is the Aircrew Intelligence Training (AIT) program designed to improve aircrew threat and ground fire recognition skills. During his visit to Bosnia, CINCTRANS was concerned about the aircrews' inability to differentiate between different types of anti-aircraft and ground fire, and as a result directed improvements in the AIT program. AMC Intel is working with AMC Ops, the AMWC, and the Air Intelligence Agency (AIA) to ensure this key training initiative is fully implemented at the units. Current initiatives include development of realistic training videos, better implementation of training at the unit level, and enhanced intelligence-tactics coordination at the units.

Information Warfare (IW) Training

The command's new IW Branch continues to coordinate implementation of the AMC IW awareness, training, and education program as outlined in draft AMC Instruction 10-1, the command IW directive. Once active, this program will involve all AMC personnel in basic and recurring education and training to include reading key IW documents such as <u>Cornerstones of Information Warfare</u> and <u>Air Force Draft Doctrine</u> 5 (Information Warfare Doctrine for the USAF) as well as viewing the "Cyberstrike" video series. It will also establish clear training standards at the units and items for the Inspector General to assess during ORIs. The AMWC is integrating information warfare into applicable curriculum and doctrine. This kind of integration will add greatly to the common understanding by AMC personnel of IW principles and practices. These measures will ensure that AMC personnel are adequately trained to protect and exploit fixed and deployable C4I systems. The IW Branch is determining how the AMC program will relate to Air Force IW training requirements.

Counterproliferation/Weapons of Mass Destruction (WMD) Awareness

The Air Force Counterproliferation Master Plan and AMC Counterproliferation Implementation Plan provide guidance to forward operating areas (FOAs) and direct reporting units (DRUs) with guidance on developing implemention counterproliferation initiatives. In addition to summarizing national and DoD counterproliferation policy strategy, the Air Force Counterproliferation Master Plan provides a threat assessment and descriptions of counterproliferation programs. Using the Air Force and AMC plans as a foundation for awareness, the command needs to spread the word to the bases to plan to meet US Government initiatives.

EDUCATION

An annual survey assesses the needs for potential educational programs and services. The Education Services Program provides personnel with on- and off-duty educational opportunities from high school through graduate degree levels that are essential to meet intermediate- and long-term needs. Also, the continuing development of responsive voluntary educational programs is essential in maintaining a public image that will support recruiting and retention of high quality personnel. Although extensive educational counseling is available for all AMC personnel, each individual has the primary responsibility for taking advantage of educational opportunities. It is vital to the future of AMC that each mobility professional understands the career and personal implications of making the most of educational opportunities.

The Tuition Assistance Program is the primary means that our military pay for their education. It is a quality-of-life issue that impacts recruiting, retention, and readiness. In every USAF Recruiting Service survey since 1988, recruits have identified education as the number one reason they join the Air Force. Education is a foundation of our ability to develop and retain high quality personnel, and education is the primary way our personnel develop themselves for more challenging jobs. Education allows the military to return to society a more productive citizen, better able to support his/her family. Tuition assistance is important to the lives of our personnel and their families in this time of personnel turbulence and transition.

AMC education programs are experiencing record course enrollments despite the force drawdown. During FY95, AMC personnel enrolled in 50,276 courses--a 20 percent increase since FY91. Officers earned 463 master's and 3 doctorate degrees; enlisted members earned 1,633 associate, 564 baccalaureate, and 66 master's degrees. Our people are preparing for increasingly competitive promotional opportunities and focusing on making themselves marketable within and outside government service.

AMC continues to test a consolidated Education and Training Flight (E & TF) for future implementation. The concept of the E & TF is to provide "one-stop service" for career development activities; eliminate duplication and fragmentation of base-level education, training, and testing programs; create a central base-level structure and serve as a hub to receive and administer distance learning; and enhance customer service satisfaction. Satellite networks, computers, teleconferencing, E-mail communications, and other technologies are making their debut in our education classrooms now. In fact, all AMC bases have satellite receivers installed and operational, providing education and training opportunities. These high technology delivery systems, combined with improved traditional programs, will continue to provide a flexible, cost efficient, and high quality product to AMC personnel.

CIVILIAN TRAINING AND EDUCATION

To achieve maximum mission capability, the Air Force must develop and maintain high quality civilian employees. It is Air Force policy to provide training and education for its civilian employees in order for them to perform their duties at a desired level of proficiency. We rely on the vision and judgment of our supervisors and managers to identify specific training needs of our civilian employees. Employees who have valid training needs will be given the opportunity to participate in training and development programs alongside their military counterparts. This includes attending classes offered through the Mission Readiness Training Program as well as the AMWC. The intent of Air Force-sponsored training is to supplement employees' self-development activities.

The Air Force Personnel Center, Directorate of Civilian Personnel Operations (DCPO) at Randolph AFB TX offers professional career development and educational opportunities to those employees who demonstrate exceptional performance and potential to progress to key management positions. DCPO publishes an annual civilian training guide that gives details on these opportunities. Included are programs offered through PME as well as prestigious colleges and universities.

CAREER DEVELOPMENT

This section reflects AMC's goals and strategies for career development for the entire air mobility team. In many cases, when people are assigned to AMC, we hone their skills to specific aircraft and system requirements particular to their locale through a variety of command-unique, formal training courses, on-the-job training programs, flexible work schedules, and certification programs; then, we classify them. Professional development is done through a variety of means including formal, in-resident PME programs, and planned job rotations at various locations.

Many AMC military members face uncertainty about career opportunities. While the Air Force as a whole is getting smaller, our personnel need to know there will still be opportunities for hard-charging officers and enlisted personnel who want to stay in and excel. Commanders and functional managers must counsel these members and provide career guidance.

CLASSIFICATION

The Air Force classification system establishes the occupational structure of the officer and enlisted force and identifies duties and tasks for every position needed to accomplish the Air Force mission. The system also identifies qualifications and abilities of each member in relation to position and skill requirements. The occupational structure is flexible to permit airmen and officers to specialize and develop their skills and abilities while allowing the Air Force to meet changing mission requirements.

Individual airmen and officers have a joint responsibility with commanders and supervisors at all levels to fully develop their abilities consistent with Air Force needs and within the established patterns of specialization. An Air Force member's professional progression is directly related to the amount of personal effort the member makes to gain and keep specialty qualification. Opportunity to add to technical, military, and professional qualities is afforded through such avenues as Community College of the Air Force, continuation training, off-duty education, and self-training.

OFFICER DEVELOPMENT

Officer professional development is critical for creating the mobility leadership of tomorrow. There are two sides to this development responsibility: what commanders can do for their officers and what officers must do for themselves.

Commander Evaluation & Counseling Responsibilities

Commanders must ensure each officer receives the most accurate and meaningful performance reports and promotion recommendations possible. The purpose of evaluation reports is to record an individual's performance over a specific period. They provide a permanent, long-term record of an officer's performance and potential based on that performance. Promotion recommendations provide performance-based differentiation to assist central selection boards. Both documents must make clear, consistent recommendations for PME and command, if warranted. Commanders must also take the time to counsel their subordinates and provide opportunities to develop leadership skills. Providing consistent and effective performance feedback to officers helps them improve their performance and grow professionally.

Officer Developmental Responsibilities

Advanced academic degrees and PME are vital for officer progression and can greatly impact promotion board results. Officers need to accomplish the appropriate PME as soon as they are eligible, either by correspondence, (CD-ROM for ISS), seminar, or in residence. PME emphasizes the analytical and practical tools officers need as future military leaders. Off-duty advanced degree programs are normally offered at all AMC bases through various accredited institutions and should normally be pursued as soon as the officer has depth of experience in the career field. Officers may also pursue on-duty education opportunities through selection to an AFIT-sponsored advanced degree program.

Officer Assignment System (OAS)

The recently revised OAS balances individual officer desires with mission needs under the tenet of "service above self." It also provides for better utilization and professional development of Air Force personnel. The foundation of the OAS is a proactive team approach, which depends on commanders working closely with their people, discussing long-term career development, assignment options, and individual potential in relation to future assignment actions. Active involvement in career counseling and assignment recommendations enhances mobility officer professional development and better prepares the AMC officer corps for future Air Force leadership positions. Depending upon an officer's general career area, there are many avenues to success under the OAS.

Mission support officers have skills that can be utilized Air Force-wide and are encouraged to seek experience in other commands, the Air Staff, and Joint Staffs to gain depth and breadth. Overseas experience is particularly useful since it gives an officer a "deployed in place" perspective. Support officers have many opportunities to develop their career skills early, especially at wing or higher level staff jobs. Additionally, leadership opportunity comes earlier for mission support officers, making majors and lieutenant colonels eligible to compete for squadron command on the AMC PHOENIX EAGLE Support Board.

Depth of experience in a major weapon system is the strong foundation upon which rated officers can build their professional development. Rated broadening may then be achieved by crossflow into another weapon system or through an AETC schoolhouse instructor assignment. Statistics show a strong correlation between schoolhouse experience and operational depth to subsequent selection to the PHOENIX EAGLE squadron commanders list. Upon promotion to major, rated officers should seek staff tours at MAJCOMs, the Air Staff, and Joint Staff to successfully compete for leadership and command positions in AMC.

> Objective 3.1.1
> *Support programs that develop and broaden air mobility experts to increase mobility presence in Air Force and joint leadership positions.* DPA, Continuous

AMC is committed to creating a pool of highly qualified mobility experts to groom for future AMC, AF, and joint senior leadership positions. Many programs exist to develop these mobility experts. The PHOENIX HAWK program identifies captains with 5-7 years of service who possess leadership qualities worthy of increased responsibility. These officers will PCS to Scott AFB and spend 1 year in the TACC followed by 1 year on the AMC staff. Selected officers are exposed to a MAJCOM staff tour early in their career and will be ideally positioned to crossflow to another major weapon system upon program completion. The PHOENIX REACH crossflow program identifies officers to crossflow from airlift aircraft to tanker aircraft or vice versa. These officers will have extensive operational experience in both the airlift and tanker mission. The Advanced Studies in Air Mobility course is a highly selective and academically challenging masters-level study of all facets of air mobility. This course is held at the AMWC and targets officers with mobility experience and 9-13 years of commissioned service.

ENLISTED DEVELOPMENT

Advancement in the enlisted ranks depends heavily upon individual initiative, performance, education, and training. Enlisted members must consider promotion fitness throughout their careers. It is never too early to begin.

Commander Evaluation & Counseling Responsibilities

Commanders must ensure all personnel receive the most accurate and meaningful evaluation reports possible. The purpose of evaluation reports is to record an individual's performance over a specific period. Evaluation reports provide a permanent, long-term record of an individual's performance, and potential based on that performance. Commanders must also take the time to counsel their subordinates and provide opportunities to develop leadership skills. Providing consistent and effective performance feedback to subordinates helps them improve their performance and grow professionally.

Airmen

Initial career development places great emphasis on skill-level training and in-residence PME. Supervisors should provide skill-development opportunities to ensure first-term airmen become proficient in their immediate jobs and develop career field knowledge as a whole. Airman Leadership Schools (ALSs) provide instruction on a variety of topics to include: Quality Air Force, leadership and management, communicative skills, and profession of arms. Senior airmen must also graduate from the ALS before they can be promoted to staff sergeant.

Noncommissioned Officers (NCOs)

In order to improve their promotion fitness, mid-level noncommissioned officers must continue skill-level advancement, attend in-residence PME, and pursue career-broadening assignments. Staff sergeants must attend in-residence advanced technical training and reach the 7-skill level before they can be promoted to the rank of technical sergeant. Technical sergeants must graduate from an in-residence NCO Academy to reach master sergeant rank. Superior duty performance also provides the key to attaining supervisory positions with greater responsibilities. Mid-level NCOs desiring senior-level promotions need to begin career broadening by seeking positions at various organizational levels to include wing and MAJCOM staff jobs. A special or lateral duty assignment, such as PME/technical training instructor, enlisted aide, and Air Force recruiter can enrich career knowledge and skills.

Senior Noncommissioned Officers (SNCOs)

Those desiring promotion to senior master sergeant and chief master sergeant must recognize that promotion to these ranks is very competitive. By law, only 3 percent of the total enlisted force is authorized in the top two grades, not to exceed 1 percent in the grade of chief master sergeant. Career advancement will hinge upon a variety of factors to include duty performance, education, breadth of experience, level/degree of responsibility, leadership, and career achievements. Master sergeants are highly encouraged to complete the USAF Senior NCO Academy by correspondence at the earliest possible opportunity. Extension Course Institute's (ECI) Courses 5 (interactive CD-ROM) and 8 (hardcopy format) are available to enhance the master sergeant's professional career development. Selected master sergeants and all senior master sergeants are given the opportunity to complete the resident course at Maxwell AFB, Gunter Annex, Alabama. In fact, promotion requisites to chief master sergeant include completion of a resident senior enlisted service school such as the USAF Senior NCO Academy.

Enlisted Quarterly Assignments Listing (EQUAL)

EQUAL was implemented in September 1992 and pertains to enlisted (E1 - E8) rotational assignments, both to and from overseas. This system encourages customer involvement by allowing members to tailor assignment preferences to actual requirements. For both cycles, EQUAL provides a listing of projected Air Force vacancies by CAFSC and rank. Since implementation, the EQUAL system has provided both increased stability to the airman assignment system and has heightened customer awareness and satisfaction. Figure 3-5 is a list of the quarterly assignment cycle schedules. Commanders and supervisors should understand windows of vulnerability and opportunity for their assigned members and be aware of the time cycle involved for filling unit vacancies.

OVERSEAS RETURNEE CYCLE	
Requirements	Member
Allocate/Advertise/Match	DEROS Month
Mar/Apr/May	Aug/Sep/Oct
Jun/Jul/Aug	Nov/Dec/Jan
Sep/Oct/Nov	Feb/Mar/Apr
Dec/Jan/Feb	May/Jun/Jul
OVERSEAS ASSIGNMENT CYCLE	
Air Force Requirements	Member
Allocate/Advertise/Match	Reporting Months
Jan/Feb/Mar	Oct/Nov/Dec
Apr/May/Jun	Jan/Feb/Mar
Jul/Aug/Se[	Apr/May/Jun
Oct/Nov/Dec	Jul/Aug/Sep

Figure 3-5. Overseas Cycles

CIVILIAN DEVELOPMENT

Advancement in federal civilian service is dependent on experience, education, training, and performance. There are qualification requirements for every position in federal civilian service, and individuals must meet those requirements before being placed in a position. Applicants from outside federal civilian service are usually appointed at entry-level grades, although reassignments do occur at all levels. Performance is a major factor in advancing beyond the entry level. Many employees in career fields such as personnel, supply, etc., have gone from entry level to mid-level to senior level positions based on their performance, initiative, and enthusiasm for the job. As in any large organization, some occupational areas lend themselves more readily to career advancement than others. Individuals need to evaluate their own career goals and seek opportunities that fit those goals. Additionally, in this time of right-sizing and restructuring, an individual needs to be willing to accept a variety of assignments which will enhance a person's potential to perform more complex jobs.

QUALITY OF LIFE

AMC places the same priority and emphasis on quality of life issues as does the Secretary of Defense, the Secretary of the Air Force, and the Chief of Staff. In fact, most of this subsection directly supports one of the Air Mobility Total Force Goals: ***Provide quality support to people***. By focusing on quality of life, we not only demonstrate the value we place on our human resources and the dignity that should be afforded them, but we also are supporting Air Force and air mobility readiness since every quality-of-life issue has some impact on personnel readiness. With the operational tempo increasing, the force downsizing, and benefits eroding, we need to stand firmly behind initiatives intended to maintain and improve quality of life--if for no other reason than to maintain readiness so that air mobility men and women can provide responsive, strategic **Global Reach for America**.

MEMBER INVOLVEMENT

AMC gets people involved in process improvement at all levels. The Command Quality Office provides courseware and distributes it command wide to train all personnel in quality process improvement. As a result, a Process Action Team (PAT) addressed a travel pay issue and it was selected as the Chief of Staff Team Quality Award winner at the 1994 Quality Air Force Symposium. AMC has recognized PAT members through Air Force Achievement Medals, cash incentive awards, civilian-sponsored Notable Achievement Awards, and wing and headquarters-sponsored recognition programs. Air mobility team members are encouraged to improve processes through Air Force and wing suggestion programs and customer surveys. AMC people continue to challenge "business as usual" practices to improve air mobility mission accomplishment.

PERFORMANCE AND RECOGNITION

Military

Objective 3.3.2
Increase awareness of recognition programs for air mobility personnel. DPP, FY01

The Air Force has long provided an outstanding formal recognition program. The Meritorious Service Medal (MSM), Air Medal, Air Force Commendation Medal (AFCM), and Air Force Achievement Medal (AFAM) are presented to commend individuals for outstanding service to their country. The Air Force Outstanding Unit Award and Organizational Excellence Award are unit type awards presented to organizations who, through teamwork and camaraderie, have demonstrated outstanding performance. The administrative processing of these awards over the years has proven very labor intensive and time consuming. Improving AMC recognition programs is a priority in this command, and we have streamlined and improved these processes tremendously. Approval authority for several awards was reduced to the lowest level possible. Wing commanders now have the authority to approve MSMs, AFCMs, and AFAMs locally, in most cases. No longer is it difficult to submit an individual or team for a decoration. Officer Performance Reports and Enlisted Performance Reports are used as justification for the award of MSMs and AFCMs, streamlining the process and making it much easier and quicker for submission and approval. We are currently working closely with the Air Force Personnel Center to improve the deployment recognition process, in order to clarify who can submit an award and who can approve it. Our people are now recognized in a more timely manner than in the past. However, there is always room for improvement. Each unit can ensure that all members are aware of what decorations and unit awards are available, the eligibility requirements, and suspense dates. Awareness is the key to a successful program with increased recognition.

The majority of AMC units conduct a Company Grade Officer, Civilian, Senior NCO, NCO, and Airman of the Quarter/Year program to recognize those individuals who rise above their peers in job performance, off-duty extracurricular activities, off-duty education, and general Air Force knowledge. Generally, winners compete in higher-level competitions. However, there are many untapped opportunities to increase recognition and foster morale, incentive, and esprit de corps. Operation and support units can develop internal programs to recognize the best pilot, navigator, transporter, etc. With expanded recognition programs at unit level, supervisors, commanders, and senior raters can document and capitalize on these achievements to open more career development opportunities. These opportunities often translate into higher promotion rates.

HQ AMC functional communities conduct competitions for annual winners prior to further competition at Air Force level. For example, Security Police, Social Actions, and Personnel have annual programs recognizing their outstanding performers. A recent successful initiative was the publication of the HQ AMC Special Trophies and Awards Guide, which combines all functional area award criteria and processing procedures in one, easy-to-read reference document, which greatly increased the number and quality of award submissions within the command. We expect this guide to be a handy tool in preparing and processing future awards.

Civilian

The Air Force provides a formal honorary award program to recognize and motivate deserving civilian employees and to encourage improvements in government operations. Various medal-type awards are available to recognize outstanding performers and the approval authorities range from wing level to the Secretary of the Air Force, depending on the level (rank) of award. Our goal in AMC is to make the nomination process for civilian honorary awards as much like the military system as possible.

In addition to medal-type awards, monetary awards recognize individuals for noteworthy contributions or performance which significantly exceeded job requirements. Approval authorities for monetary awards range from second-level supervisors to the Office of Personnel Management, depending on the award and the amount of money involved. Time off is another avenue of recognition for superior accomplishments. Approval authority for time-off awards is either the supervisor or an official at a higher organizational level, depending on the number of hours granted to the employee.

The Air Force civilian recognition program also encompasses awards from external organizations, usually on an annual basis. These organizationally sponsored awards are a vital part of the overall program and a valuable avenue for deserving civilian employees to compete and receive recognition on a much broader scale, while further enhancing morale, productivity, and creativity. Normally, each wing, NAF, and the headquarters staff (directors/chiefs) may nominate one individual to compete at the MAJCOM level. AMC then recognizes its winner who goes on to compete at the Air Force level. The Air Force winner goes on to compete at a higher level or at the organization sponsoring the award.

Documentation for most approved awards becomes a part of the Official Personnel Folder in addition to it being documented in the civilian personnel data system. The same applies to documentation for Air Force-level recognition for competitive awards.

Several other recognition programs exist within AMC and are all equally important. Job performance and recognition are directly linked to promotion in all grades. Recognizing our outstanding performers is, and will continue to be, a priority in this command. We must also strive to recognize the unique accomplishments of teams. People are our most vital resource. AMC men and women are deployed throughout the world, often in harms way, on a daily basis. We will continue to recognize our outstanding performers--military and civilian--providing credit where credit is due, both formally and informally.

HUMAN DIGNITY

Objective 3.3.1
Eliminate improper or unlawful discrimination or harassment. DPP, Continuous

The primary objective of Equal Opportunity Programs is to improve mission effectiveness. Recently increased emphasis on the reduction and elimination of unlawful discrimination and harassment has resulted in the establishment of newly created Air Force and AMC initiatives. In AMC, our goal is to promote an improved awareness and positive acceptance of diversity in all aspects of AF life. We strive to remove all artificial barriers limiting our people from the full realization of their human potential. Full professional participation and consideration for individual human dignity and worth are inherent rights that cannot be compromised because of an individual's race, color, religion, national origin, sex, or age. AF efforts to address mission degrading discrimination has resulted in the establishment of "Equal Opportunity 2000-Roles & Responsibilities." The CSAF directed Equal Opportunity Awareness Training for Air Force members and all DoD Civilian Employees. The AMC Human Dignity Program (HDP) was established with the specific charter to monitor command trends relating to potential discrimination and maltreatment. By direction of the AMC/CC, HDP committees are established at headquarters and at every wing in AMC to assist in our human dignity efforts. Social Actions personnel are currently being certified as Conflict Resolution Mediators to address military grievance issues at their lowest level. Civilian Equal Employment Opportunity (EEO) counselors are also being trained as certified mediators to address civilian EEO issues and attempt resolution at the informal level. In an effort to better prepare our Social Actions Officer force, newly assigned officers are now required to attend the 16-week basic Social Actions Course at the Defense Equal Opportunity Management Institute. Our approach is proactive with emphasis on viable inplace complaint systems.

TDY TEMPO

The very foundation of our war-fighting and readiness capability is our people. The command's top priority is the talented, dedicated men and women who provide responsive global reach for America every day. Following the end of the Cold War, we've seen an increase in the tide of ethnic strife and a tremendous expansion of peace-keeping and humanitarian operations around the globe. Our nation has called upon these dedicated professionals more than any other time in our history. They have answered the call for relief and peace-keeping operations around the world--Somalia, Haiti, the former Soviet Union, northern Iraq, Rwanda, Bosnia, and many other areas. The number of troops being sent overseas on temporary duty to these "hot spots" has risen dramatically. Moreover, with the downsizing of the force, our people are being separated from their families for greater periods of time and on a more frequent basis, and the number of military personnel TDY overseas steadily rises as we reduce the number of personnel stationed overseas. We must be sensitive to this growing concern of our members and their families.

While some of our critical specialties continue to be heavily tasked, we continue to meet the goal of averaging less than 120 days of TDY per person in a year. In the last year, KC-135 aircrews averaged 105 days of TDY, and TALCE members averaged 101 days. Aerial port personnel and C-141 aircrews both averaged 95 days. KC-10 aircrews averaged 89 days of TDY in the last 12 months, and C-5 aircrews averaged 85 days. Over the previous 9 months, C-17 aircrews averaged 62 days of TDY, putting them on pace for 82 days of TDY in a 12-month period. A key contributor to our success in keeping averages under 120 days is reserve component participation in deployments.

PAY AND BENEFITS

Our military strategies depend on highly trained, ready, quality forces. To achieve success, we must tend to the morale of our people and ensure they are adequately compensated for their skilled labor, sacrifices, and increased family separations which have become a big part of their everyday lives.

Objective 3.2.1
Support AF and DoD efforts to close militar -private sector pay gap, maintain retirement benefits, close BAQ gap, and support commissary benefits. DPX, FY03

Military-Private Sector Pay Gap

When Congress previously determined we would have an all-volunteer force, in effect, the nation committed itself to civilian pay comparability. Approval of a 2.6 percent pay increase for FY95 and a 2.4 percent raise for FY96 was an indication of congressional support for our people in the military. In this regard, Secretary Perry's commitment to address the pay gap which developed between military and private sector wages was welcome news. Although it will not be a one-shot fix, the sooner the gap is closed and our people are more fairly and adequately compensated, the less likely we will return to the unfortunate situation that existed in the late 1970s. Military pay raise shortfalls contributed greatly to the retention problems and the resultant "hollow force" which threatened our national security. The commitment of the President, Defense Secretary, and the Congress to develop affordable options to eliminate the gap over time is imperative for continued readiness and is heartening to all our men and women in uniform.

Retirement Benefits

Quality-of-life issues have been and will continue to be an essential element of readiness for some time in the future. The retirement system is one of the single most important reasons men and women remain in the armed services for a full career. Defense Secretary Perry and General Shalikashvili, Chairman of the Joint Chiefs of Staff, have already expressed their concern about maintaining the integrity of the system and have vigorously opposed any cuts in retirement benefits. As a result of congressional reform of the military retirement system in the 1980s, the value of the life stream earnings of future retirees has been reduced by almost 25 percent and not all of the savings have been realized. We do not know the long-term impact on retention from the congressional efforts in the 1980s to reduce the value of retired pay. Any additional changes contemplated to the system should be approached with utmost care because of the added risk to retention and, ultimately, readiness. Further cuts would be a serious breach of faith with the men and women who have served us so well.

Pay comparability and maintaining the viability of the retirement system are critical aspects of the compensation package, but there are other important programs which directly impact readiness.

Housing

AMC must provide its families affordable housing, either in kind or in the form of allowances, which meet established community standards. AMC has mapped out a strategy for facility improvement and repair which will bring our family housing (FOCUS HOMES) and our dorms (FOCUS DORMS) up to established standards. Military members who cannot be housed in government quarters, however, are forced to pay far more out-of-pocket expenses than the 15 percent intended by the variable housing allowance program. Proposed legislation will help decrease the cost of housing that members are forced to absorb out of basic pay. Increasing the amounts earmarked for basic allowance for quarters will more closely align housing costs with the 15 percent established by Congress. Local housing allowance floors are needed for our junior members to ensure they have adequate and affordable housing. Additional housing legislation is needed to protect those families whose VHA is reduced, but whose housing costs remain constant because of contractual obligations. Specific information on AMC facilities upgrades, FOCUS DORMS, and FOCUS HOMES programs can be found in this AMMP in the Infrastructure section.

Commissary Benefits

A common perception among military members and retirees is there has been a gradual, but continuing attack on benefits and entitlements. Commissary savings are vital to the military community. The commissary benefit is ranked only second behind medical care as the most important non-cash benefit. The commissary is crucial for our young enlisted personnel with families, especially those stationed in high-cost-of-living areas. The commissaries offer a 20 to 25 percent savings. For a family of four, which spends an average $500 monthly on commissary goods, this represents a savings of up to $125 per month. Faced with pay gaps, inflation, and rising housing costs, our people increasingly rely on the commissary benefit to meet basic family needs. Recently, congressional language has been very supportive of the commissary benefit and has noted the importance of commissaries as a non-pay compensation benefit.

Health Care

For years, the perception among active duty and retiree families is that one of their most cherished entitlements, medical care, was eroding, almost to the point of nonexistence. For many family members, their access to care on a space-available basis meant that access to timely care was severely limited. For many retirees, access to a Medical Treatment Facility (MTF) on a space-available basis resulted in limited care and treatment. For those who could not use the MTF because of distance, it meant little realized health care. Furthermore, with additional base closures and an almost certain dwindling active duty medical population, timely access to medical treatment for dependents and retirees will be even more unlikely. However, the TRICARE system which will be in full operation by 1997 will be the answer to the perceived shortfall and hopefully will alleviate the fears of military members and their families. Finally, Medicare Subvention is needed to allow retirees over the age of 65 to enroll in the HMO option, TRICARE Prime. This will allow timely access and adequate coverage at a fair price for all military beneficiaries.

> Objective 3.4.1
> *Facilitate implementation and maintenance of a managed health care system that optimizes quality, access, and cost for all beneficiaries.* SGS, FY99

To implement and maintain a managed health care system that optimizes quality, access, and cost for all beneficiaries, a TRICARE medical care initiative is being pursued. A key task to implementing TRICARE is determining the medical services required for the active duty population. Care required beyond this threshold will be evaluated on local health care market availability, quality, and cost. For other than active duty care, AMC

MTFs will "make or buy" health care based on business case analyses of their local markets. DoD MTFs within the US have been divided into 12 geographical medical regions. The largest MTF within the region will be designated the lead agent for TRICARE contract development and monitoring and coordination of regional resource planning. AMC will facilitate TRICARE implementation by strategically resourcing its facilities based on mission requirements, local market analyses, and business assessments. This will include active pursuit of federal joint-use opportunities and rightsizing our MTFs in light of potential downsizing of the medical force.

Medical funds (O&M and CHAMPUS) will be distributed by DoD Health Affairs on a per capita basis. The local catchment area manager will be responsible for providing or arranging necessary care for the identified patient population (number of covered lives) within their area.

SERVICES

Services contributes to the readiness of AMC personnel through fitness and subsistence programs, fostering community cohesion, supporting family well-being, and by offering customer-driven programs to improve the quality of life for AMC people.

Several strategies, goals, and objectives are common to all Services activities and will be used in developing base-level and command wide modernization plans. All areas will constantly seek to improve and expand on customer satisfaction, improve and maintain facilities and equipment, enhance training and motivational programs, and maintain a capability to respond to wartime combat and peacetime contingencies.

Prime Readiness In Base Services (Prime RIBS)

The Prime RIBS program is an Air Force, MAJCOM, and base-level program that organizes, trains, and equips Services military forces for wartime and peacetime contingency support roles. The AMC Prime RIBS program is in sound condition. In the short-term, the focus is to implement Services data automation hardware and software for the field environment. Mid- and long-term actions are focused on continuous improvement in all areas, including replacing and upgrading mobility and readiness training assets, improving home station and field training programs and increasing the integration of Air Reserve Component (ARC) forces into contingency operations.

Mortuary Affairs

The Air Force Mortuary Affairs Program provides for the performance of all logistic functions incident to the recovery, identification, care, and disposition of the remains of deceased military personnel and other eligible deceased persons.

Goals of the AMC mortuary affairs program include implementing and strengthening global responsibilities for all OCONUS deaths, implementing procedures at the Dover and Travis AFB port mortuaries to care for all CONUS Air Force deaths, and providing semiannual training for units tasked to support port mortuary contingency operations.

Military Support & Community Support Activities

Objective 3.4.4
Increase effectiveness and availability of support programs for all AMC members, as well as families, to ensure mission accomplishment. DPP, FY01

Military support provides Air Force personnel with food, lodging, fitness, and recreational services during peacetime and wartime. The short-range focus is on integrating subsistence support into Services and implementing direct vendor subsistence delivery. Longer range goals include use of preprepared foods, refurbishing or replacing outdated base dining facilities, and developing new standards for inflight meals.

Lodging goals include upgrading all transient facilities to AMC standards, programming and building enough transient facilities to meet requirements, replacing furnishings and performing upgrades on a programmed rotational schedule, and ensuring all transient facilities have computer capabilities (laptop access). Additional goals include developing an automated accounting system and acquiring a deployable information system to handle field lodging.

Objective 3.4.3
Achieve Five Star Fitness Program certification at all AMC bases. SVP, FY99

Fitness and sports activities are evolving to meet increased fitness standards and healthier lifestyles. Goals are to improve the overall fitness programs in base fitness centers to meet the needs of the Air Force Fitness Program. Actions necessary to attain this new level include training fitness staffs to fulfill fitness prescriptions in support of the fitness improvement programs (FIPs), modernizing the expanding equipment to support the FIPs, projecting and initiating facility projects to meet increasing customer base, conducting viable intramural and extramural sports programs and assisting members in developing individualized fitness programs. The AMC Five-Star Fitness Program is a benchmark for base fitness programs and provides standards at three levels in each of five categories: professional fitness specialist, trained staff, equipment, facilities, and programs. When an AMC base fitness center meets the standards at any level in two categories, they receive a plaque intended for public display. AMC Pamphlet 215-11 details the program.

Objective 3.4.2 *Build healthier AMC Communities.* SGP, FY05

Force readiness is directly related to community health. To achieve continuing progress in force readiness an integrated program covering the breadth of prevention activities is a foundation building block. In essence, we must "build healthier communities." The primary AMC focus is to optimize global reach and secondarily to raise the entire AMC community's level of health. Building a healthier community does not mean simply ensuring the absence of disease. Nor is it limited to restoring wellness by curative intervention. Instead, it means preventing illness and injury while protecting our environment. This will be accomplished through optimizing wellness through healthier lifestyles, clinical prevention, medical/dental treatment, and occupational health and community environmental programs. Enhancing health promotions, disease prevention, and targeted interventions are tools. Specific tasks to begin this journey are: reduce the number of modifiable health risks in the active duty force 20 percent by 2005; meet the DoD supported clinical prevention objectives of Healthier People 2000 for all active duty by 2010 and increase troop availability by decreasing duty time lost for medical reasons 25% by 2015.

Community support activities include library services, skills development, outdoor recreation, and Community Activity Center programs. To keep these activities productive in contributing to the well being of community members, it is necessary to ensure resources are allocated in the most effective manner. First, fiscal oversight is required to ensure activities are attaining profitability standards necessary for continued operation within the financial framework of the base Morale, Welfare & Recreation (MWR) fund. Second, human resources are to be applied based on filling positions within Services activities where marketing feedback shows the most program demand.

Business Activities

Business activities in Services include golf, bowling, officer, enlisted, and collocated clubs; Aero Clubs; and other membership clubs. These activities provide social, dining, and recreational opportunities for military personnel, their family members, and other authorized patrons. Business activities must generate sufficient cash to cover operating expenses, and provide for facility and equipment upgrades by charging patrons who use them. This has created a challenging environment for these activities at some of our bases. Collocation of officer and enlisted club programs is the AMC standard when new construction or major renovation takes place, or where market demand dictates. Our goals are to continue to provide and upgrade programs and services while generating sufficient income to maintain and improve our facilities and equipment. In our efforts to attain these goals, we have had to reduce operating hours and provide only those programs that are demand driven. Continued efforts are required to improve quality.

Youth Programs

Youth programs provide family support and well-being through a variety of child development programs (CDPs) and youth activity (YA) centers. AMC CDPs are certified and accredited. The majority have operational losses of nonappropriated funds. Demand for child care and before-and-after school care requires additional space and staffing. Goals are to meet the demand for care, achieve financial stability, maintain annual certification and accreditation in all CDPs, and provide adequate facilities and staffing for quality youth programs. Actions include assistance and guidance for certification and accreditation of CDPs and support of the youth programs.

CHAPLAIN PROGRAMS

The Chaplain Service provides opportunities for the free exercise of religion in the Air Force community through worship and rites, religious education, visitation, and pastoral counseling. In peacetime, these take place in the normal running of a base chapel involving chaplains, enlisted support personnel, contract personnel, and chapel volunteers. In deployment, Chaplain Service personnel are assigned to AMC Global Reach Laydown packages, where they provide for the religious needs of deployed personnel. Chaplain Service personnel are deployed to air bridges, staging, and tanker task force locations. They will visit specific locations as needed using opportune travel. Several areas with special focus are:

- Worship and Rites
- Religious Education
- Pastoral Counseling
- Visitation

There is a different flavor at deployed locations, and the conditions vary according to location, availability of deployed personnel, size of groups, duty hours, and the pressures of the situation. Chaplain Service personnel alert commanders about the local religious customs, possible challenges in relationships with host countries, and any other religious matters unique to that location. In addition, the confidentiality an individual has with a Chaplain is unique and allows the Chaplain to get a sense of morale, build rapport, and give encouragement to individuals as necessary. The visitation of work areas is essential and requires an available means of transportation.

LEGAL SERVICES

All legal offices provide a wide range of personal legal services to military members, dependents, and retirees. These include assistance in claims and civil, nonbusiness matters. Legal offices provide advice and prepare documents for clients in such areas as estate planning, powers of attorney, domestic relations, real estate transactions, landlord-tenant issues, personal income taxes, and rights under the Soldiers and Sailors Civil Relief Act. Legal offices also provide notary services. In support of deployed forces, these services are provided pre-deployment on the mobility line and during deployment by either deployed attorneys or by a legal office designated to provide the necessary support. The emphasis is on providing the military member and his or her dependents with advice and answers on matters that might otherwise serve to detract from the member's ability to focus on mission accomplishment.

Military defense attorneys provide legal defense services to military members who are under investigation or are subject of administrative or judicial action. *Defense attorneys work independently and have a separate reporting chain from attorneys assigned to base legal offices.* They provide legal advice and assistance in matters such as court-martial actions, nonjudicial punishment proceedings, involuntary separations, adverse promotion and reenlistment actions, and letters of reprimand. Legal defense services are available to deployed forces. Although defense attorneys deploy, they are not available at all locations. Therefore, defense attorneys may service some locations through telephone, fax machine, and other electronic means.

FAMILY SUPPORT CENTERS (FSCs)

FSCs play a vital role in ensuring a high quality of life for active duty members and their families, as well as DoD civilians and their families. It is imperative that quality of life for those remaining in the Air Force be a priority for the organization.

Modern Challenges Of The Family

Changing national demographics and continually fluctuating family structures, laws, and values make for a volatile program arena. FSCs must constantly adjust programs and services to meet ever-changing family needs. With the aging of the American population, the newest trend in families is in the area of elder care and elder assistance, although a number of other issues promise to create new challenges for the FSC. Employment assistance for those transitioning as well as for the family members of those remaining, continues to be a driving need as trends indicate major national shifts in career development and security. Economic instability has significantly increased our workload in the Personal Financial Management Program with ever increasing numbers of families and individuals requiring assistance with financial problems and questions.

Organizational changes and down-sizing bring with them hardships and accompanying stress for active duty members and their families alike. The FSC is involved in pro-active initiatives to help individuals and the organization manage the changes and respond in a positive manner to the changes.

Family Support Center Action

Today: The FSC continues to adapt to the ever-changing needs of military families, active duty personnel, retirees, and DoD civilians with a whole host of programs and services tailored to their specific needs. Those include, but are not limited to, transition assistance, relocation assistance, information and referral, crisis assistance, personal financial management, family development education, family separation support, and Air Force Aid.

Short-range and out: A number of recent family-related needs assessments both Air Force and AMC-wide show a high level of senior leadership understanding of and confidence in FSC services. The assessments also revealed major populations who are unaware or confused about the services available to them in FSCs. The results of those needs assessments are forming the basis for futuristic planning both in the short-range and the out years. Continuing assessments will further define existing needs as well as services and programs for the future. We expect to see growing issues with family separation, due to increased deployments and mobility requirements. Those issues are being addressed in this command as well as at the Air Force and DoD level. Funding to date has been adequate, but beginning in FY97 the command will be short $1M in funding needed to maintain mandated programs and services. Recent manpower reductions are also significantly hampering the command's ability to provide all mandatory services and will continue to create greater and greater issues for service delivery. Further exacerbating the problem is the redirection of program funds at the base level. The command redirected over 25 percent of the FY96 budget to meet other requirements. If we are to provide critical support to families and personnel, we must be willing to dedicate the necessary resources to effectively service the population.

RETIREMENT & SEPARATION

All Air Force personnel are faced with a critical decision near the end of their military career. Should they separate or remain on active duty to retire from the Air Force later? A person's separation from the Air Force can be generated for many reasons (e.g., hardship, dependency, etc.). Most separations occur based upon the request of the individual once their Active Duty Service Commitment is fulfilled or they have completed their term of enlistment. For normal retirements, a military member must have a minimum of 20 years Total Active Federal Military Service (TAFMS) and 8 years Total Active Federal Commissioned Service (TAFCS) to retire as an officer.

The Air Force will remain in the force drawdown mode through FY97. Additional losses of 900 officers will be sought. To reach this goal, two programs will be used: the Limited Active Duty Service Commitment (ADSC) waiver program and the Early Retirement Program for eligible officers who have 15 (but less than 20) years TAFMS and 8 years TAFCS by their requested retirement date to retire as an officer. The requirement for 3 years time in grade for full colonels to retire in grade is expected to continue to be waived to 2 years time in grade.

For enlisted personnel, programs similar to those used for officers are being used. Enlisted end strengths for FY97 will be met by a combination of normal losses (including a Limited ADSC Waiver Program) and reduced accessions. There are no additional enlisted losses programmed. No incentivized drawdown programs are expected for enlisted personnel.

TRANSITION ASSISTANCE PROGRAMS

The number of military service members and civilians supporting the military continues to decrease in efforts to align with the reduced threat of conflict and to help in efforts to balance our national budget. Many Service members must be separated before the end of their military careers. Congress realized that separating military personnel will need support to ease the transition to civilian life. Public Law 101-510, The National Defense Authorization Act of 1991, established the Transition Assistance Program (TAP) on a permanent basis, replacing the pilot TAP project authorized by the Veterans' Benefits Amendments of 1989 (P.L. 101-237).

The TAP legislation authorized separation transition incentives, for a limited amount of time, and transition services, to be continued beyond the drawdown period. Incentives such as the Voluntary Separation Incentive (VSI), Temporary Early Retirement Authority (TERA), and Special Separation Benefits (SSB) will be terminated when the drawdown is completed. Transition services, providing separating members with pre-separation counseling and employment assistance, are permanently authorized.

Several federal agencies were designated to support the transition program. The Secretary of Labor is responsible, along with the Secretaries of Defense and Veterans' Affairs, to establish and maintain the Transition Assistance Program (TAP).

In early 1995, Congress added the Coast Guard to the list of eligible personnel for TAP. DoD has also declared that certain DoD civilians at BRAC installations will receive the same priority for services as military members and other civilians affected by the draw down will be serviced on a space-available basis. With large DoD civilian reduction-in-force actions projected until FY99, the AMC Transition Program is expanding services to assist all DoD civilians affected by downsizing.

Facility shortfalls remain a barrier to effective service delivery. However, of greater concern are budget cuts now impacting the TAP. Staffing and budget cuts in DoD are hindering the maintenance of a quality program and projected cuts in other federal agencies threaten to further degrade services. AMC is dedicated to maintaining quality transition assistance services to all eligible personnel and is concerned that resources may not be sufficient to meet the needs of transitioning personnel.

In summary, the changing strategic and structural environment in which AMC people must operate presents many challenges for the command. The scale and scope of AMC's increasing worldwide operations in an era of scarce resources compels us to seek new, innovative ways of accomplishing missions and managing our force. People are the key to the command's successful response to these challenges. AMC's Total Force team of active duty military, ARC, in-service civilian employees, and civilian contract service workers must remain motivated, responsive, and ready to meet the challenges of the future.

Training is a continuing challenge for many specialties. Many initiatives are currently being worked to improve training and provide our units fully qualified people. The increasing use of simulators will make training more realistic while saving money and time. Additionally, computer-based training and interactive courseware training systems will be used extensively in the training arena. The Directorate of Personnel will continue to support education and training programs as well as guide commanders and AMC people in career development with the objectives of effective utilization, individual self-satisfaction, and the development of air mobility experts.

Section Four
INFRASTRUCTURE

INTRODUCTION

Global mobility operations require a seamless infrastructure system to support worldwide DoD customer requirements. Each part has a vital role to the overall mobility system. AMC's infrastructure must be flexible and responsive. It needs to expand or contract, in response to peacetime or contingency requirements. The three integral parts of infrastructure covered in this section include:

- Fixed Facilities
- Infrastructure Architecture
- Information

An assessment of the infrastructure supporting AMC operational tasks, core activities, and a synopsis of the key shortfalls is provided on the next page. The remainder of this section covers the deficiencies highlighted in these assessments, the plans and programs to overcome those deficiencies, and where infrastructure is moving in the future for AMC.

INFRASTRUCTURE TASKS ASSESSMENT

AIR MOBILITY ASSESSMENT

OPERATIONAL TASK	PEOPLE				INFRASTRUCTURE				EQUIPMENT			
	T	S	M	L	T	S	M	L	T	S	M	L
Aeromedical Evacuation	See Applicable Section								See Applicable Section			
Airdrop												
Air Refueling												
Cargo Airlift												
Passenger Airlift												
SIOP												
Special Operations												

CORE SUPPORTING ACTIVITY ASSESSMENT

CORE SUPPORTING PROCESSES	PEOPLE				INFRASTRUCTURE				EQUIPMENT			
	T	S	M	L	T	S	M	L	T	S	M	L
IRM / C4I Systems	See Applicable Section								See Applicable Section			
Command and Control												
Intelligence												
Information Warfare												
Logistics												
Training												
Security												
Medical												
Cargo / Pax Handling												
Operations Support												
Base Operating Support												

T: TODAY (FY97)
S: SHORT TERM (FY98-03)
M: MID TERM (FY04-12)
L: LONG TERM (FY13-21)

GREEN: GOOD CAPABILITY
YELLOW: PARTIAL CAPABILITY
RED: POOR OR NO CAPABILITY

INFRASTRUCTURE DEFICIENCIES

Deficiency:

1. Inadequate Dormitories
   - Current facilities do not provide quality, private housing for assigned personnel — page 4-11
2. Inadequate housing
   - The majority of existing housing units do not meet current Air Force Whole House Standards — page 4-11
3. Compliance With Environmental Standards
   - Sites require clean-up due to contamination caused by past activities — page 4-13
4. Inadequate Command & Control Capabilities
   - C2 systems are inadequate and incompatible with other systems — page 4-41
   - Limited worldwide communications with AMC assets — page 4-40
   - C4I systems lack secure capability — page 4-47
   - Systems do not meet USAF directed WMD considerations — page 4-27
5. Inadequate C4I Systems Architecture & Supporting Infrastructure
   - Current C4I systems architecture inadequate to support global in-transit visibility and C2 requirements — page 4-45
   - C4I systems infrastructure does not support the target architecture, is not in place to meet command needs, and is vulnerable to IW attack — page 4-46
   - AMC C4I systems are not integrated nor meet "open system" standards for accurate & timely information exchange — page 4-48
   - Weapons of Mass Destruction (WMD) considerations are not incorporated into C4I systems planning — page 4-27
6. Deployable Communications for the Theater
   - Existing initial & sustaining, deployable communications capabilities do not satisfy air mobility requirements and AF directed WMD considerations — page 4-36
7. Insufficient In-Transit Visibility (ITV)
   - Insufficient cargo, and passenger tracking capability for unit moves, and insufficient patient tracking capability — page 4-42
8. Aging Facility Infrastructure
   - AMC facilities deteriorating faster than they are being upgraded to meet mission requirements — page 4-10
   - Investment levels inadequate to construct new or upgrade existing facilities — page 4-7
   - Aging medical facilities rated "unsatisfactory" in Commander's Facility Assessment — page 4-9
   - Support, Operations, Logistics, and Command Facilities rated "degraded" in Commander's Facility Assessment — page 4-7
9. Intelligence Systems and Requirements Management Shortfalls
   - Inadequate deployable intelligence systems, capabilities, and connectivity — page 4-30
   - Lack automated means of correlating ops information needs to available intelligence — page 4-29

INFRASTRUCTURE-RELATED GOALS AND OBJECTIVES

GOAL 1:
Champion, field, and operate world-class air mobility for our customers.

1.1 Maximize the future potential of air mobility for America.
- 1.1.1 Foster innovative new mobility concepts and aggressively investigate new technological opportunities. .... XPD, FY03, pg 4-43

1.4 Provide a responsive air mobility C4I system.
- 1.4.1 Migrate AMC C2 and transportation systems to Global Command & Control System (GCCS) Defense Transportation System (DTS) and Defense Information Infrastructure (DII) Common Operating Environment (COE). .... SCT, FY99, pg 4-52
- 1.4.2 Provide accurate and timely passenger and cargo air movement data from receipt to delivery. .... DOU, FY00, pg 4-43
- 1.4.3 Establish an information superhighway at base level .... SCP, FY04, pg 4-50
- 1.4.4 Provide global voice/data connectivity to aircraft and worldwide locations. .... DOU, FY02, pg 4-37
- 1.4.5 Integrate information warfare into all aspects of command operations .... DOO, FY02, pg 4-24

GOAL 3:
Provide quality support to people.

3.5 Upgrade the living and working environments to enhance quality of life.
- 3.5.1 Complete the Squadron Operations/Aircraft Maintenance Unit Facility program. .... CEP, FY02, pg 4-12
- 3.5.2 Complete the quality of life facility upgrades .... CEP, FY01, pg 4-10
- 3.5.3 Complete the FOCUS DORMS program. .... CEH, FY10, pg 4-11
- 3.5.4 Upgrade en route facilities to meet command standards. .... CEP, FY20, pg 4-20
- 3.5.5 Complete the FOCUS LOGISTICS program. .... CEP, FY07, pg 4-12
- 3.5.6 Complete the FOCUS HOMES program. .... CEH, FY30, pg 4-11

GOAL 4:
Lead the Air Force in environmental excellence.

4.1 Identify, investigate, and clean up contamination associated with past activities.
- 4.1.1 Clean up to lower level of risk, or have remedial systems in place for high risk sites by FY07, medium risk sites by FY10, and low risk sites by FY14. .... CEV, FY14, pg 4-13

4.2 Enhance and maintain a sense of environmental responsibility.

- 4.2.1 Upgrade all underground storage tanks to Environmental Protection Agency (EPA) standards..CEV, CY98, pg 4-13
- 4.2.2 Prevent future enforcement actions...CEV, FY01, pg 4-13

4.3 Minimize adverse environmental impacts from all air mobility processes.

- 4.3.1 Reduce purchases of EPA-17 toxic chemicals by 50 percent from CY92 baseline. ....CEV, CY96, pg 4-14
- 4.3.2 Reduce solid waste 50 percent from CY92 baseline. ....CEV, CY97, pg 4-14
- 4.3.3 Reduce hazardous waste 50 percent from CY92 baseline...............CEV, CY99, pg 4-14
- 4.3.4 Reduce volatile air emissions by 50 percent from CY93 baseline....CEV, CY99, pg 4-14
- 4.3.5 Reduce pesticide use by 50 percent from FY93 baseline. ....CEV, FY00, pg 4-14

FIXED FACILITY INFRASTRUCTURE

Fixed infrastructure is critical to maintaining the capability to supply rapid global mobility in support of the national security strategy. We must be able to deploy and sustain substantial forces in parts of the world where prepositioning may not be feasible, where adequate bases may not be available, or where there is a less-developed industrial base and infrastructure to support forces once they have arrived.

Objective 3.5.4
Upgrade en route facilities to meet command standards. CEP, FY05

Support for the strategies of Forward Presence and Crisis Response depends on our ability to generate sufficient lift and refueling capacity at CONUS mobility bases and sustain that capability through the en route system. This depends on high quality facilities and a systematic peacetime basing scheme that ideally situates our force structure for rapid, flexible response to mobility taskings. AMC's strategy for positioning a worldwide en route system is a difficult balance between key factors, including: proximity to mobility customers (both strategic onload/offload points and air refueling tracks), an area's capability to provide key logistics support, and acceptable air traffic and weather patterns. When these factors are properly combined, it becomes clear that there are few truly "ideal" mobility basing locations. In the current climate of base closures and dwindling basing options, AMC will critically review and establish its mobility force basing requirements, clearly articulate them, then fight hard for a basing plan that meets them. As we work to establish this plan and gain or maintain key installations, the next step is establishing a sound facility investment strategy.

FACILITY INVESTMENT STRATEGY

Goals

AMC developed a facility investment strategy to provide an intermediate-range plan to accomplish its tasks. It lists five facility goals in order to support the command goals of dramatically improving AMC living, working, and recreation facilities, and leading the Air Force in environmental excellence:

- Enhance the quality of life for our personnel through aggressive facility programs.
- Raise our facility standards in a climate of decreasing budgets.
- Improve facilities rated "Unsatisfactory" by the Commander's Facility Assessment.
- Protect, preserve, and enhance the environment.
- Use nontraditional approaches to more effectively execute our programs.

Facility Investment Strategy, Action Plan

Facility investments are completed by the following process: *Develop facility standards*--work with users to establish facility standards. *Determine requirements*--apply facility standards to determine requirements. *Plan* the project--where it will go and how it will fit with the base master plan. *Program* and defend the project to ensure all levels of approval are completed. *Design and construct* the project and turn it over to the customer. Facility investments are programmed and executed in two broad categories:

- Major investments which replace or extend the life of a facility.
- Real Property Maintenance (RPM) work required on a continuous basis as a fixed cost of operating facilities.

Overall requirements for facility investments are based on analysis of the age, condition, and plant replacement value (PRV) of all facilities. The Commander's Facility Assessment defines and prioritizes additional requirements. Current investment levels in the budget will only allow major modernization/replacement investments on a 170-year cycle for facilities with design lives of 50 years. Dedicating 1.2 percent of PRV per year to major investments in facility modernization/replacement would decrease the modernization/replacement cycle to 100 years. Studies commissioned by DoD for a report to Congress concluded that we should spend 1.8 percent of PRV annually on real property maintenance. In total, we should allocate at least 3 percent of AMC's total PRV annually to major facility investments and RPM.

Major Facility Investment

For the purpose of setting command priorities and relative investment levels, we define four categories for major investment requirements:

Environmental Compliance

This category includes any program required to bring AMC installations into compliance with environmental laws and regulations or prevent noncompliance with known future laws or regulations. One of the major goals of the Air Force is to be a leader in environmental excellence.

Current Mission MILCON

Current Mission MILCON is divided into five subcategories of work:

- Health and safety requirements to protect people and resources from health and safety hazards.

- Modernization of facilities and correction of space deficiencies in current facilities. We must provide modern facilities for a smaller, more efficient force. Squadron operations and aircraft maintenance units in AMC are uniformly undersized and most are in substandard condition. AMC is continuing to place top priority on upgrade to ensure our unaccompanied personnel have adequate living conditions meeting all current standards. As we define standards for facilities in other functional areas, we will continue to refine and prioritize our requirements.

- AMC base infrastructures are suffering from decades of neglect and inadequate funding for maintenance and repair. AMC will devote a significant portion of its total investments to fixing infrastructure problems.

- Consolidation/Reduction projects support consolidation of functions in the best facilities and reductions in our physical plant to reflect smaller facility requirements.

- Mandated energy reductions of 20 percent by the year 2000 and 30 percent by the year 2005 will decrease total consumption and increase the efficiency with which we use energy. We have already made the easy reductions; to meet our final goals will require significant investments in more energy-efficient systems and infrastructure.

Medical MILCON

AMC's medical facilities are deteriorating. Given the current and expected future funding structure, this deterioration can be expected to continue. The status of current medical MILCON funding results in an Air Force wide average replacement cycle of 100 years. The average age of AMC medical facilities is 27 years. With the growing average replacement cycle, maintenance of medical facilities becomes more important.

The maintenance of medical facilities is not adequate in both funding and Civil Engineering support to maintain the facilities in their current state. The Air Force Medical Logistics Office has determined that 3 percent of a medical facilities replacement value must be spent on maintenance in order to keep that facility from deteriorating. This 3 percent only keeps the status quo, it does not include the backlog of maintenance projects most AMC medical groups have to get their facilities up to proper operating condition. In the past 10 years, AMC has received the required 3 percent funding only twice (FY95 and FY96). Without an increase in funding, AMC medical facilities will continue to deteriorate. The deterioration of medical facilities is also increasing as Civil Engineering capabilities diminish. The draw down of Civil Engineering manpower has made it nearly impossible to keep up the intensive preventative maintenance required of a medical facility.

Given the lack of sufficient funding and Civil Engineering resources, AMC/SG is taking steps to make the best use of funds. Facility projects are accomplished by priority, with life safety repairs and infrastructure projects being funded first. Alternative maintenance contracts are being pursued as well as standardized in-house facility management preventive maintenance schedules. While the facilities will continue to deteriorate, our goal is to make them as safe and functional as possible.

Nonappropriated Fund (NAF) Facilities

Major facility investments funded by NAF fall into three categories:

- Services NAF facilities
- Army and Air Force Exchange Service (AAFES) facilities
- Defense Commissary Agency (DECA) facilities

AMC sets goals for NAF major investment programs as overall indicators of the health of our facilities. We compete for funding for Morale, Welfare, Recreation, and Services (MWRS) facility programs at the Air Force Morale, Welfare, Recreation, and Services Board (AFMWRSB). AAFES and DECA investments are determined based on market analyses by those agencies. AMC will maintain liaison with these agencies to ensure we remain competitive for funds to provide modern NAF facilities.

REAL PROPERTY MAINTENANCE (RPM)

RPM work is the continued maintenance, repair, and minor construction required to keep facilities functional for their intended purpose until major investments are made at appropriate times in their life cycle. RPM work can be as simple as replacing a washer in a faucet or as complex as renovation of an entire facility. It includes scheduled preventive maintenance work on facility systems, utilities, and pavements. It is crucial to allocate adequate resources to RPM activities in order for us to occupy them for twice their design life. RPM work is performed through three primary avenues: base civil engineer organic forces, self-help by facility occupants, and facility RPM by contract.

AMC's Facility Investment Strategy is based on the reality that Global Reach mission capabilities rest on the foundation of fixed infrastructure at our CONUS bases and en route systems. This investment strategy is designed to prioritize requirements, ensuring we work our most critical problems first. AMC will continue to refine the strategy as our force structure changes.

Objective 3.5.2 *Complete the quality of life facility upgrades.* CEP, FY01

Funding for quality of life projects reached record levels in FY95, as bases continued to aggressively upgrade and build a broad range of facilities to enhance their living and working environments. To augment these base-level efforts, in November 1995, HQ AMC published command-wide programs to upgrade or replace existing family support centers, chapels, and airman leadership schools. Using a combination of funding through the Operations and Maintenance program (both in-house and contracted) and the MILCON program, these facilities will be upgraded to meet command standards.

ACCOMPANIED AND UNACCOMPANIED HOUSING

Provide Quality Support To People

AMC people are the key to maintaining America's capability to supply rapid global air mobility. To attract and retain high quality people, we need housing that supports the needs of members and their families.

Upgrade Living And Working Environments To Enhance Quality Of Life.

Objective 3.5.3 *Complete the FOCUS DORMS program.* CEH, FY10

A large majority of AMC dormitories do not meet AF standards in terms of size and condition. To correct this situation, we have established a requirement to provide one dorm room for all unaccompanied E-4s. This requirement is based on the single-occupancy policy that we expect the DoD to implement within 4 years. The FOCUS DORMS program outlines the renovation and new construction required at each base to provide rooms of sufficient quality and quantity to meet the new requirement. The FOCUS DORMS program is still being revised and validated by the AMC wings. The standards used in the program include new construction to the "1+1 single occupancy" standard which features a shared bath and a shared kitchen. The program is expected to take until FY10 to fund and execute all projects. Upon completion, all AMC dorms will meet the new Air Force standards for single occupancy.

Objective 3.5.6 *Complete the FOCUS HOMES program.* CEH, FY30

AMC's family housing, as a whole, does not meet current AF whole house, whole neighborhood standards. To address the command's housing needs, HQ AMC created FOCUS HOMES, a family housing investment strategy that documents family housing requirements and presents an execution plan to meet these requirements. FOCUS HOMES integrates projects from the individual base's Housing Community Plans, using two investment categories. MILCON projects provide large-scale replacement or renovations of entire units and RPM projects are used on a continuous basis to provide interim small-scale maintenance and repair. The FOCUS HOMES program currently is estimated to cost close to $1.6 billion and will take until FY30 to execute. In addition, we are working with OSD on private sector financing initiatives to reduce costs and provide high quality family housing earlier than FY30.

Objective 3.5.1
Complete the Squadron Operations/Aircraft Maintenance Unit Facility program. CEP, FY02

The combined Squadron Operations/Aircraft Maintenance Unit (Sq Ops/AMU) concept was born from the decision to place aircraft operators and maintainers under one roof. Existing flying squadrons and maintenance units were housed in undersized, inadequate facilities. Using a three-phased, programmatic approach, an AMC team of command-and base-level operators, maintainers, and engineers visited selected airlift and tanker bases to establish space requirements and develop interim and permanent facility plans for combined flying and maintenance operations. Publication of the Consolidated Sq Ops/AMU Design Guide in September 1993 marked the culmination of the first phase in the three-step process. During the next 9 months, another AMC team visited each base, evaluating existing aircraft maintenance units and squadron operations facilities to develop interim and permanent plans to provide shared facilities in which operators and maintainers would coexist. In June, 1994, AMC/CC approved the Sq Ops/AMU funding strategy to build 31 permanent facilities at 8 bases for a total cost of $208 million. We are revising the program to reflect the deletion of two C-141 Sq Ops/AMU facilities at McGuire AFB. The new estimated program has 30 buildings with an estimated cost at $216 million. AMC funded $10.5 million of operations and maintenance and Defense Base Operating Funds for Transportation (DBOF-T) funds for interim facilities to provide minimal adequate space until permanent construction is complete. Immediately following completion of this second phase, design and construction began on both interim and permanent facilities. Final completion of permanent construction is slated for FY02.

Objective 3.5.5
Complete the FOCUS LOGISTICS program. CEP, FY07

In July of 1994, AMC/CE completed the first in a series of facility design guides for logistics facilities. These guides specify standards for space, layout, finishes, and equipment for supply administration and warehouse facilities, vehicle operations and vehicle maintenance facilities, and flight line support facilities. During the ensuing months, a team of command and contractor personnel visited each of the core bases in AMC and identified requirements to raise our existing logistics facilities to these new standards. The FOCUS LOGISTICS program consolidates these requirements and establishes a funding strategy for accomplishing these projects. In April of 1995, AMC/CC reviewed and approved the $124M plan to complete funding for this program through a combination of Military Construction Program (MCP), Operations and Maintenance (O&M), and DBOF-T funding.

ENVIRONMENTAL QUALITY

Lead the Air Force in Environmental Excellence

The DoD has made the commitment to take the lead in federal agency environmental compliance. Protecting the environment is part of the cost of doing business. To meet our environmental obligations, we in AMC will focus on three primary areas of emphasis: cleaning up sites contaminated by past activities (Installation Restoration Program); ensuring present operations comply with federal, state, and local environmental standards (Environmental Compliance Program); and preventing future pollution (Pollution Prevention Program).

Installation Restoration Program

Objective 4.1.1
Clean up to lower level of risk, or have remedial systems in place for high risk sites by FY07, medium risk sites by FY10, and low risk sites by FY14.
CEV, FY14

AMC will finish all Installation Restoration Program sites by the year 2014 using a "risk-based" cleanup system. AMC wings will correct the "worst" sites first, optimize the use of innovative technology to achieve results more quickly and cheaply, work to reasonable standards, and actively foster the adoption of the "risk-based" criteria. We will continue to seek funding through the Defense Environmental Restoration Program established for cleanup of DoD hazardous waste sites consistent with the provisions of public laws.

Environmental Compliance Program

AMC must place limited funds where they will do the most good. We need to ensure we dedicate enough well-trained, motivated people, to work environmental issues, providing them a management structure--grades, organization level, and reporting system--commensurate with the importance of their duties. Excellent training on environmental issues must permeate every level of the command so that all airmen and civilians are aware of their environmental responsibilities. Maintaining excellent relationships through communications and Public Affairs helps foster and retain a sense of environmental awareness and supports our responsibilities as new technologies evolve.

Objective 4.2.1
Upgrade all underground storage tanks to EPA standards.
CEV, CY98

As part of federal hazardous waste legislation, EPA published new rules on removing, upgrading, and cleaning up contamination around all active underground storage tanks and their associated piping. This involves timely programming, budgeting, design, and construction to ensure that all work on all underground tanks in AMC is completed by the end of 1998. This will be accomplished through a combined O&M/MILCON funding program.

Objective 4.2.2
Prevent future enforcement actions. CEV, FY01

AMC must maximize the effectiveness of the Environmental Compliance Assessment and Management Program (ECAMP), build effective relationships with regulatory agencies, use the Environmental Impact Analysis Process to support decision making, protect the environment, and protect and enhance natural and cultural resources (including wetlands, historic sites, and endangered species) through sound stewardship and management. We must improve and sustain relations with regulatory agencies at all levels.

Objective 4.3.1	
Reduce purchases of EPA-17 toxic chemicals by 50 percent from CY92 baseline.	CEV, CY96
Objective 4.3.2	
Reduce solid waste 50 percent from CY92 baseline.	CEV, CY97
Objective 4.3.3	
Reduce hazardous waste 50 percent from CY92 baseline.	CEV, CY99
Objective 4.3.4	
Reduce volatile air emissions by 50 percent from CY93 baseline.	CEV, CY99
Objective 4.3.5	
Reduce pesticide use by 50 percent from FY93 baseline.	CEV, FY00

<u>Pollution Prevention Program</u>

We will prevent future pollution by reducing the use of hazardous materials and minimizing the release of pollutants into the environment to as near zero as possible. The AMC Pollution Prevention Program has three major components: 1) increased recycling, product substitution, and training, 2) reduced hazardous material use and waste generation from installations, and 3) reduced life-cycle use of pollutants as an integral part of weapon system acquisition. Reductions in both EPA-17 toxic chemicals, hazardous and solid waste generation, pesticide use, and volatile air emissions are essential to prevent future pollution and to avoid or reduce the potential for violations of environmental legislation. Reductions also save AMC in purchase and disposal costs for these items and saves shelf/storage space.

<u>INFRASTRUCTURE ARCHITECTURE</u>

TANKER AIRLIFT CONTROL CENTER (TACC)

The TACC is the focal point of the air mobility system. Air mobility taskings flow directly from the TACC to CONUS units and OCONUS en route locations. The AMC command and control concept is based on centralized control and decentralized execution, providing flexibility and responsiveness. Fixed C2 components are the TACC and Air Mobility Control Centers (AMCCs) at key en route locations.

The total or partial loss of the TACC would, within 24 hours, adversely affect AMC's capability to perform its global mission. To continue TACC's planning, scheduling, and execution functions for the effective command and control of mobility forces, an Alternate Tanker Airlift Control Center (ATACC) was established at Travis AFB CA. In the event that the TACC becomes incapable of performing its mission, the ATACC ensures AMC has the capability to continue the functions critical for effective C2 of AMC's Global Reach forces.

The ATACC located at Travis AFB is scheduled for demolition by the end of FY 99. A new ATACC is currently being designed at Robins AFB within the HQ AFRES facility. Co-locating the ATACC and HQ AFRES will enhance the synergy and cooperation between AMC and reserve forces. Construction of the new ATACC is scheduled to begin in the spring 1998.

Objective 1.4.4
Provide global voice/data connectivity to aircraft and worldwide locations. DOU, FY02

AIR MOBILITY EN ROUTE SYSTEM (ERS)

The ERS is a dynamic global network comprised of people, equipment, and infrastructure designed to support air mobility forces worldwide. Thirteen key overseas locations (see Figure 4-1) serve as peacetime waystations for aircraft and aircrews to use as they transit the globe in accomplishing the air mobility mission. AMC sends the majority of its peacetime air mobility missions through a small number of overseas locations (13 of the locations have a squadron size presence of AMC personnel; manning at an additional 18 locations is much smaller and reflects a mix of military and civilian contract personnel). These 31 locations are the framework AMC relies upon whenever it must expand the ERS to meet other than routine peacetime operations.

Integral to the success of the ERS is a worldwide Command, Control, Communications, Computers, and Intelligence (C4I) system whose function is to tie into a cohesive system the aircrews, maintenance personnel, transportation specialists, intelligence personnel, and logisticians who make the air mobility mission happen.

Recent assessments of the ERS by an AMC led team of functional experts found infrastructure deficiencies at many of the bases AMC intends to use during major regional contingencies in either the Pacific or Europe. The team identified over $1 billion dollars in needed improvements to aerial port facilities, fuel systems, and airfield pavements at those locations. The poor state of much of our overseas ERS infrastructure hampers routine peacetime accomplishment of the air mobility mission and will pose a serious challenge to AMC in successful mission accomplishment during times of heightened air mobility activity.

Acquiring the funding needed to make these improvements is an arduous task; for this reason, the Commander of AMC declared "FY97--Year of the En Route System." General Kross wants the command to focus on the ERS, obtain the funding to get it repaired, and improve the processes we employ in support of the air mobility mission.

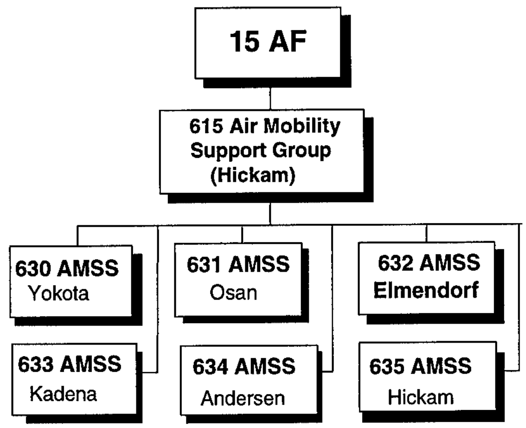


Figure 4-1. Fixed Overseas En Route Locations

Air Mobility Support Group (AMSG)

The AMSG formulates plans, establishes procedures and directs the administration of subordinate units in support of Defense Transportation System (DTS) and DoD-sponsored aircraft, cargo, and passengers. The AMSG manages budget, contracting and safety programs, and provides logistics, intelligence, and air transportation planning to meet mission requirements.

Air Mobility Support Squadron (AMSS)

The AMSS operates air terminal facilities in support of DTS and DoD customers. They generate, launch, and recover AMC and theater airlift missions and en route support aircraft. The AMSS operates a command and control (C2) center. For the 623 AMSS and 633 AMSS: manages an Air Mobility Control Flight (AMCF), providing affiliation training, airfield surveys, and deployment of mobile C2 elements, when tasked by proper authority.

Air Mobility Control Center (AMCC)

The AMCC is the C2 flight in each AMSS. AMCCs are extensions of the TACC providing command and control support at key en route locations. Normally, OCONUS AMCCs manage all aircraft and aircrews operating AMC missions through their location. Assigned personnel monitor strategic mobility missions, report mission movement for theater-assigned C-130 forces (when operating on USTRANSCOM missions), and coordinate ground support activities to include maintenance, aerial port services, and aircrew support for all AMC missions transiting their station.

Aerial Ports

Passenger and cargo movement is a total process beginning with customer's requests and ending with final debarkation. Aerial ports are the vital link in the air transportation system, handling the majority of the cargo and personnel moved worldwide. Aerial ports are manned to meet peacetime activity levels with surge capability provided by reserve forces, which comprise over half the total aerial port manpower.

Aerial Port personnel within the Air Mobility Operations Groups (AMOGs) and Aerial Port Mobility Flights (APMF) train for war, support peacetime and contingency deployment requirements, and assist fixed aerial ports in their duties.

Aerial Delivery Support Flights (ADSF) support unilateral training, and vary in size depending on the unit's mission. ADSFs are manned with aircrew loadmasters, parachute fabricators, and air transportation specialists.

Intelligence Support

AMC maintains three en route intelligence detachments at Ramstein AB, Yokota AB, and Pope AFB to provide transient aircrews with timely and tailored intelligence. All en route intelligence detachments will soon have global connectivity through the Secret Internet Protocol Router (SIPRNET) or Quick Dial-Up Capability (QDUC), providing an ability to "Reach Into" theater and "Reachback" to CONUS networks for up-to-the minute intelligence support to air mobility operations. Intelligence personnel at these locations brief transient aircrews on developments in-theater. They also debrief aircrews and develop Mission Reports (MISREPs) for dissemination to operators and staffs throughout the command.

Logistics Support

Logistics support is dedicated to keeping AMC aircraft mission capable. This support can be broken down into three essential functions: The AMC Logistics Readiness Center (LGRC), maintenance flights, and a forward supply system.

Maintenance Support

Maintenance flights provide an in-place maintenance capability at en route locations. Manning authorizations are Special Experience Identifier (SEI) coded for specific weapon systems. The AMC goal is to have a minimum of 50 percent of assigned personnel who are previously qualified in one of the specific SEIs. Cross Utilization Training (CUT) and aircraft qualification training are used to train the remaining personnel. Authorizations are based on total weapon system requirements and are allocated to meet workloads and assessed capability requirements. Flexibility is needed in order to tailor the maintenance force to changing workloads.

Supply Support

The Forward Supply System (FSS) provides a limited number of high use, mission essential spare parts stored and controlled by AMC at selected en route locations to ensure responsive, immediate air mobility. These spares are part of AMC's strategic wartime spares requirement. Spare engines are also positioned at key bases. Included in the FSS are Forward

Supply Locations (FSLs) and Forward Supply Points (FSP) in theater and Primary Supply Points (PSP) in CONUS for parts repair. The future focus will be on improving responsiveness by reevaluating each level with maintenance experts. This should result in improved support in the en route system and increased availability of spares at PSPs and other home station locations. Improvements will be accomplished by reduction in some inventories and increases in others as required to support the system, and simplification of the distribution of material. Computation factors and stockage policy changes will enhance stock positions at all regionalized distribution centers. FSS stock is treated as top priority at CONUS support bases with a use, replace, repair concept in place. FSS stock shortages will also be treated similar to Awaiting Parts (AWP) requirements, allowing use of the MICAP Asset Soursing System to draw assets from other bases via lateral support. Distribution will be enhanced by establishing dedicated channel missions to deliver serviceable stock and return reparables to CONUS support bases daily.

En Route Facilities

Objective 3.5.4
Upgrade en route facilities to meet command standards. CEP, FY20

Facilities at our en route locations are outdated and do not meet AMC standards. The AMC staff worked with our numerous customers to establish standards for such specialized facilities as passenger terminals, fleet management facilities, and material processing and storage facilities. The command has measured facility requirements at all en route locations against command standards to assure uniform improvement projects at each location. AMC has established a 9-year, $127 million plan to improve the living and working conditions of people assigned to these overseas locations, with construction completion anticipated in FY20.

Intertheater Aeromedical Evacuation (AE) Interface

The Aeromedical Evacuation System (AES) is composed of interdependent components (AMC, ACC, theater Air Force components). The ability to maintain a seamless interface among the AES components is critical. While AMC is the proponent for global AE policy, Air Force/SG maintains the facilitation role for AE systemic interface through the Aeromedical Evacuation Executive Board (AEEB), the Aeromedical Evacuation Steering Group (AESG), and selected working groups. Air Force/SG's role assures system wide improvements and standardization with AMC, Air Combat Command (ACC), and theater operational planners. AMC has Manpower Equipment Force Packaging (MEFPAK) responsibility for the UTCs supporting intertheater AES.

Intertheater support structures will be specifically tailored to each situation. Efforts are underway to determine requirements to meet changing threat assessments and define AE readiness requirements. AMC must determine the support structure for budgetary and force requirements, and integrate the medical regulating and movement processes. Continual review and refinement is needed as defense guidance and systems architecture change.

Management oversight is required to maintain intertheater peacetime and contingency AE support through an ARC-based system. Management actions must ensure funding for Manpower Personnel Authorization (MPA) mandays and active duty/ARC actions to permit use of ARC personnel on other than MPA mandays, and 25 percent volunteerism when Presidential activation is not authorized.

AMC, in coordination with ACC and theater operators, will review and refine the intertheater C4I system structure in the context of the USAF reorganization efforts. Initiatives to outline intertheater C4I systems will ensure AMC can provide adequate support and flexibility to unified commanders in changing worldwide AE operations. Planned use of AE Civil Reserve Air Fleet (CRAF) ensures required materials handling equipment and other related support facilities/equipment, to include AE Operations Teams and Aeromedical Staging Facilities are positioned to support patient reception.

MOBILE INFRASTRUCTURE

When AMC must operate in locations where there is a limited infrastructure, a deployable en route support system is needed. GRL provides the flexibility to rapidly establish en route stations or enhance a fixed support system anywhere in the world. Under GRL, resources from the various CONUS based organizations are brought together to form those deployed organizations required to achieve the objectives of any particular air mobility operation.

Global Reach Laydown (GRL)

Operations RESTORE HOPE (Somalia), SUPPORT HOPE (Rwanda), and JOINT ENDEAVOR (Bosnia), demonstrated the need to rapidly deploy to and operate from bare bases. GRL meets that need by pre-identifying for crisis planners the assets necessary to operate from a bare base. The tasked theater's Air Force component command provide/source Base Operating Support (BOS) while AMC provides throughput requirements.

Force Modules: GRL consist of five different force modules: 1) onload, 2) contingency tanker task force, 3) stage/en route, 4) hub/transload, and 5) spoke/offload. Each force module corresponds to the type of location AMC may operate. Each force module is comprised of all the personnel and equipment UTCs required for a bare base operation. These GRL force modules must deploy early to ensure AMC has the capability to handle the operational requirement. The number of UTCs in each force module and the number of force modules used in a particular package will be tailored at execution to fit the specific contingency concept of operations.

Equipment modernization emphasizes the need for rapid deployment worldwide. Each package is designed to deploy and function in 3-5 days, with follow-on sustainment after 30 days. Equipment modernization efforts in areas such as BOS, Materials Handling Equipment (MHE), C4I systems, weather, and Air Traffic Control and Landing Systems (ATCALS) will be designed to support rapid (day-one) deployment capability. This equipment will be modular, easily palletized, interoperable, and capable of being quickly set up in austere environments.

Organic Capability: Currently, GRL identifies and requires assets (Harvest Falcon, fuel equipment, ATCALS, combat communications assets, vehicles, fire protection equipment) from Services and commands other than AMC. AMC will operate in concert with the host theater to provide support to AMC units deployed in theater. The level of theater-provided support will depend on the requirements of the specific contingency. AMC provides BOS augmentation forces for host theater shortfalls. To optimize rapid deployment of GRL, development efforts will be oriented toward gaining an organic capability; that is, AMC will own and manage specific assets required in support of bare-base operations. This ensures rapid establishment of an en route mobility structure supporting worldwide operations.

Multiple Packages: As demonstrated by the multiple locations where US forces are engaged, AMC must provide rapid en route mobility support to several simultaneous contingencies worldwide. To guarantee this capability, future efforts will concentrate on ensuring AMC has enough assets to deploy and to meet simultaneous GRL requirements.

GRL Facilities Goals

Objective 3.5.4
Upgrade en route facilities to meet command standards.
CEP, FY20

Acquire, maintain, and employ state-of-the-art assets to accomplish the following missions at deployed bases under austere conditions:

- Provide operations, living, dining, sanitation, and working facilities for deployed AMC aircraft and personnel.
- Provide fire suppression and crash rescue services without degrading home station service.
- Provide explosive ordnance disposal service to survey beddown locations for explosive hazards, as well as to protect people, facilities, and resources from the effects of unexploded ordnance and terrorist explosive devices.
- Provide detection, protection, and decontamination for both military and CRAF missions in response to a nuclear, biological, or chemical attack.

Action Plan

AMC will acquire the mobile infrastructure portion of the GRL in the near term by:

- Using existing theater bare base assets.
- Relying on 49th Bare Base System Group assets located at Holloman AFB.
- Identifying force module components to the AF bare base systems program manager.
- Maintaining proficiency through home station training, JCS exercises, and formal schools.
- Program one 550 man package at each AMOG.

The number of locations supported is based on the FY98-03 Defense Planning Guidance. Using estimated populations and aircraft numbers, the number and type of bare base, explosive ordnance disposal (EOD), fire protection, and air base operability assets will be estimated, funded, and acquired. We will pursue maximum use of base realignment and closure assets, and those from closing overseas bases.

Prior to receipt of any new mobile infrastructure asset, the logistics support must be in place. The largest investment item is new storage facilities. Facilities maintenance and WRM storage and maintenance manpower are accounted for in the civil engineering and supply manpower determinants respectively.

Air Mobility Operations Group (AMOG)

The AMOG is an organization aligned under each NAF and established to create a discrete capability from which to source GRL assets. The AMOG coordinates the deployment of resources from its in-garrison units, with possible augmentation from other resources within active duty or ARC organizations. These resources, deployed as Air Mobility Elements (AMEs) or Tanker Airlift Control Elements (TALCEs), are the heart of AMC's ability to support expanded air mobility operations. The TACC tasks these elements as fully functioning teams to provide C2, aerial port, logistics, intelligence, combat camera, C4I system, civil engineering, security, weather, and other assets needed to meet GRL mission requirements.

Tanker Airlift Control Element (TALCE)

TALCEs are mobile organizations responsible for providing continuous on-site management of airfield operations. TALCE is a provisional organization composed of various mission support elements. They deploy to provide mission support where insufficient resources or operational support exists. TALCEs, with augmentation, provide command and control, communications, aerial port services, logistics, security, weather, and intelligence--all critical elements for ensuring safe, efficient tanker and airlift operations.

Combat Camera

Combat Camera has a rapid response (as little as 6 hour deployment) to evolving world situations. Tasked through the TACC, Combat Camera teams are a vital link to decision makers, providing essential imagery for operations, intelligence requirements, information warfare, and psychological operations (PSYOPS).

To meet future requirements, Combat Camera will migrate to lighter, faster, smaller systems using smaller bandwidth and solar power. Systems will be integrated into common digital platforms for both still and motion imagery. Gun camera and theater documentation imagery will be transportable via fixed, satellite, or cellular means up to Top Secret. Units will master and duplicate motion and still products using digital technology in such formats as CD-ROM and non-linear video production systems using high density storage media. Combat Camera will continue to orient its deployment packages to either man transportable or cargo required, with an emphasis on man transportability.

New capabilities will be completely in the digital arena--3 to 6 chip digital still cameras, CD-ROM based storage and distribution systems, and faster and improved quality photo printers. Transmission of full motion digital images, via digital worldwide cellular transmission networks will speed up our response capability, allowing transmission of images (motion and still) directly from a field environment. Digital multimedia systems and personal computer video teleconferencing capabilities will be tied to fully integrated base local area networks (LAN) and an Air Force wide area network system.

Deployable Medical Systems

Deployed AMC elements supporting Global Reach require medical care. Traditional Air Transportable Clinics (ATCs) are designed to support a maximum of 300 people, while Air Transportable Hospitals (ATHs) can support up to 5000 people for 20 days but do not provide the flexibility to support small deployments. To better support Deployable Medical System elements, a deployable medical package short of an ATC is being developed. AMC is reviewing access to ATCs and associated UTCs. Many of our deployments are to areas involving significant communicable disease exposure. UTCs are being evaluated and reprogrammed to focus on preventative medicine requirements to ensure the health of the deployed force. Any additional resources required will be requested through medical programming submissions, and/or reapportioned excess AF assets.

The Medical Global Reach Laydown Team (MGRLT) is currently being developed along with an equipment list which will deploy with this small medical team. The team consists of:

AFSC/SEI	TITLE	QUANTITY
044F3	Family Physician	1
043H3	Public Health Officer	1
4N051/496	Medical Service IDMT	1
4E051	Public Health JMN	1
4B051	Bioenvironmental Eng JMN	1
43E3A	Bioenvironmental Engineer	1

NOTE: This team can be pared and tailored to add a Flight Surgeon to stage base locations where no SME has been deployed. The MGRLT with a family physician would be deployed to non-stage bases where the number of AMC personnel is of sufficient size to warrant a physician. Where no environmental issues are of concern the Bioenvironmental Engineer and Tech can be deleted.

The MGRLT is designed to deploy from Bare Base to Main Base locations. This modular UTC will allow us the flexibility to meet the needs of the deploying force and cover the spectrum of medical, geographical, and environmental threats to deploying AMC personnel. Teams can be deployed rapidly to debarkation points to join deploying TALCE packages. HQ AMC/SGXP is in the process of registering this team as a Unit Type Code (UTC).

Proposed automated enhancements will facilitate medical record and patient tracking into the next century. Development of an automated tracking system, using bar coding, will enable tracking of medical equipment and facilitate return to theater medical treatment facilities. Technology upgrades to provide computerized medical records (such as an ID card sized dog tag), and essential elements of medical or personal information (medications, allergies, demographic data, and significant medical history) will ensure vital patient data is readily available to medical providers. This enhancement will eliminate redundant paperwork and ensure the vital information flows with the patient.

INFORMATION INFRASTRUCTURE

INTRODUCTION

This section begins with Information Resource Management, where the business rules for managing information are covered. This is followed by a description of the evolving role of information warfare. Next, AMC's functional information requirements are spelled out. Finally, AMC's current C4I systems architectural shortfalls are discussed, followed by a description of the target architecture which will provide AMC a global, seamless, integrated, interoperable C4I system. This target architecture will overcome the current architectural shortfalls and meet AMC's functional C4I system requirements. This is a macro-level discussion. More detailed information about AMC's current and future systems is in the AMC C4S Master Plan.

INFORMATION RESOURCES MANAGEMENT (IRM)

The real value of information resources management is that it can decrease the amount of time it takes warfighting commanders to make decisions and increase the quality of those decisions. The ability of any military to fight and win wars is totally dependent on the efficiency and effectiveness of its decision cycle. In that sense, information is truly a strategic weapon that must be exploited to its fullest potential.

In February 1994, the USAF Scientific Advisory Board (SAB) released the Report of the Ad Hoc Committee on Information Architectures that Enhance Operational Capability in Peacetime and Wartime. CSAF's charter to the board stated "the revolution in information technology affords the Air Force an unparalleled opportunity to realize its vision of Global Reach-Global Power. To achieve this goal, a structure needs to be defined that permits every user to have secure access to relevant and accurate information in a timely and useful manner."

The Defense Information Systems Agency (DISA) and its Defense Information Infrastructure (DII) are going a long way toward fully integrating major information systems and ensuring the eventual interoperability of all DoD information systems. AMC must work to further its own initiatives that provide accurate, timely, and relevant information to its commanders, while preserving all information of historic value.

INFORMATION WARFARE (IW)

IW Concepts and Definitions

> Objective 1.4.5
> *Integrate information warfare into all aspects of command operations.* DOO, FY02

IW is defined as any action taken to deny, exploit, corrupt, or destroy the enemy's information and its functions; protecting ourselves against those actions; and exploiting our own military information functions. It is a rapidly evolving concept incorporating many disciplines, fueled by technology, and with information superiority as its ultimate goal. Information superiority refers to the employment of superior situational awareness to seize and maintain the initiative, influence the enemy's actions, and induce operational paralysis while denying an adversary the ability to do the same. IW operational concepts include security measures (communications, computer, emissions, information, and operations security as well as information protection), psychological operations (PSYOP), military deception, electronic warfare (EW), physical attack, and information attack. Proper use of these IW components will help us achieve the three objectives of IW, which are to **control** the information realm so we can exploit it while protecting our own military information functions from the enemy; **exploit** control of information to employ IW against the enemy; and **enhance** overall force effectiveness by fully developing military information functions. Actions taken to control the information realm, known collectively as Counter Information, are further divided into offensive and defensive components, referred to as Offensive Counter Information (OCI) and Defensive Counter Information (DCI). OCI includes actions taken against an enemy's information functions, while DCI includes actions protecting our military information functions from an adversary. Because the command's role in IW is primarily defensive, DCI is a capability we must develop as quickly as possible. An effective DCI capability will be fundamental in safeguarding AMC operations.

IW is a continuous process and a relatively new plane of conflict in which the use of electronic information systems, together with protective measures, makes it possible to defeat even a numerically superior force by interfering with the adversary's decision-making processes. It is no longer solely a matter of who has the best or most people and equipment, but who can best gather, understand, and control information. The focus of IW is *any* information function, whether it is C2 systems and networks, an oil refinery's control system, or a telephone switching station. When a strictly military role is assigned to IW, the application is referred to as Command and Control Warfare (C2W). C2W addresses only activities focused against an adversary's ability to direct the disposition and employment of forces, or those which protect a friendly commander's ability to do so. As the military strategy that implements IW on the battlefield, C2W should be viewed as a subset of IW. The defensive aspects of IW/C2W must be developed within AMC to protect air mobility operations from IW threats. These issues are addressed more fully in draft AMCI 10-1, the command's IW instruction.

Threat Description and Recent IW Initiatives

The Global Reach mission requires AMC aircrews to fly into harm's way on a regular basis. As the IW threat develops, our aircrews and other deployed personnel will become increasingly vulnerable to IW attack. Similarly, the global nature of the IW threat will put even CONUS-based AMC assets and operations at risk. Adversaries intent on employing IW against us will be able to ignore the geographical barriers that have long kept our country safe from all but nuclear or a New York Trade Center type terrorist attack. Our dependence on information systems makes us vulnerable to a variety of IW attacks including hackers, malicious software, espionage, terrorism, and direct attacks by an enemy during a period of crisis or war. For example, an adversary could use malicious software to shut down avionics systems at an airbase or corrupt Time Phased Force Deployment List (TPFDL) data during a crisis. The Rome Labs incident, occurring between March and April 1994, makes clear the damage even hackers can do to military information networks. In this instance, a hacker made more than 150 Internet intrusions, disrupting operations at Rome Labs and compromising a great deal of sensitive information.

With such threats in mind, AMC/CV directed an IW Process Action Team (PAT) to define the role, mission, and scope of IW for the command; develop an AMC instruction detailing IW procedures and responsibilities; draft a financial plan for IW initiatives; and produce a draft organizational structure. The IW PAT *completed its work Jun 96*, and an Information Warfare Working Group (IWWG) has taken its place as a forum in which the command's IW experts meet to address IW-related issues. The IWWG will act as a standing consultative and coordinating body for a new IW Branch currently being formed at the headquarters. Draft AMC Instruction 10-1, developed by the IW PAT, details AMC IW roles and responsibilities as well as awareness, training, and education requirements. The instruction's review of unit-level IW responsibilities could easily double as a baseline list for the command Inspector General to use during ORIs. The IW Branch will refine and publish this instruction to provide the command with concrete IW guidance. An AMC IW funding initiative made the final list of PEG recommended programs, but due to fiscal constraints was not funded. In addition to addressing AMC/CV concerns, the PAT allowed IW specialists from several directorates to work together and better understand how their organizations will coordinate to bring IW into the mainstream of AMC operations. This synergism will continue to pay dividends as the command's IW program develops.

Continuing IW Deficiencies

Despite these successes, AMC still has a number of IW-related deficiencies. First, the HQ AF IW doctrine and master plan are not complete, nor has the AF produced a comprehensive IW threat assessment. As a result, AMC and the other MAJCOMs have no blueprints to follow as they develop their IW programs. The lack of a clearly defined IW threat makes it difficult for AMC to develop defensive IW DCI policies and procedures for air mobility operations or incorporate IW concepts into war and exercise planning. These larger issues raise the possibility that AMC may stay ahead of HQ AF in developing certain aspects of its IW program, leading to coordination problems. In addition, basic network and systems vulnerability assessments are far from complete. The Air Force Information Warfare Center (AFIWC) has conducted initial vulnerability assessments, confirming AMC has insufficient protection against attacks on or intrusion into its C4I systems and networks. This vulnerability extends to our global C2 network. These weaknesses in the command's defensive IW capabilities must be addressed as soon as possible. Further assessments performed on a regular basis are essential if AMC is to develop effective IW protective measures. *Another problem revolves around the HQ AMC IW Branch, which is only now standing-up to address the command's IW issues.* Additionally, IW awareness, training, and education programs are not yet defined, despite attention to this issue in the IWWG. Nor is security measures training keeping pace with technological changes and the developing IW threat. Robust security training programs must be a key element of any IW awareness program. Finally, consideration of IW concepts in war and exercise planning is not institutionalized within the command. This, combined with the lack of an IW acquisition strategy for future networks and systems, demonstrates a clear need for integration of IW concepts into all aspects of AMC operations.

Current Status of AMC IW Initiatives

The command is in the process of standing-up a new IW Branch to address all IW-related issues for AMC. Once fully established, the IW Branch will continue working initiatives begun by the IW PAT and IWWG. The first of these tasks is to develop a command-wide IW awareness, training, and education program. The program will include an effective security measures component as well as recurring fundamentals training to include readings and current videos. This will give every member of the command at least a basic understanding of IW principles. It will also give the AMC/IG a clear set of criteria to examine during ORIs. In addition, the IW Branch will coordinate with AF and the Air University staff to ensure the appropriate personnel receive intermediate and advanced IW training. Equally important is the need for an AMC-specific IW threat assessment, which will give command decision makers the insight they need to tailor our IW program to the command's requirements. The IW Branch will also coordinate with AFIWC to develop a continuing program of vulnerability assessments that will allow us to identify and correct problems as they surface. AMC already has a number of Information Protection specialists assigned to this task, and future cooperation with AFIWC will build on the foundation established by these individuals. Equally important is coordination with Air Force Materiel Command (AFMC) to incorporate the AFMC-developed IW acquisition policy for new systems into the AMC acquisition process. This will make it easier to ensure IW protective measures are built into all C4I systems and networks. Finally, the IW Branch will ensure all AMC directorates support initiatives to develop a global C4I architecture with an inherent capability to withstand IW attack. This last step is critical if the command is to assure mobility information dominance for AMC operations into the 21st century.

AMC is only now developing the necessary infrastructure to carry out a major IW program. Nevertheless, the IWWG has determined basic manpower requirements to support such a program, and this information continues to play a central role in the development of the command's IW Branch. Key directorates involved in this process, including DO, IN, and SC, support these manpower projections for an AMC IW program. In addition to developing a dedicated manpower pool, AMC will coordinate all IW initiatives with AF and USTRANSCOM, ensuring an effective crossflow of information and adherence to lines of authority.

Countering Weapons of Mass Destruction (WMD)

With the end of the cold war, the rise in regional instability, and the global proliferation of WMD and their delivery systems, the United States will undoubtedly confront adversaries armed with WMD. WMD are classified as nuclear, biological, and chemical (NBC) weapons due to their indiscriminate power. Elements of WMD are:

- Proliferation: the spread of nuclear, biological, and chemical capabilities and the missiles to deliver them.

- Nonproliferation: the full range of political, economic, and military instruments of national power to prevent proliferation, reverse it diplomatically, or protect US interests against an opponent armed with WMD or missiles.

- Counterproliferation: all Department of Defense (DoD) efforts to combat proliferation, including preventive efforts designed to stop the spread of WMD technologies and systems, and protective efforts for use in situations involving the use of WMD.

Proliferation is the most serious threat facing the US today. It is a threat to the survival of deployed US forces and many US allies. US forces must be prepared to deal with the threat and use of WMD via a broad range of delivery means. Countering WMD proliferation is inherent to what the Air Force is equipped and trained to do both in peace and war. AMC must be prepared to execute its traditional roles in environments where the use of WMD is threatened or occurs.

WMD Infrastructure Status

USAF requires a fast, high-volume C4I capability interoperable with the other services and with governments and armed forces of allies and host countries. It is imperative AMC reorient the existing capabilities and force structure to address the proliferation threat and develop new capabilities within fiscal guidance. AMC's policy and planning efforts should incorporate counterproliferation into all strategic plans, doctrinal publications, and training programs. Each AMC installation should plan, develop, operate, and support capabilities to accomplish counterproliferation tasks which fall within their mission and function. Intelligence efforts must develop and/or support capabilities required to detect, identify, monitor, characterize, and report on WMD programs. An acquisition strategy must streamline the acquisition process, as appropriate, to respond to urgent threats and ensure the effective management and oversight of Air Force counterproliferation programs and activities. Warfighting efforts must incorporate WMD considerations into offensive, defensive, logistics, and command, control, communications, computers, and intelligence (C4I) planning.

AMC must be prepared to operate in a number of geographic regions under a wide variety of conflict environments. Additionally, AMC must be able to operate under the pre-crisis, crisis, and post-crisis spectrum of counterproliferation activities

INTELLIGENCE INFORMATION REQUIREMENTS

During day-to-day operations, command decision makers require a macro view of the world. As "hot spots" surface and the possibility of crisis or contingency operations develops, they need more detailed and current information. This requires HQ AMC to provide an in-depth assessment of the potential area of operations. With the command's commitment to numerous humanitarian, peacekeeping, and peace enforcement missions worldwide over the past few years, intelligence support to air mobility operations has never been more important. Information the AMC Intelligence Directorate provides to the command senior staff, TACC, and AMC Threat Working Group plays a key role in safeguarding AMC operations around the globe. Figure 4-2 illustrates key intelligence functions as they relate to air mobility missions.

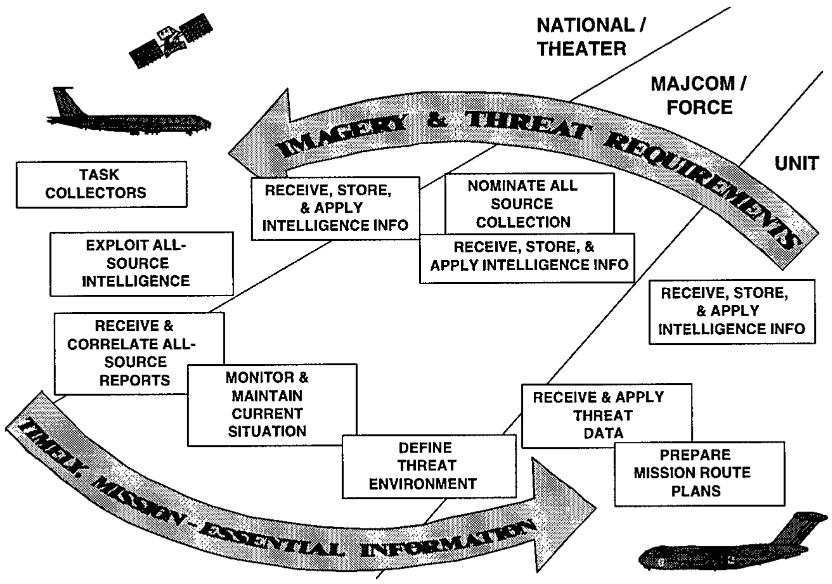


Figure 4-2. Intelligence Functions

At the units, operators require data of a more tactical nature: the capabilities, locations, and intentions of hostile forces; LZ/DZ imagery; and composition of runways and taxiways. These are but a few of the Essential Elements of Information (EEIs) unit-level intelligence personnel must provide in support of AMC operations. Information requirements at each unit vary according to its taskings and geographical area of operation, and the "owners" of the information could be in different places, ranging from the National Photographic Interpretation Center or the Joint Combat Camera Center in Washington DC, to theater Joint Intelligence Centers, to stage locations with aircrews. HQ AMC is developing global connectivity via the Secret Internet Protocol Network (SIPRNET) and a Quick Dial-Up Capability (QDUC) to ensure intelligence personnel at the headquarters and units are able to "Reach Into" theater networks, while deployed personnel can "Reachback" to CONUS networks to access the information aircrews and staffs require to perform their missions and stay apprised of the situation in theater.

AMC relies on the National Foreign Intelligence Program (NFIP) for much of its information. NFIP was chartered to guide the acquisition, processing, and dissemination of foreign data. National and collection assets for all intelligence disciplines--human (HUMINT), signals (SIGINT), imagery (IMINT), open source (OSINT), and measurement and signatures (MASINT)--are tasked to satisfy the command's EEIs. Intelligence gathered to satisfy EEIs may be at the Sensitive Compartmented Information (SCI) level, but is usually collateral (non-SCI). The majority of AMC information requirements are classified to protect the collection process and sources.

AMC Intelligence Infrastructure and Initiatives

HQ AMC continues to upgrade intelligence systems and establish global connectivity in support of air mobility operations. Key current initiatives include acquisition of the Combat Intelligence System (CIS) for the headquarters, units, and en route intelligence locations. Closely related to this program are ongoing efforts to acquire a deployable (laptop) CIS, modems providing a Quick Dial-Up Capability (QDUC), and day-one capable SATCOM. These deployable systems will be part of a "fly-away" intelligence systems package providing connectivity and good data transfer capabilities at austere and bare-base locations. In addition, AMC is working to provide unit-level CIS maintenance and to ensure all intelligence personnel receive formal and recurring (internal) CIS training. To ensure headquarters and unit personnel can "Reach Into" theater networks, and deployed or overseas personnel can "Reachback" to CONUS for timely intelligence, AMC is working to connect units to SIPRNET. Combined with QDUC, this makes reliable, global connectivity a reality for AMC, leading to enhanced support for air mobility operations even though several of our en route manpower positions are being eliminated as part of the drawdown. Similarly, AMC is establishing agreements with theater intelligence organizations to ensure ready access to theater servers. We are also working with USTRANSCOM to gain global access to Imagery Product Archive (IPA) servers and imagery delivered to USTRANSCOM via the Modular Dissemination System (MDS), and teaming with AIA to satisfy all AMC imagery requirements. Finally, AMC continues to ensure intelligence systems are fully interoperable with operations systems such as the Air Force Mission Support System (AFMSS), Command and Control Information Processing System (C2IPS), the Contingency Theater Automated Planning System (CTAPS), and the next-generation Real Time Information in the Cockpit (RTIC) system. These initiatives, once complete, will carry AMC into the next century, ensuring delivery of seamless, timely, and tailored intelligence in support of air mobility operations worldwide.

AMC has fielded the Combat Intelligence System (CIS) to all active-duty and most ARC units. CIS is the centerpiece of headquarters and unit intelligence systems. It features a wide array of applications including global connectivity to networks and databases via SIPRNET and Intelink-S (a classified version of the Internet); orders of battle; electronic intelligence applications; imagery dissemination and manipulation; mapping, charting, and geodesy applications; graphics; and word processing. CIS incorporates Sentinel Byte, the CIS Automatic Associator (CIS/AA, formerly known as Constant Source), Intelligence Correlation Module, and Rapid Application of Air Power (RAAP) modules. For imagery receipt and transmission through CIS, the latest release incorporates the Demand Driven Direct Digital Dissemination (5D) system. In addition, CIS will be networked with operational squadrons to provide a seamless flow of intelligence to operations systems such as AFMSS, C2IPS, CTAPS, and the next-generation

RTIC system. In addition, CIS will be fully interoperable with the Joint Deployable Intelligence Support System (JDISS), which is being replaced at AMC and throughout the Air Force with CIS. CIS is the Air Force migration system for intelligence and will automate the daily functions performed by intelligence personnel at both the headquarters and unit levels. We had a glimpse of these emerging capabilities during Operation JOINT ENDEAVOR, when deployed intelligence personnel used the system extensively and very successfully to acquire critical information for aircrews and staff and disseminate intelligence gathered from aircrew debriefings and other sources. The recent development of QDUC has also enhanced our CIS capabilities, making it possible for unit-level personnel to dial directly into the AMC collateral Local Area Network (LAN) and from there obtain global connectivity. Units will retain QDUC even after SIPRNET installation to maintain a rapid and alternate means of achieving global connectivity. AMC will build on these successes by establishing agreements with theater intelligence organizations to ensure ready access to theater servers. Outstanding USAFE support to AMC personnel and systems during JOINT ENDEAVOR and Air Expeditionary Force (AEF) II underscores the value of these agreements.

Despite the enormous potential CIS demonstrated during JOINT ENDEAVOR, AEF II, and in day-to-day operations throughout the command, a number of shortfalls remain. While most active-duty units have CIS connectivity via Air Force Military Network (AFMILNET), few have connectivity through SIPRNET, to which all DoD systems are supposed to migrate. While all units have a rudimentary connectivity capability through secure telephone point-to-point transmissions, this does not allow for a rapid or reliable transfer of data for extended periods. Some ARC units still have stand-alone CIS terminals incapable of accessing global networks. Until all stand-alone CIS terminals are networked via SIPRNET or QDUC, intelligence personnel at those locations will not be able to provide a seamless, timely flow of information to aircrews and staff. Adding to this concern, CIS deployability is currently inadequate. The standard system weighs 850 pounds and requires half a pallet for deployment. As a result, unit-level personnel have trouble deploying with their CIS. During JOINT ENDEAVOR, personnel deploying to a forward location were separated from their CIS because of its size and associated space limitations on the aircraft. Subsequently, the CIS was lost for nearly two weeks, leading to a serious degradation of our deployed intelligence capabilities. To prevent such problems in the future, AMC will field a deployable (laptop) CIS for use at austere and bare-base locations. A related problem occurs when unit-level personnel take their only CIS with them into the field, leaving in-garrison personnel without a CIS. This makes it impossible for deployed personnel to "Reachback" to their home unit for information and for in-garrison personnel to "Reach Into" Service, theater, and national databases to support upcoming or ongoing deployments. Acquisition of laptop CIS terminals will also help to alleviate this problem. Finally, JOINT ENDEAVOR made clear the importance of intelligence participation in AMC ADVON teams sent to coordinate the command's in-theater requirements. Because CIS requires a supporting infrastructure and regular maintenance, AMC needs to make arrangements for these issues prior to the deployment of AMC forces.

Two other CIS shortfalls affecting intelligence support to air mobility operations are maintenance and training. AMC is working to establish an agreement providing for base-level maintenance of CIS. The agreement will include an omnibus TBM maintenance contract with two GTE contractors located at each AMC base to perform maintenance for all systems including CIS, and in addition would provide for blue-suit CIS maintainers at each base. To enhance CIS reliability during deployments, AMC is working to include a dedicated CIS maintainer in certain Unit Type Code (UTC) packages. Until this agreement is in force, intelligence personnel will have to ship CIS terminals experiencing even minor problems to the depot at Kelly AFB or HQ AMC/INY. This results in down-time and loss of training opportunities as the unit waits for shipment of a spare from headquarters. Currently, the only other option is to send a contractor or blue-suit maintainer TDY to the base, which is expensive and time consuming. Training is a related issue surrounding CIS. Many AMC/IN personnel have not attended formal CIS training, and most units are only now developing effective internal training programs. AMC will work to ensure both formal and internal training opportunities exist for unit-level personnel. Without adequate training, intelligence personnel will be unable to take full advantage of CIS capabilities.

The Mobility Air Intelligence System (MAIS) initiative must be fully funded before AMC can overcome these CIS shortfalls. Air Staff has approved MAIS funding beginning in FY99, with a disconnect for FY98 funding. Funds approved under the MAIS initiative will provide the hardware, maintenance support, and training needed to allow CIS to reach its full potential as the command's centerpiece intelligence system. Funding shortages, combined with delays in SIPRNET installation, have already pushed back CIS purchases and connectivity, and have forced AMC to rely on non-optimum encryption/decryption equipment to develop the AMC CIS architecture. Any delay or decrease in MAIS funding will exacerbate these problems.

As the preceding paragraphs illustrate, connectivity and deployability are key challenges facing AMC intelligence personnel as they strive to provide enhanced support to air mobility operations. To improve both in the near term, AMC will field a robust, dial-up modem capability (e.g. STU-III) to provide a QDUC access to the AMC collateral LAN and a day-one capable SATCOM (e.g. INMARSAT B) to provide for connectivity at austere and bare-base locations. Both AMEs and TALCEs usually include at least one intelligence specialist tasked to provide intelligence support to aircrews and staff at forward operating locations (FOLs). Infrastructure at these FOLs is often limited or nonexistent, requiring SATCOM connectivity to intelligence networks. To receive or transmit data at acceptable speeds, intelligence personnel at these locations will rely on their modem for a direct dial-in to global networks and as an encryption/decryption device connected directly to their laptop computers and SATCOM hardware. As part of a "fly-away" intelligence systems package along with a laptop CIS, the modem and SATCOM will allow one or two intelligence specialists to deploy with their equipment, establish day-one global connectivity, and rapidly transfer large quantities of data for use by transient aircrews and staffs at higher echelons. For situational awareness and timely threat warning, we will acquire the Multi-Mission Advanced Tactical Terminal (MATT) to provide for transmission of intelligence to aircrews in flight and personnel at forward operating locations. MATT is a migration system that will ultimately be replaced by the Joint Tactical Terminal. To provide redundant connectivity at austere and bare-base locations, AMC has stated a requirement for access to systems fielded as part of the Theater Deployable Communications program. We will also determine the applicability of programs such as the Global Broadcast Service (GBS) for supporting connectivity requirements. These initiatives will reduce our dependence on C2 systems such as MARC vans during deployments, freeing up deployed communications systems for other uses.

Closely related to the connectivity issue is the command's requirement for timely and detailed imagery to support air mobility operations. Currently, AMC is capable of meeting most command imagery requirements, but there are occasions when timeliness, format, quality, and coverage could be improved, especially during short-notice operations when go/no-go decisions are pending. The key shortfall in previous years has been the lack of an ability to be proactive in obtaining and archiving imagery for AMC target sets. Recently, however, an IPA server was installed for USTRANSCOM and AMC use, with delivery of the Modular Dissemination System (MDS) expected by Jan 97. These two means of receiving and disseminating imagery are part of the solution to the command's imagery shortfalls. In addition, AMC is teaming with USTRANSCOM/J-2 and the Air Intelligence Agency (AIA) to develop procedures for transferring products to imagery servers for rapid dissemination to units, en route locations, and FOLs worldwide. We are also working to gain unrestricted access to theater imagery servers. This global connectivity will ensure aircrews and staff receive imagery in a timely manner. It will also ensure rapid access to specialized products such as color multispectral imagery (MSI), which AMC is already using to support air mobility operations. The key issue at this point is who will populate the IPA server with imagery for AMC missions. Currently, AMC relies on a geographically separated HQ AMC/IN imagery exploitation section at Offutt AFB to provide required imagery. Because this unit will disband in FY97/4 as part of the drawdown, AMC is making other arrangements for imagery support. As noted above, some of this support will come from USTRANSCOM personnel loading imagery from MDS onto the IPA server. In addition, AMC is pursuing agreements with AIA that will allow imagery exploitation units to populate the IPA server with time-critical and routine imagery in support of AMC missions.

Another concern facing AMC is the inadequate interface between intelligence and operations systems. CIS interface with AFMSS is a key shortfall at this point. Although AFMSS is capable of receiving feeds from CIS, the current arrangement requires improvement. In particular, we need a more rapid and seamless flow of intelligence and an ability to transfer specialized imagery, including color MSI, to AFMSS. Another area of concern is the flow of intelligence into the command's current RTIC platform, the Multi Sensor Tactical System (MSTS). MSTS is difficult to set up, requires excessive space on the aircraft, and cannot receive feeds from CIS. A follow-on system will soon replace MSTS. AMC will work to ensure the new system addresses these shortfalls and allows aircrews to receive intelligence on demand during the mission planning process and in the cockpit.

The Intelligence Data Handling System (IDHS, a SCI-capable system) supporting headquarters intelligence requirements is sufficiently reliable and robust to accomplish the mission. Benefiting from the co-use of the USTRANSCOM-funded IDHS, AMC analysts have the tools to retrieve and tailor DoD intelligence data to provide the AMC/CC and his staff with the necessary assessments for planning and decision making. An SCI-capable secure video teleconferencing system known as the Joint Worldwide Intelligence Communications System (JWICS), administered by USTRANSCOM and located in the headquarters, provides for a real-time and secure exchange of information. AMC is working to integrate its JWICS facility into the Scott AFB secret-level Defense Commercial Telecommunication Network.

Given the command's high operations tempo and the number of Requests for Information (RFIs), AMC will continue to refine its RFI procedures in coordination with USTRANSCOM/J2, which utilizes several requirements management systems with direct feeds to the national level. In addition, AMC will leverage a database such as the Air Customer Needs Database (ACIND) or the Intelligence Functional Area Analysis (IFAA) that correlates operations information needs with available intelligence. This database will allow intelligence analysts to see at a glance which materials are available to support operations or answer questions about a topic of interest to the command. It will also provide the status of on-going production requirements. Once AIA has networked ACIND to national-level requirements management systems, it will be a potent tool for addressing operations information needs and interfacing with the national-level systems.

AMC will strive to meet the above initiatives in the short-term. With adequate funding, all are realistic and achievable in this timeframe. Once fully implemented, these improvements will result in a globally networked intelligence architecture with day-one, robust connectivity to AMC aircrews and staffs around the world. JOINT ENDEAVOR and AEF II provided the first real tests of this emerging intelligence architecture, and it passed with flying colors. Aircrew and staff received necessary intelligence more quickly than ever before, and this will only improve as our systems and connectivity develop over the next few years. Even as we focus on these short-term initiatives, we must continue to place emphasis on integrating rapidly changing technological advances into communication systems architectures supporting AMC. With this in mind, AMC will be ready to incorporate more distant technologies such as Multi-Level Secure (MLS) capability into our operations. We will also work with AF/IN to field databases that are automatically fused, correlated, and populated. These capabilities are at least a decade in the future, but AMC will be positioned to take advantage of them as they develop.

COMMAND AND CONTROL (C2) INFORMATION REQUIREMENTS

In order to ensure that we meet our C2 needs in the short-, mid-, and long-term, we are striving to improve the capability, efficiency, and effectiveness of C2 operations. To that end, the following C2 goals will guide system capability development:

SHORT-TERM GOALS (FY97-01)

- Move C2IPS to a client-server architecture and migrate towards the Theater Battle Management Core System (TBMCS)
- Develop capability to process classified/unclassified information on the same system
- Implement worldwide logistics communication
- Attain total asset visibility of mission support equipment
- Exploit Commercial Off-the-Shelf Technical Order Technologies
- Obtain deployable C4I equipment
- Provide C2 system support capabilities within the command

- Install a common Air Mobility fleet C2 capability
- Improve AMC base communications infrastructure
- Upgrade and standardize C4I equipment in AMC command posts and en route locations
- Receive seamless feeds from intelligence systems

MID-TERM GOALS (FY02-10)

- Provide assured C2 connectivity
- Exploit the concepts of deployability within our C2 systems
- Establish interoperability in AMC, AF, & Joint/Combined C2 systems
- Maintain equipment and system survivability
- Standardize C2 equipment within the command

LONG-TERM GOAL (FY11-20)

- Maintain pace with proven commercial technology

Short-Term Goals

Move C2IPS to a Client-Server Architecture and Migrate Towards the Theater Battle Management Core System (TBMCS)

AMC's decision to move the C2IPS architecture to client-server will greatly ease C2IPS's migration to the TBMCS. This migration is needed to create a seamless flow of air mobility mission data to and from strategic (at the Tanker Airlift Control Center) and theater (Airlift Coordination Cell of the theater Air Operations Center) information systems. In FY97, this interface will take the form of an Early Operational Interface (EOI) between C2IPS and Contingency Theater Automated Planning System (CTAPS). The EOI will support incorporation of airlift mission into the Air Tasking Order (ATO) with associated airspace deconfliction. In FY98, C2IPS will interact with TBMCS 1.0 by submitting mission schedules and schedule changes. TBMCS 1.0 will evaluate mission schedules, assign theater data, and notify C2IPS of mission rejects.

In FY99, C2IPS will interact with TBMCS 2.0 through a two-way guard interface to facilitate the flow of mobility information from an unclassified airlift information system to a classified theater information system. TBMCS 2.0 will be able to task, schedule, and track theater air mobility missions. TBMCS 2.0 tanker information will flow directly to C2IPS deployed to tanker units in theater.

In FY01, planning and execution functionality will be functionally integrated into TBMCS 3.0. Theater air mobility missions will be tasked, scheduled, and tracked in TBMCS 3.0. Strategic planning and execution information will flow between TACC and theater information systems through a "smart" two-way guard interface.

Develop Capability to Process Classified and Unclassified Info on a Single System

Automated C2 systems pass both classified and unclassified information. Today, C2 systems pass unclassified information without encoding or encrypting transmissions. While the information itself is unclassified, the stream and flow of information is subject to collection and analysis which could reveal mission capabilities, limitations, and intent. The current lack of a capability to link C2 systems requiring different/multiple levels of security access is one of AMC's most significant limitations. The implementation of a secure data processing capability will improve our ability to preserve the integrity of AMC C2 systems with respect to principles of IW. It will also help to ensure a seamless flow of information from intelligence to operations systems.

Implement Worldwide Logistics Communications

Current Logistics C2 systems are not accessible worldwide, causing delays in customer deliveries and increased cost. When current systems were implemented, the technology did not exist to provide worldwide communications for Maintenance Recovery Teams (MRTs) or directly down-linking aircraft mission support data. Future acquisitions will take advantage of current commercial communications capabilities to update our Logistics C2 systems from any recovery location worldwide. Within the short-term, the use of INMARSAT-M communications will be implemented which will greatly improve timeliness of critical C2 decision support. In addition, radio frequency communications are being installed at each of our units to improve computer access of critical logistics systems in direct ground support of our aircraft.

Attain Total Asset Visibility of Mission Support Equipment

> Objective 1.4.2
> *Provide accurate and timely passenger and cargo air movement data from receipt to delivery.* DOU, FY00

AMC's current inventory of mission support equipment is made up of hundreds of thousands of pieces of equipment worldwide. The equipment is continuously installed and removed on aircraft as missions are tasked or completed. The decision support process is hampered by the manual data entry and sharing of this data. Bar code reading standards and Electronic Data Interchange (EDI) standards now make it possible to collect the data with much less effort and provide the accuracy required for C2 decisions. In the short-term, AMC will implement bar coding and EDI standards to improve our responsiveness.

Exploit Commercial Off the Shelf (COTS) Technical Order Technologies

AMC's mission takes our aircraft to every corner of the globe. When aircraft break at remote locations, maintenance recovery teams are dispatched. To facilitate these recoveries, AMC aircraft must carry on-board paper copies of technical orders. These files are referred to as G-Files and can weigh up to one half ton. The command strategy is to exploit common commercial hardware and software such as Compact Disk (CD) technology and Portable Document Format (PDF) to eliminate unnecessary weight, reducing operating cost while increasing lift capability. Near term efforts are underway to digitize technical data on the C-5 and C-17. AFMC CALS program offices converting nearly 14 million pages of technical data to PDF and HQ AMC/LG is laying in the infrastructure to provide a read capability both in the shops and on the aircraft.

Obtain Deployable C4I Systems Equipment

A key element in AMC's Global Reach Laydown concept of operations is the Mobility Air Reporting and Communications (MARC) system. The MARCs are being upgraded to include C2IPS nodes and DoD-mandated Demand Assigned Multiple Access (DAMA) communications capabilities.

The deployable Air Force C4I systems force structure is being reorganized. AF/SC made HQ AMC responsible for providing initial C2 and base-level common-user communications support at AMC bare base operating locations or at AMC operating locations where base-level communications capabilities are insufficient. In the past, deployable base-level support was supplied out of Air Force combat communications units or theater deployable communications resources. Base-level communications services provided include worldwide telephone (DSN), message service (DMS), data network access (including MILNET, DSNET, and AFNET), and other special services as required. AMC's Air Mobility Communications Squadrons (AMCS) and core tanker wing communications squadrons are not equipped to provide this level of support.

AMC's requirement for deployable base-level communications and intratheater communications systems were addressed in the CAF-AMC-AFSOC, 311-92 Multi-Command Mission Need Statement (MNS) for Theater Deployable Communications (TDC). AMC requires fifteen TDC packages to support the Global Reach Laydown concept of operations.

Today, ACC will continue to provide sustainment base-level communications for AMC's deployed bare base operating locations. However, the availability and distribution of those assets will become more critical as AMC is called upon to support a higher number of deployed locations than in the past. Additionally, it is critical AMC retain the capability to expand C2 and base-level communications support at en route locations where fixed base resources are insufficient. In the short-range, AF has funded 4 of AMC's 15 TDC packages in the FY96-01 POM. AMC has submitted an initiative through DBOF-T for the remaining 11 packages. Once fielded, these packages will enable AMC's deployable communications units to support Global Reach Laydown with ground-to-ground communications connecting AMC's deployed en route system, AMC headquarters, and theater joint networks. AMC will closely monitor and support TDC funding. In the mid-and long-range, AMC will remain closely linked to the AF deployable communications community to take advantage of new technology providing smaller, lighter, more capable, scaleable, and more flexible C4I systems

Provide C2 System Support Capabilities Within The Command

As C2 systems evolve, AMC needs to identify training requirements and educate the maintainers and operators in advance of fielding new C2 systems. Technologies today require new skills not previously found in the Command. Given the length of training and number of courses, lead times for training can exceed a year. The TDC program will require in excess of six months of specialized training before maintainers and operators can work with this new technology.

Logistics support for maintenance and spares must be based on two-level maintenance concepts and comprehensive built-in-test capability for all equipment/systems. The increasing emphasis on COTS technology should make contractor logistics support (CLS) for maintenance more cost effective than previous blue suit and DoD civilian intermediate and depot level maintenance. Sole reliance on CLS should be evaluated and balanced against wartime maintainability and supportability requirements.

Install A Common Air Mobility Fleet C2 Capability

A common C2 capability throughout the mobility fleet will give AMC a universal set of capabilities usable in any situation. A common C2 capability entails both voice and data communications. Voice communications have an important place in the C2 equation, but the information that is the most useful to the aircrew is fused, multi-source, digital data.

Objective 1.4.4
Provide global voice/data connectivity to aircraft and worldwide locations. DOU, FY02

An emerging method of extending C2 systems directly to the cockpit of AMC aircraft is becoming available as an offshoot from a Federal Aviation Administration (FAA) program to increase air traffic control capabilities. Under the FAA Automatic Dependent Surveillance (ADS) program, large aircraft (civilian and military) operating in oceanic airspace will be equipped with a satellite based (HF radio is also being considered) automatic data link capability to receive air traffic control instructions and information and transmit autonomous position reports and aircrew requests. ADS will allow a safe decrease in aircraft separation and increase in traffic density. The ADS concept is an extension of a capability commercial airliners have possessed for years. The air-to-ground data link has been installed in almost all large civilian airliners. Civilian aircraft routinely transmit aircraft performance data, passenger information, and maintenance analysis data to ground stations that perform rapid analyses, and then transmit suggested courses of action back to the aircraft. A major feature of ADS is the requirement for aircraft to transmit information concerning weather conditions that is obtained from aircraft systems. The real time weather data from the aircraft is combined with forecasts and performance data from aircraft systems to dynamically reroute the aircraft based on the most advantageous weather patterns.

Inherent in this capability is the ability to communicate with other than air traffic control agencies. The ADS communications infrastructure, collectively called the Aeronautical Telecommunications Network (ATN), will allow direct data communications with ADS equipped aircraft almost anywhere in the world. Equally possible is direct communications between aircraft while inflight. Mapping, flight plan, air refueling rendezvous, weather, intelligence, and maintenance information can all be easily passed to and from aircraft over a system that will be reliable and highly automated. This capability must also be available for aircraft in the CRAF.

The ability to transmit digital data to and from the aircraft, combined with the emerging user interface technology such as electronic forms, handwriting recognition, and pen based computers, will make it possible for aircrews to complete required paperwork while in the airplane and transmit the information to central databases. Normal maintenance debriefings may no longer be necessary, potentially decreasing aircraft maintenance turn around times and increasing the amount of available crew rest time.

Currently, AMC is installing High Frequency (HF) Automatic Communications Processors (ACP) in the airlift fleet to automate the HF radio operations and improve connection success rates. The ACP acts as an automated radio operator to simplify the tuning of the radio and rapidly scan through available frequencies to get the best possible connection. The ACP provides the interface to AMC deployed ground unit radios and the Scope Command Global High Power HF program. The combined HF modernization program gives AMC voice connectivity throughout many of the worldwide routes flown. Continued work needs to be done to increase the number of Scope Command sites around the world to increase reliable HF coverage.

In addition, AMC is installing the INMARSAT Aero-C commercial SATCOM system on the airlift and KC-10 fleet. The Aero-C provides worldwide, store-and-forward data connectivity similar to email. The system also provides position reporting and tracking. The Aero-C is intended to work as an interim until the ADS solution is identified and fielded, or when a combined voice/data system is funded and installed.

UHF SATCOM antennas are being installed on all AMC strategic airlift aircraft to increase their mission flexibility. AMC aircraft frequently operate at off-line locations or on sensitive missions where instant communications is a must. Built-in UHF SATCOM antennas allow easy use of carry-on satellite radios to provide secure voice or data capability. The mid-to long-term goal is satellite voice and data integrated into the cockpit.

Improve AMC base communications infrastructure

AMC base-wide communications networks are improving, but continued emphasis and additional resources are needed to provide the robust capability to support existing and future requirements. Through an AMC developed program and other in-house initiatives, AMC was able to improve (on a limited scale) our wing level information transport systems (ITS). For example: with the exception of one base, AMC bases now have fiber-optic connectivity to select mission direct support facilities (e.g., command posts, wing headquarters, some logistics facilities, base network control centers, etc.) However, beginning FY 96, HQ USAF developed a corporate strategy to ensure every base has an information transport system that will link existing and planned voice, data, video, graphic, and imagery systems via a high speed multi-media network. The corporate strategy was funded through a wholesale MAJCOM infrastructure tax, and AMC's initiatives were curtailed to support the USAF effort. The goals remain, and AMC is indeed evolving to, a fiber network distribution system, digital switches, writer-to-reader capability that will eliminate labor intensive communications centers, and base information protect tools that will eliminate base network intrusion. Upgrade and standardize C4 equipment in AMC command posts and en route locations.

Upgrade and standardize C4I equipment in AMC command posts (CPs) and Air Mobility Control Centers (AMCCs)

The C4I equipment in AMC's CPs and AMCCs are antiquated, nonstandard and becoming increasingly unsupportable. To solve this problem, the Objective Wing Command Post (OWCP) program is upgrading, integrating, and standardizing the C4I equipment capabilities where needed. The OWCP program consists of nine sub-programs. The following is a synopsis of these nine programs with current status:

- Air Mobility Advanced Console System (AMACS): Replaces command post consoles at stateside locations with a state-of-the-art Siemens Rolm private branch exchange. Three bases (Andrews, McChord, Travis) have been surveyed with installation scheduled to begin before the end of FY96. Two additional bases (Scott, McConnell) are projected to received the AMACS in FY97.

- Automatic Notification System (ANS): Provides stateside AMC CPs the automated capability to initiate telephone notifications by selecting prerecorded messages and call groups. System is operational at all stateside CPs.

- Message Processing Terminal (MPT): Provides secure AUTODIN access for the transmission and receipt of operational message traffic. Of the nine locations identified as lacking AUTODIN connectivity, MPTs have been installed and are operational at three sites, with four additional sites scheduled for operation by 30 Sep 96.

- Command Post Console Replacement (Overseas): Phase I of this program replaces logistically unsupportable consoles at Andersen, Elmendorf, Kadena, Osan, Incirlik, Lajes, Mildenhall, and Rota with proprietary phones. Installations have been completed at Andersen, Elmendorf, Kadena, and Osan, with Lajes and Rota projected for completion by the end of FY96. At Hickam and Yokota where command post facilities are shared with the host base, ESI digital switches were installed. Funding for the AMC portion of these installations was provided by the OWCP program. Phase II of this sub-program will replace consoles and P-Phones with an AMACS type system.

- Secure/Non-Secure Facsimile. Provided a plain paper secure facsimile machine with facsimile gateway to nine locations not having a plain paper facsimile capability. At 14 locations having a plain paper facsimile capability, a facsimile gateway was provided. The facsimile gateway allows the replacement of two facsimile machines (one secure/one unsecure) with one facsimile for use in both secure/unsecure mode.

- Closed Circuit Flight line Video (CCFV) System: Provides closed circuit surveillance system with taping capability to monitor Flight line activities. CCFV system is operational at Charleston AFB with McChord scheduled for completion by the end of FY96.

- Recorder: Phase I of this program provides 20-40 channel recorders for the recording of all telephone and radio conversations generated/received at each command post controller console position. Recorders are operational at 19 locations. Phase II of this program will replace all analog recorders with state-of-the-art digital recorders.

- VHF Radios: Replaces leased VHF radio equipment with government furnished equipment at Dover, McChord, McGuire, Charleston, Pope, Fairchild, and Travis. It also installs VHF radios to the following locations that currently do not possess a VHF capability; Mildenhall, Rota, McConnell, MacDill, Grand Forks, and Scott. McChord, McGuire, Dover and Scott installations are complete with Grand Forks projected for completion by the end of FY96.

- Computer Flight Plan. Provides software and modems for CPs and AMCCs to interactively access and recall flight plans from the Jeppsen Flight Plan Computer located at Offutt AFB NE. This sub-program was completed in early FY96."

Receive Seamless Feeds from Intelligence Systems

Aircrews and other deployed AMC personnel require intelligence for situational awareness and threat avoidance. Currently, the command lacks the necessary interoperability between intelligence and operations systems to ensure a seamless flow of intelligence. To address this shortfall, AMC will continue working towards development of seamless interfaces between CIS and AFMSS to provide aircrews with intelligence during the mission-planning process. This must include a capability for rapid transfer of specialized products such as color Multi-Spectral Imagery (MSI). In addition, MSTS cannot receive feeds from CIS. We will ensure the follow-on RTIC system can receive a seamless flow of intelligence from CIS and other systems as required. This intelligence-operations interface must also extend to C2IPS, CTAPS, and all C2 migration systems associated with air mobility operations.

Mid-Term Goals

Provide Assured C2 Connectivity

AMC C2 capability is increasingly based on commercial satellite systems--both UHF and Super High Frequency (SHF). As systems evolve, we must base our linkage between the TACC and forward/deployed elements on redundant and parallel communications systems. If our communications lines pass through or are based on using telecommunications services of hostile nations, AMC must ensure we can re-route communications without loss of connectivity.

C2 systems must support AMC elements, from the smallest element to a full wing, bare base deployment. AMC does not have a single, command-wide system that provides this capability. Future systems must provide assured connectivity for all levels of activity from any location worldwide back to the CONUS.

Exploit The Concepts Of Deployability Within Our C2 Systems

The AMC mission requires C2 systems to be compact, versatile, and mobile--capable of performing multiple tasks in a variety of environments. Users should be able to transport their system to and from any location, either a ground or airborne site, with minimal tear down and set-up time. C2 systems must be able to operate as stand-alone systems, capable of direct communications back to theater or CONUS C2 centers.

Establish Interoperability in AMC, AF, and Joint/Combined C2 Systems

AMC C2 systems must interoperate with theater, AF, joint, and allied systems. Currently, a system of standard United States Message Text Formats (USMTF) exists to pass data between automated systems, ensuring various systems can pass information between each other. In the future, both Electronic Data Interchange (EDI) and USMTF message formats will be used to pass this information. Efforts are being made to merge these similar standards. Also, AMC and ACC have initiated an effort to standardize data elements in theater air tasking orders (ATO) to ensure everyone can obtain the data they need, when they need it.

The mid-term goal is integration of C2 systems used by AMC and other MAJCOMs into a suite of standard systems used across the entire Air Force, both at fixed bases in the CONUS and in theater deployed locations. The benefits of this strategy are two-fold. First, we will know that our systems will be fully integrated and will work well with each other. Second, we will have the assurance that personnel will know how to use our systems because they will be using the very same systems in peace and in war.

Maintain Equipment And System Survivability

The AMC C2 structure must be survivable regardless of natural disaster or conflict. As levels of command attrit, the C2 system should be designed to recognize this loss of a user/node and automatically react to re-designate command based on pre-established parameters. Loss of a node should not cause a failure in the C2 network. Degradation to the network should be systematically controlled and not result in catastrophic failure. In accordance with the Information Warfare principle of Defensive Counterinformation (DCI), C2 systems should be capable of withstanding deliberate attacks as well as unintended interference. DCI includes active and passive actions to protect ourselves from an adversary's information warfare attacks. In this sense, C2 systems must have built-in IW protective measures to counter an enemy's efforts to degrade, destroy, or exploit them.

Standardize C2 Equipment Within The Command

The same terminal/radio/keyboard used in the TACC should be used by deployed elements in the field. This equipment must be modular and scaleable to support any contingency. As contingency operations begin, units need to tailor their equipment requirements to scale up to the level of activity. As forces redeploy from operations, equipment should scale down to support reduced activity and personnel requirements. C2 software should reside on a single computer and use the same user interface. Using common equipment reduces training requirements as personnel rotate between AMC units and increases productivity and reduces manpower requirements--less training means less trainers and personnel required to support the unit mission while individuals are trained. It also allows us to build standardized IW protective measures into our C2 systems, reducing their vulnerability to destruction, degradation, or exploitation.

Long-Term Goal

Maintain Pace With Proven Commercial Technology

Commercial telecommunication companies lead the DoD in research activities in the telecommunications field. As technology evolves, AMC will ensure its systems remain compatible and upgradeable. Technology advances are difficult to predict. Equipment will become smaller, lighter, and more dependable, making C2 systems more portable and reactive. AMC will be ready to exploit major advances in technology to help accomplish the mobility mission more efficiently. Manpower reductions are forcing us to replace people with automation whenever feasible. We must receive C2 information in near real-time so decision makers can base their decisions on the most up to date information. Simplifying the actual movement of information will allow a true writer-to-reader message transfer capability. Providing information filters in our systems will ensure users receive or view only the information they need. AMC will fuse all relevant information into easily interpreted graphical representations so decision makers can easily comprehend the situation. Our systems must predict problems so we can proactively solve them. They must also include the latest IW protective measures to deter attacks by external adversaries as well as computer hackers.

TRANSPORTATION INFORMATION REQUIREMENTS

Achieving in-transit visibility will be the single most challenging task of the US Transportation Command (USTRANSCOM) and AMC transportation information systems in the near future. The capability to monitor the status of passengers, patients, and cargo at any point while in the Defense Transportation System (DTS) is critical. Future transportation information systems must automatically capture a variety of movement information from any location with minimum manpower and no duplication of effort. AMC must be able to "know" the location and status of any piece of cargo in the air segment of the DTS and quickly communicate that information to USTRANSCOM and its customers. To accomplish this, transportation information system development is migrating legacy systems to core open systems to provide information quickly and accurately to managers and decision makers at all levels of command.

Objective 1.4.2
Provide accurate and timely passenger and cargo air movement data from receipt to delivery. DOU, FY00

AMC aerial port and air terminal activities have the capability to provide near real-time location and status of cargo and passengers transiting AMC's fixed infrastructure. However, the present group of information systems that perform this function do not have a shared common database. Data from several separate databases must often be combined to derive answers to questions.

AMC aerial port and air terminal activities have less capability to provide near real-time status and location of cargo and passenger being deployed or redeployed through AMC's en route or mobile infrastructure during exercise or contingency. These shortcomings exist because the current processes for mobility information gathering and management involve a complicated combination of organizational, operational, and procedural processes. The processes are different for peace and war. Execution of the wartime processes, in particular, involves a complex combination of manual, semi-automated, and automated procedures that rely on proprietary and outdated computer and communication systems. Additionally, deploying or redeploying units are not always fully prepared with the documentation they need to move. This situation is exacerbated by the frequent lack of dedicated access to quality, high capacity data circuits, especially in remote areas where contingencies tend to occur.

In the short-term (FY99), AMC will provide accurate and timely cargo and passenger air movement data through the development of the Global Air Transportation Execution System (GATES). GATES will establish an automated means for the integration of service, command, agency and commercial sector transportation systems. Utilizing off the shelf technology coupled with reuse efforts, GATES will provide air segment ITV, information integrity, and interoperability among commands. The use of automatic identification technology (AIT), such as radio frequency identification, integrated circuit memory cards, two dimensional bar codes, optical laser cards, magnetic strip cards, and linear codes, will be exploited. GATES will be the primary means of capturing, processing, and executing cargo and passenger movement. The successful fielding of GATES will enable the efficient aerial movement of passengers and cargo in peacetime and wartime situations and provide the DoD with ITV.

Objective 1.1.1
Foster innovative new mobility concepts and aggressively investigate new technological opportunities. XPD, FY03

GATES development and implementation will follow an incremental approach. Increment I (FY97) will provide automated capture of data utilizing AIT technology; the ability to plan, control, or direct transportation core activities; a comprehensive aerial port cargo and passenger execution capability; historical or contingency movement statistics; non-repudiated electronic data interchange (EDI) capability with commercial shippers or DoD agencies; and the electronic interfaces with other systems used to manage transportation assets transiting aerial ports. Increment II (FY98) will provide the ability to capture and transmit classified transportation information. Increment III (FY99) will provide the ability to transmit digital data to and from the aircraft, combined with emerging user interface technologies such as electronic forms.

AMC is aggressively working with USTRANSCOM and the other Services to identify and implement solutions to ensure that shippers comply with bar code and shipping data requirements. Emerging technologies such as automated bar code scanners that can scan a moving vehicle or a whole pallet of cargo at once and tiny radio transmitters that can transmit the contents of a shipping container without human intervention are available now. AMC will embrace these technologies to take the mobility mission into the next century.

WEATHER INFORMATION REQUIREMENTS

Timely and accurate weather information is essential to the success of AMC operations and resource protection. AMC's weather information requirements include current and forecast weather conditions for airfields and all routes of flight. Information requirements vary by location. For example, the weather support unit within the TACC forecasts for all air refueling tracks outside CONUS, monitors the weather for all AMC missions and installations, and advises decision makers on the impact weather will have on operations. Weather support units must have continuous access to weather observations, satellite data, and numerical weather prediction products worldwide. At the unit level or at a deployed location, the weather technician needs similar data, but only for those areas in which the supported missions operate. These data sets can be large, often covering broad ocean areas and airfields halfway around the globe.

Observations of current conditions and terminal airdrome forecasts are essential to air operations and to aid command and control decisions. AMC weather units disseminate observations and forecasts to local customers (at fixed installations) via the Automated Weather Distribution System (AWDS). These products are made available to other weather units and to weather centers via the Air Force-operated Automated Weather Network (AWN). Weather teams deployed to locations where the AWN is not available, transmit forecasts and observations via SATCOM to the TACC weather unit where the data are retransmitted via the AWN.

Satellite data is essential to determining the current state of the environment and expected changes. The AF-managed Defense Meteorological Satellite Program (DMSP) provides access to worldwide cloud, upper air, and space environmental data. DMSP data is available to AMC weather stations via AWDS and the Air Force Dial-In System (AFDIS). Weather stations also receive US civil and foreign environmental satellite data from the National Environmental Satellite, Data and Information Service, an agency of the Department of Commerce. AMC weather teams deploy with satellite receivers to access US civil and foreign satellite data. By 1997, they will be able to receive DMSP data in a deployed environment as well, with fielding of the Small Tactical Terminal (STT), a two-person deployable meteorological satellite imagery receiver. Beyond 2000, the DMSP will be replaced by the Presidentially-mandated converged civilian and military program, National Polar Orbiting Environmental Satellite System (NPOESS).

Successful receipt and dissemination of weather graphics, alphanumeric data, and satellite imagery in deployed locations depends on adequate communications capability (whether SATCOM or land line). Two-way weather communication needs must be factored into theater requirements in this era of open systems to preclude inefficient work-arounds and ensure timely handling of perishable information.

Future requirements include weather interfaces to AMC C2 and mission planning systems, allowing those systems to tap into a weather database.

C4I SYSTEMS ARCHITECTURE

Introduction

AMC's future C4I systems are driven by a robust target architecture that reduces system proliferation, enhances operational mission effectiveness, reduces support requirements, and provides opportunity for continuous improvement via technology insertion throughout the command. Achieving this target architecture is becoming more and more challenging due to significant manpower and funding constraints--the prognosis is even deeper reductions. Consequently, the importance of exploiting new, even revolutionary technology, to provide "must have" capability that is affordable, cannot be overstated.

AMC's future C4I systems environment will be dynamic with major capability gains clearly evident over the next several years. These formative years are critical to the deployment of our objective information infrastructure (OII). The OII will provide the enterprise wide corporate nervous system that will support our commanders' need for global information access. The OII will be an all-encompassing structure that allows all mobility C2 entities worldwide, real-time data access on demand-an information pull system vice push system. All source information will be readily available, corporately in user-friendly form, easily manipulated, shared, cross-referenced, and with macro-to-micro levels of detail. Though widely distributed, all information will be current and consistent system wide. By including expert systems, and eventually artificial intelligence (as those technologies mature), capabilities available to the war fighter will include smart information correlation, advanced simulations and modeling, true multi-media exploitation, and eventually, virtual reality.

Fundamental restructuring of the overall Defense establishment will alter the way our mission is performed, and the role of C4I systems in facilitating mission accomplishment. Adaptable, flexible, and quick response to rapidly changing global conditions must be key themes in migrating to our target architecture. Thus, we need modern, integrated, interoperable, multilevel secure, world class service to AMC's forces into the next century.

This section will discuss AMC's current C4I systems architectural deficiencies and describe the target architecture and the architecture strategy to allow AMC to achieve its vision of a seamless, integrated, global air mobility C4I architecture. It is an architectural discussion which focuses on capabilities rather than individual systems, and provides a macro level view. Detailed information on individual systems, programs, funding profiles, etc., is found in the AMC C4S Master Plan.

Efficient employment of mobility forces for Global Reach requires a superior, high technology C4I systems force multiplier. To achieve this, AMC has developed the following modernization goals to guide its target architecture strategy:

- Develop and implement flexible modular system architectures
- Develop transparent information, computing, and information utility
- Use a single, user friendly, secure terminal
- Use "open" systems to maximize interoperability
- Use distributed processes to assure information availability
- Centrally manage/operate common transport utility
- Assure distributed redundant data for survivability
- Develop shared global data bases with standardized data elements
- Assure individual customer tailoring of information resources
- Apply multi-level secure (MLS) technology
- Use shared utility services for overall cost savings
- Enforce software, network, and hardware standards and engineering practices
- Utilize standard user interfaces
- Assure built-in IW protective measures

C4I Systems Deficiencies

The goal of AMC's target architecture is to develop an integrated, maintainable, interoperable, robust, seamless, and multi-level secure system in an open environment. In order to reach this goal, the following shortfalls must be overcome.

Information Engineering efforts are not complete, contributing to: the lack of shared software to provide automated capabilities based on processes vice organizational systems; the inability to access, from any terminal on the network, all data and software functionality within authorized use and need-to-know parameters; and, the lack of a common, logical data base with standard data elements causing:

- Inability to access data when and where needed
- Inability to adapt to changing mission needs
- Inaccurate data
- Inability to share data across organizations
- Increased costs for hardware and software

Implementation of open systems environments and architectures is not complete, limiting the capability to interoperate between our communications and computer systems and to share a common communications processor for all external access. Open systems environments and architectures will help achieve interoperability, portability, flexibility, scalability and cost effectiveness of systems. These attributes facilitate new technology insertion and rapid system evolution to respond to changing business practices. Open systems are flexible and modular, enabling users to define, acquire, and add to systems that are supplied by a variety of vendors in an open, competitive market. Open systems support the interoperability of hardware, software, and communications products developed by different suppliers at different times.

Finally, AMC must overcome the inability to integrate classified processing with unclassified processing. AMC is on the brink of overcoming this challenge, which will allow the integration of duplicate functions and clear the way for our target architecture. In the past, numerous capabilities were thwarted because our C4I systems could not talk to each other, due to technical problems. This is no longer the overriding difficulty. Today's problem area is classified processing. It's a major barrier, preventing us from tying a multitude of functional systems together. As a result AMC has propagated and proliferated a number of segregated systems. In order to interconnect these systems, C4I systems specialists have been forced into manual work-arounds and redundant equipment. Multi-Level Security (MLS) is an essential element in achieving AMC's target architecture and realizing the ability to integrate classified and unclassified processing on the same systems. MLS implementation will be a combination of hardware, firmware and software products that will resolve this shortfall. Tomorrow's MLS requirements are even more expansive and thus expensive. An MLS breakthrough is of paramount importance and we expect to meet this challenge head on. AMC is developing and integrating a generic set of commercially supportable products to satisfy MLS requirements and provide a portable product which is adaptable to all AMC applications requiring MLS capability. The office of the JCS has designated AMC's effort as a DoD testbed. A breakthrough in this area will allow C4I systems growth over the next decade. The absence of this capability would severely hinder our abilities to meet architectural targets, thus affecting AMC's ability to perform certain missions.

C4I Systems Target Architecture

The target C4I systems architecture is based on six characteristics: (1) shared common logical data base; (2) shared common communications processor for all external access; (3) shared software and hardware providing automated capabilities based on processes vice organizational systems; (4) access from any terminal on the network to all data and software functionality (within authorized use and need-to-know parameters); (5) multi-level secure environment; and (6) a common high speed multi-media transport utility.

Figure 4-3 depicts AMC's target C4I systems architecture. This architecture applies to all echelons of command (from the cockpit to the headquarters), and will fully recognize and accommodate theater, service, and allied systems in which AMC must interoperate.

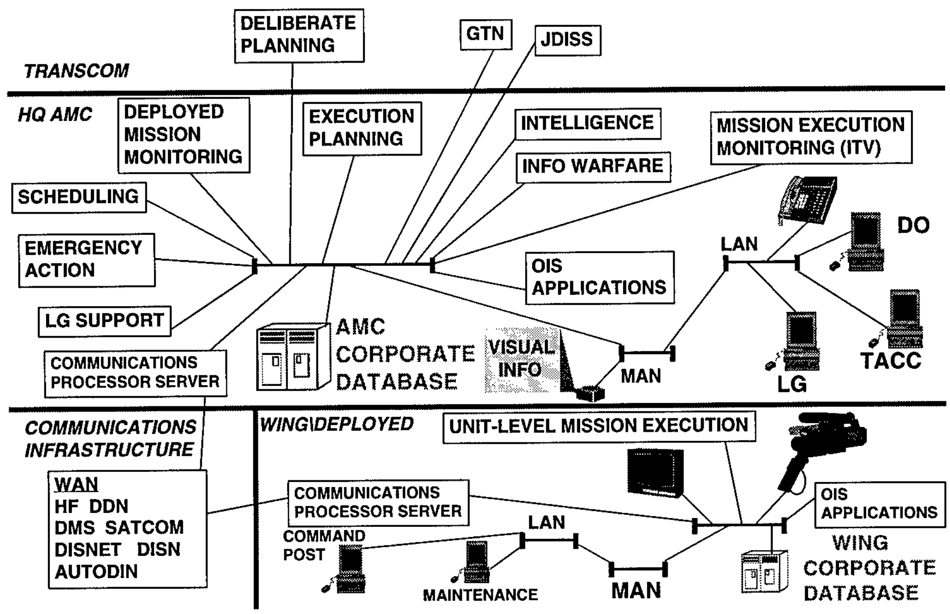


Figure 4-3. AMC's Target C4I Systems Architecture

Shared Common Logical Data Base

Data refers to the values physically recorded in the database and information refers to the meaning of those values as understood by some users. To put it more simply, data is "pieces of information" and a data base is an "electronic file cabinet" to store that information. AMC's target architecture will have a shared corporate data base and a command data dictionary. A shared corporate data base removes the need for costly "system" interfaces because data is not passed between "systems," but is accessed from the common data base by multiple software modules, ad-hoc queries, and functional generated reports. The corporate data base environment also eliminates conflicting information because there will be only one occurrence of the data (at that location) vice separate data bases at different stages of update. It will also contain standard data elements which allow different applications (and the organizations that use them) to gather and exchange information for mission execution. Finally, the data base will store digitized voice and visual information that can be retrieved by anyone requiring that information. All echelons of command will have access to the corporate data base; from a C-141 flying over the Pacific, to a bare base operation in Africa, to a staff officer in HQ AMC.

Shared Common Communications Processor

An important part of AMC's global network at each echelon of command will be a shared common communications processor. This processor will select the appropriate path for data to travel by spanning a wide variety of alternatives such as Defense Data Network (DDN), Defense Message System (DMS), DISN, military strategic and tactical relay satellite (MILSTAR), Super

High Frequency (SHF), UHF/Very High Frequency (VHF), HF, global secure cellular, dedicated lines, laser, etc. It will also eliminate costly software redundancy where each "system" would require software to interface with the various communications media. All user terminals or PCs will access the integrated network of LANs, Wide Area Networks (WANs), and Metropolitan Area Networks (MANs) via the communications processor and their LAN server. This will give every terminal access to all AMC corporate data and all automated processes. At deployed locations, the communications processor will be internal to the LAN server. The shared communications processor will have built in redundancy to eliminate any single points of failure.

Shared Software and Hardware

Shared software and hardware will remove the "system" boundaries by allowing every terminal on the network use of capabilities as long as all security challenges have been addressed. A shared software environment will essentially eliminate "systems" as we know them today. Software "modules" will automate the various functionalities (scheduling, cargo processing, execution monitoring, deliberate planning, etc.) running on a variety of open systems compliant hardware platforms. "System boundaries" are eliminated because capabilities are in terms of automated processes and screens of information, reports/queries available, etc. Demand on the system will be able to support a "surge" capability during contingencies. Shared hardware will eliminate duplicate hardware items in one location and processors at locations worldwide, doing the same function. The Air Force and DoD are already on their way to achieving this environment through regionalization of Standard Base Level Computer (SBLC) and of MAJCOM non-C2 functions. Examples of the functions supported by these regionalizations are accounting and finance, military and civilian personnel, supply, flight crew scheduling, aircraft and communications/electronics equipment maintenance, etc. A shared common communications processor will eliminate the need for multiple interfaces with the various communications media at each location. Ultimately, this shared software and hardware environment will eliminate duplication by managing all the software which automates a process (scheduling, planning, etc.) as one system, and by sharing the hardware that stores, processes, and moves information from one point to another. Overall, there will be reductions in O&S costs, and problems will be less frequent as long as there is no single point of failure and we adhere to proper backup procedures.

Voice, visual, and data communications will be integrally tied together. Conference/briefing rooms will have the capability to project electronic briefings and communicate with other agencies, to include Video Teleconferencing (VTC). In addition, PC's will have voice and video capability, expanding the realm of VTC to the customer's desk.

Visual Information (VI) centers across the AF will have interoperable electronic imaging systems rather than chemical photo processing, and will be integrated into the C4I Systems architecture at all echelons. Photo customers will receive products within minutes. Photos, as well as full motion video, will be in a data base and accessible by Air Force/base customers. Customers will be able to import this visual information into briefings, etc. Most graphic products will be produced at the office PC, not in the graphics shop. Only highly specialized graphics requests will be produced at the VI centers. Bases will have digital video editing for customer use. Office PCs will also have limited capability to edit digital video programs.

Access From any Terminal on the Network

Access from any terminal on the network will become reality with the adoption of open systems standards for networks. Networks are generally characterized by having a transport capability, an internal switching mechanism, and an ultimate consumer. As such, in AMC's target architecture, networks are all the LANs, WANs, MANs, switches, routers, Asynchronous Transfer Mode (ATM), Synchronous Optical Network (SONET), SATCOM, HF, land lines, etc.; the "utility" that connects everything and everyone together. The network will be configured to provide bandwidth on demand. In other words, the network will be capable of transferring to a user, regardless of his location (aircraft, deployed location, headquarters), something as small as a word processing file, or as large as a full motion video with audio file. Access to this network will be through the shared, open systems-compliant, common communications processor, that will be transparent to the user-thus making our target system a truly seamless system.

Multi-Level Secure Environment

The target architecture will be based on a multi-level secure environment. Both classified and unclassified data will be accessible on a single terminal, eliminating the need for separate "systems" for each classification level. Authorized access via a user profile system will be the norm where each "user" is described concerning what data he/she can see, what data he/she can update, and what classification level he/she is cleared for, etc. This system will require built-in IW protective measures to ensure security against exploitation or inadvertent release of sensitive information

Common High Speed Multi-media Transport Utility

AMC personnel rely on the common-user cable system to provide intrabase connectivity supporting secure and non-secure voice and data information transfer. With only a few exceptions, the existing base-wide cable networks on AMC bases are antiquated--incapable of supporting current requirements as well as future expansion. This places demands on the common-user cable network resulting in information "traffic jams" that increase during contingencies or in times of war. A common, high speed, multi-media transport utility will link all existing and planned voice, data, video, graphic, and imagery systems via a robust in-place "bandwidth upon demand" utility. The utility will provide high speed, broadband digital connectivity and will be designed to support not only today's, but also tomorrow's technological advancements, like ATM and SONET. The utility will encompass an optical fiber cable, its termination equipment, allied support (e.g., conduit system, power, etc.), Base Network Control Center resources, and life cycle management resources.

Air Mobility C4I Systems Architecture Strategy

Objective 1.4.3 *Establish an information superhighway at base level.* SCP, FY04

To ensure the C4I system architecture becomes reality, AMC will execute the following four-pronged strategy:

1. Continue to incorporate the additional user needed capabilities, discussed in the "functional requirements" portion of this section, in periodic releases of each of the C4I systems we have today.

- Required functionality and information needs will be documented on Baseline Change Requests (BCR) and processed through the established Configuration Control Boards (CCBs) and Functional Management Boards (FMBs).

- User requirements will be prioritized and balanced with the AMC requirement to migrate to the integrated, seamless system described previously.

2. Continue to develop IDDs which are used by the individual developers to develop releases which incorporate the AMC standard data elements and message formats to pass increasing amounts of information between systems and users, and to increase interoperability among DoD, and allied systems.

- Continue to expand the Core C2 systems test bed to include all C4I systems.

- Continue to control releases of more "air mobility" systems as multiple releases to increase the interface capability and interoperability.

- Continue to incorporate EDI message sets to increase interoperability with USTRANSCOM components and industry.

- Continue to introduce new technology into each multiple release of the growing "air mobility system."

3. Continue the DoD directed migration efforts to eliminate software duplication, improve functional processes, and to increase the use of DoD standard data elements.

- Continue the migration of the 44 separate AMC C4I systems into the 13 selected AMC migration systems.

- Continue migration to the open systems environment in compliance with the Technical Architecture for Information Management (TAFIM).

4. Continue integration of all AMC C4I systems into one seamless, integrated air mobility system.

- Continue to establish and develop the foundational elements needed by developers to "integrate" separate systems.

- Continue to investigate new technology for insertion into the Air Mobility System.

- Continue to develop standard tools and methodologies to help the integration effort and to manage the Meta-Data (data about the command, i.e. processes, business rules, data models, data elements, baselines, etc.)

- Continue to develop standard code tables, validation tables, etc. and "over-the-air" loading of these tables and software.

- Continue to migrate to Global Command and Control System (GCCS) Common Operating Environment (COE) standards.

Objective 1.4.1 *Migrate AMC C2 and transportation systems to Global Command & Control System (GCCS) Defense Transportation Systems (DTS) and Defense Information Infrastructure (DII) Common Operating Environment (COE).* SCT, FY99

True integration of the C4I Air Mobility System hinges on four architectural elements. Developers need to transition from a collection of interfaced, interoperable but separate systems to the truly integrated architecture described earlier in this section. The four elements include:

a. Architecture is the documentation of the AMC information needed to do the mission, the relationship among those elements of information, and the business rules which apply to that information. The future architecture described earlier in this section is the guiding environment for development of the integrated seamless air mobility C4I system.

- The future architecture will continue to transition to an engineering architecture with successive levels of detail allowing developers to understand system level specifications for the integrated environment in which the applications, networks, and hardware platforms will function.

- The future architecture will continue to address details about voice, video, and data applications as well as network topology.

- The future architecture will continue to address details in all areas to include Headquarters, TACC, wing, theater, en route locations, and both the cockpit and back of the aircraft.

b. Standards for hardware, software (application and operating software), networks, languages, development processes, testing, and releasing of system increments.

- AMC is committed to TAFIM which incorporates the standards for open systems, Portable Operating System Interface for Computer Environments (POSIX), Government Open Systems Interconnection Profile (GOSIP), and communications protocols.

- AMC is committed to the use of ADA software language and the certification of its software process.

- AMC has established a standard test bed and release authority for the core C2 systems and is continuing to include the rest of the C4I systems.

c. Information Engineering includes Business Process Modeling, Data Modeling, Business Process Improvement, Activity Based Costing, Process simulation, Information Flow Modeling, Data Element Standardization, and Meta-Data Management.

- AMC is continuing to model AMC business processes using the DoD directed IDEF methodology. Fifty "as-is" models and several "to-be" models from AMC headquarters, TACC, aerial ports, and wing level command posts are complete. This modeling effort continues in conjunction with AFMC, the Theater Battle Management Group, USTRANSCOM, and the Defense Information Systems Agency (DISA).

- AMC has developed several implementation plans for TACC and aerial port process improvements. We will continue to increase our use of Activity Based Costing.

- AMC is investigating the new IDEF tools as well as other tools to increase our efforts in simulation, to support Business Process Improvements and Activity Based Costing, and to use Information Flow Modeling as appropriate.

- AMC has over 26,000 data elements in the Command Data Dictionary. Most of these are legacy elements which are currently used in the separate C4I system data bases. We are on the leading edge of DoD efforts to standardize data and have the first DoD accepted submission for DoD candidates and approved elements to our credit. AMC/SC also developed the standard Air Force Data Dictionary tool and has turned it over to the Air Force for operation and maintenance. We are members of the Air Force and USTRANSCOM Data Administration Working Groups and continue to work closely with DISA and the Theater Battle Management groups.

- AMC will continue development of a FIPS-156 compliant Meta-Data Repository to link process, data, information flow models, data elements, physical system baselines, software re-use modules, and other command meta-data. The repository system will allow functional users as well as system developers access to AMC business information.

d. Configuration management is a structured discipline providing for identification, change control, physical and functional auditing, and baseline status accounting of C4I assets over the life cycle of those assets.

- AMC Instruction 33-105 defines command implementation of C4I systems configuration management. Consistent with AF and DoD practices, it requires baselining all new and existing communications and computer systems and directs CM tracking of all major facets of these systems from the point of initial requirements definition until system retirement.

- Technical decisions regarding C4I baseline changes, both those internal to a single system and changes spanning multiple systems, are discussed and documented formally within an established hierarchy of project-level and multi-system configuration control boards.

- The overall CM program enables the command to identify, and analyze system changes as they are approved to ensure we migrate systematically and methodically to the target integrated architecture.

In summary, the Air Mobility System Architecture strategy will provide the framework to successfully develop and field a seamless, integrated C4I Air Mobility System providing the right information, to the right people, at the right place and time. The C4I environment described above allows AMC to eliminate duplication of system functionality, eliminate costly information interfaces, reduce data conflict, and allow users access to more information and capabilities. It will also provide other AF, DoD and allied customers "pull" access to air mobility information, and provide the environment to execute other DoD C4I migration software in AMC's operational C4I Air Mobility System, all transparent to the user.

SectionFive
EQUIPMENT

INTRODUCTION

AMC manages a large and complex system of interrelated equipment to provide Global Reach. This section addresses the equipment AMC uses to produce the Nation's Global Reach. The chapter covers four broad areas, 1) the Commander's Assessment of equipment, 2) aircraft specific plans, 3) operations and logistic initiatives, and 4) support equipment plans.

The section leads off with the Commander's Assessment of AMC's equipment supporting operational tasks and core activities, followed by identified deficiencies which limit that ability. Listed with each deficiency is a reference to the page in the AMMP where the item is addressed. Three areas are assessed to have poor capability today -- cargo airlift, airdrop, and cargo handling. In the long-term, special operations was assessed to have poor capability.

The cargo airlift shortfall is based on AMC's inability to meet the MRS BURU requirement of 49.7 MTM/D. This is a result of AMC's aging airlift fleet, the retiring C-141 and the problematic C-5. The solution to the C-141 to a great extent is the C-17. AMC is working to correct the problems facing the C-5 through cost effective modernization, however, it may prove more cost effective to replace the C-5A model. Through modernization or replacement of the C-5A, AMC must be ready with a reliable, cost effective solution. AMC cannot meet the Army's Division Ready Brigade-Medium (DRB-M) airdrop requirement with today's fleet. The number of available C-141s is decreasing while the C-5 is not equipped or certified to fly the mission at this time. Aging Materials Handling Equipment (MHE) is unreliable and expensive to maintain. The 40K loader has only a ten hour mean time between failure rate and cannot reach the cargo loading height of commercial wide body aircraft. The cargo handling will be solved with the procurement of new materials handling equipment. The 60K loader acquisition provides the capability to support all commercial and military cargo aircraft. The modernization of the MHE fleet is AMC's second highest equipment priority after the acquisition of the C-17. In the long term, special operations was assessed to have poor capability because no aircraft has been identified to replace the C-141 in this role.

Modifications represent a significant portion of AMC's effort to modernize its aircraft. Each weapon system plan includes a timeline for when upgrade studies should begin. Modernization requirements which apply across the fleet are also discussed in this section.

Emerging technologies are key to correcting many equipment deficiencies and highlighted in this chapter. Additionally, information that was in the airlift and the air refueling mission area plans (separate sections of previous AMMPs) have been incorporated into this equipment section.

EQUIPMENT TASKS ASSESSMENT

AIR MOBILITY ASSESSMENT

OPERATIONAL TASK	PEOPLE				INFRASTRUCTURE				EQUIPMENT			
	T	S	M	L	T	S	M	L	T	S	M	L
Aeromedical Evacuation	See Applicable Section				See Applicable Section							
Airdrop												
Air Refueling												
Cargo Airlift												
Passenger Airlift												
SIOP												
Special Operations												

CORE SUPPORTING ACTIVITY ASSESSMENT

CORE SUPPORTING PROCESSES	PEOPLE				INFRASTRUCTURE				EQUIPMENT			
	T	S	M	L	T	S	M	L	T	S	M	L
IRM / C4I Systems	See Applicable Section				See Applicable Section							
Command and Control												
Intelligence												
Information Warfare												
Logistics												
Training												
Security												
Medical												
Cargo / Pax Handling												
Operations Support												
Base Operating Support												

T: TODAY (FY97)
S: SHORT TERM (FY98-03)
M: MID TERM (FY04-12)
L: LONG TERM (FY13-21)

GREEN: GOOD CAPABILITY
YELLOW: PARTIAL CAPABILITY
RED: POOR OR NO CAPABILITY

EQUIPMENT DEFICIENCIES

This section lists AMC's equipment deficiencies. Following each deficiency is the particular shortfalls that are the cause of, or contribute to the deficiency. The page reference following each shortfall is where the expanded discussion of that subject is located.

Deficiency:.

1. Strategic Airlift Fleet Capability Shortfall
   - Current Strategic airlift capability doesn't meet the DPG 2 MRC MRS BURU requirement — page 5-1
   - Limited capability to deliver outsize cargo to small austere airfields — page 5-22
2. Materials Handling Equipment (MHE)
   - MHE fleet capability/shortage/condition/reliability/maintainability — page 5-70
3. Strategic Brigade Airdrop Shortfall — page 5-66
4. Combat operations vulnerability
   - AMC aircraft are vulnerable in a hostile environment — page 5-10
5. C-5 Reliability, Maintainability, and Operating Costs — page 5-34
6. C-141 Reliability, Maintainability, and Operating Costs — page 5-18
7. Aeromedical Evacuation (AE) Lift Shortfall.
   - Inefficient process and insufficient quantities of MHE/CTS to on/offload patients from B-767s — page 5-48
8. Insufficient AE Equipment
   - Current AE patient care equipage (patient movement items) inadequate to meet new JSCP tasking to support movement of sicker patients — page 5-73
   - Lack development of joint service equipment — page 5-73
9. Global Reach Laydown (GRL) Deployable Equipment
   - Insufficient deployable equipment to support GRL — page 5-69, 5-77
10. Inadequate Simulator Capabilities
    - Simulator fidelity lacks capability to maximize training — page 5-83
    - Lacks interactive capability required for formation/air refueling /SOLLII mission rehearsal — page 5-82
    - C-141 simulators inadequate to train SOLL II aircrews in NVG operations — page 5-82
    - Many AMC simulators do not meet FAA Level "C" standards — page 5-83
11. KC-135 Cockpit Avionics Deficiencies
    - KC-135 compass system unsupportable — page 5-36
    - Existing KC-135 radar systems expensive to maintain — page 5-36
    - Single HF radio isn't ALE compatible — page 5-69
    - Interphone has poor R&M and no individual volume control — page 5-36

- C-20B/C does not meet Stage III noise restrictions — page 5-57
- KC-135E does not meet Stage III noise restrictions — page 5-41

25. Limited Funding for War Reserve Material — page 5-62
    - AMC has no funding in PEC 28031 to inspect, purchase, store, transport, maintain WRM
26. KC-135 Expanded Air Refueling Capability
    - KC-135 support of joint and combined operations limited — page 5-35
27. Austere Field Approach and Landing Capability
    - Limited approach and landing capability at forward operating locations with minimal approach availability during reduced visibility/adverse weather — page 5-76
    - Approach and landing systems have limited rapid deployment capability and do not support all civil aircraft — page 5-76
    - Lack of nav aid flight checks in hostile fire areas/bad weather conditions — page 5-76
28. Air Base Security Shortfall
    - Poor capability to assess and target air base security threats — page 5-71
29. Flightline Maintenance Communications Shortfall
    - Lack of connectivity between flightline mechanics to supply and source documents/databases — page 5-57

<u>EQUIPMENT - RELATED GOALS AND OBJECTIVES</u>

GOAL 1:
Champion, field, and operate world-class air mobility for our customers.

1.1 Maximize the future potential of air mobility for America.
- 1.1.1 Foster innovative new mobility concepts and aggressively investigate new technological opportunities ....XPD, FY03, pg 5-13

1.2 Operate an air mobility system which delivers patient, passenger, cargo, and air refueling services which exceed customer expectations.
- 1.2.2 Maximize successful mission performance in degraded operating environments.................... DOT, FY06, pg 5-10

1.3 Provide an air mobility fleet and support equipment capable of meeting customer requirements across the spectrum of operations.
- 1.3.1 Acquire/modernize the MHE fleet to meet user requirements for two nearly simultaneous MRCs ....XPQ, FY01, pg 5-70
- 1.3.3 Modify the aging air mobility fleet to maintain the capability to meet future requirements. .... XPQ, FY03, pg 5-9,
- 1.3.4 Achieve the strategic air mobility requirement established by MRS BURU and the Defense Planning Guidance. ....XPD, FY05, pg 5-22
- 1.3.5 Replace C-141 aircraft capabilities to meet the broad spectrum of customer airlift requirements. ....XPQ, FY05, pg 5-22

1.4 Provide a responsive air mobility C4 system.
- 1.4.4 Provide global voice/data connectivity to aircraft and worldwide locations.................... DOU, FY02, pg 5-68

GOAL 2:
Ensure and sustain air mobility readiness.

2.2 Maintain equipment to meet global mobility requirements.
- 2.2.1 Increase aircraft availability and reliability to meet command goals and requirements. ....LGF, FY07, pg 5-63
- 2.2.2 Modify/sustain support equipment to improve reliability and availability. ....LGF, FY07, pg 5-69

AIRCRAFT MODERNIZATION OPTIONS

Acquisition lead times vary for many reasons, including the complexity of work performed. For new acquisitions with full military development, this plan anticipates 12 years from a draft Mission Needs Statement (MNS) to initial operational capability (IOC) (See Figure 5-1). A commercial aircraft buy with major modifications is estimated to be a 6-year process, while those requiring only minor changes may only take 4 years. For a major upgrade/modernization of an existing system, similar to the KC-135R/T tanker fleet, the plan allows 5 years. Systems and upgrades have been fielded faster than this, but careful consideration must be given to adequate support planning and testing. DoD now requires a disciplined approach with more oversight at each step. Using proper planning lead times will assist in conducting timely studies, proper development and testing, and orderly fleet modernization.

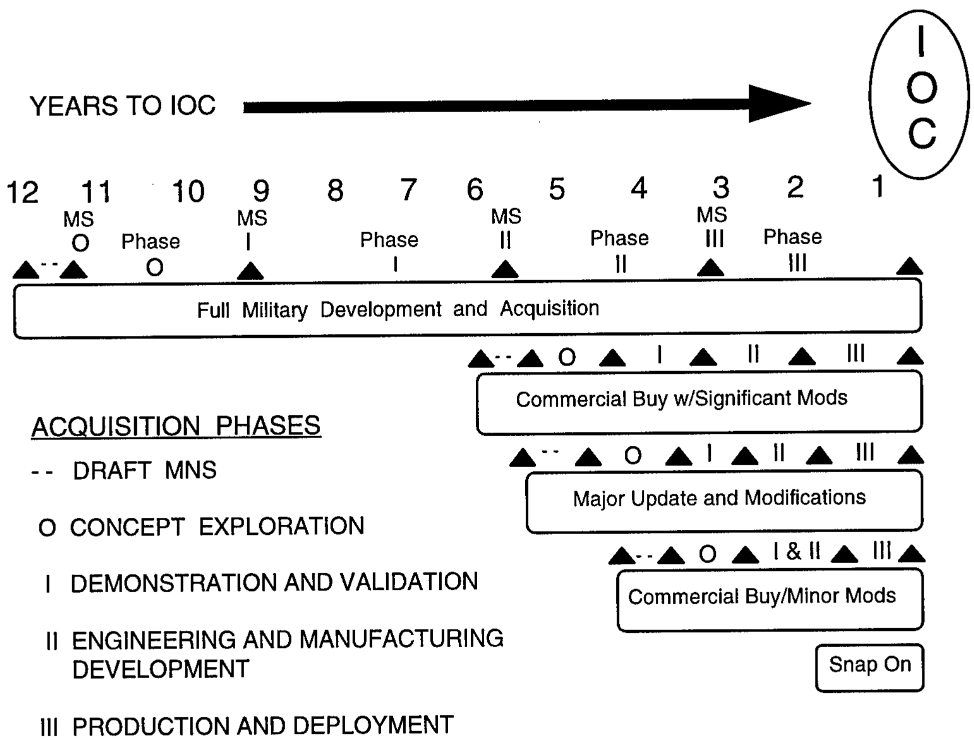


Figure 5-1 Acquisition Timelines

These modernization options are appropriate if the existing force structure is obsolete and must be replaced. However, many options are available to modernize and improve the reliability of the existing force structure while lowering the cost of operations. These also need a long-term investment view to guide which options are used and which offer the best return for resources invested.

To shorten acquisition lead times even more, AMC initiated the Snap-On project in 1993. The Snap-On project's primary concern is time, and its charter is to put technology in the field within one year of the initiation of an acquisition program. In order to meet this aggressive time line, commercial off-the-shelf, and non-developmental items are used exclusively and military unique capability is traded for time. Examples of this program in action include portable GPS, KC-135 cargo rollers, and commercial SATCOM. Through Snap-On, AMC gained the flexibility of improving capability by utilizing readily available commercial technology, without the cost and time of a lengthy military acquisition effort.

AIRCRAFT MODIFICATION CATEGORIES

Aircraft modifications represent a significant commitment of resources to our modernization effort. Many modifications arise from a need that applies to multiple AMC aircraft, therefore, this section identifies modifications for application to more than one aircraft. Timing for all modifications, if known, is included in the individual aircraft's modification summary table located in the respective section.

Aircraft modifications fall into one or more of the following three categories. The letter preceding each modification denotes one of the following applicable categories.

S **Safety Modifications:** Safety modifications are permanent mods which correct material or other deficiencies which could endanger the safety of personnel or cause loss or extensive damage to system or equipment. Safety modifications have priority for funding and implementation.

R **Reliability and Maintainability Modifications (R&M):** These modifications make permanent changes to correct safety or material deficiencies to improve R&M. In addition to permanent changes, these modifications may be retrofits of systems which were produced before the approved change was incorporated in the production line. The intent of these modifications is to reduce ownership costs through increased reliability and maintainability.

C **Capability Modifications:** Capability modifications are designed to add an additional capability that does not currently exist on the weapon system or to enhance a current capability. Requirements for new or enhanced capabilities stem from mission requirements.

MODERNIZATION NEEDS FOR MULTIPLE AMC AIRCRAFT

The majority of this section discusses needs for each aircraft type. However several modernization/upgrade efforts apply to all AMC aircraft, especially those driven by the International Civil Aviation Organization (ICAO) and the Federal Aviation Administration (FAA) regulations. Some items may even apply to aircraft that belong to other organizations but are advocated by AMC through the lead command concept. Lead command is the weapon system advocate and responds to issues addressing weapon system status and use. Lead command is the advocate for system-wide unique equipment, modifications, initial spares, and follow-on test and evaluation. AMC is the lead command for the KC-135, KC-10, C-17, C-141, C-5, C-9, C-20, C-21, and SAM aircraft. Particular equipment items for all AMC and AMC led aircraft are listed in the modifications section under Modifications Applicable to Multiple Aircraft. This section documents the need for equipment and capabilities applicable to multiple aircraft.

The majority of AMC's aircraft are over 25 years old. Although upgrades have been accomplished over the years, many of the systems are becoming extremely difficult to maintain. In some instances, it is simply a case of very low reliability and in other cases it is that replacement parts are no longer in production. In either case, modern systems represent vast increases in reliability, maintainability, and supportability. AMC's overall fleet performance will improve with the addition of more reliable systems and the maintenance support required will decrease. Specific systems include avionics, communication systems, on-board oxygen producing systems, and aircraft batteries.

Objective 1.3.3
Modify the aging air mobility fleet to maintain the capability to meet future requirements. XPQ, FY03

The FAA is significantly upgrading its air traffic management system with a global navigation satellite system, digital data communications, and advanced automation in oceanic airspace. These modernized systems support the ICAO's Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM) referred to as Global Air Traffic Management (GATM) within AMC. As the increased capabilities of the newer systems are integrated into normal operations, both organizations will increasingly restrict aircraft that do not meet the new standards. AMC must keep pace with these upgrades. Unless AMC aircraft comply by receiving onboard equipment compatible with the new systems, they will be excluded from optimum airspace which will degrade operational effectiveness, lead to higher flying costs, and influence AMC's global mobility mission.

The basis of most of the air traffic control upgrades is a digital satellite data link between the aircraft and the air traffic control center. Since the beginning of air traffic control, crews made position reports to controllers for aircraft separation. Radar gives controllers the ability to flight follow, eliminating the need for position reports. However, oceanic radar coverage is limited, so crews must still make manual position reports during oceanic flights. With Global Positioning System (GPS) and satellite data link, air traffic control will have effective coverage worldwide. There are, however, more advantages with satellite data link. Controllers and crews can pass clearances, weather forecasts, and more through the link which will reduce the need for radio communication. With the establishment of a data link, air traffic control center capabilities increase exponentially resulting in greater use of limited airspace. As data link use is implemented, aircraft without the capability will be excluded from the most desirable airspace.

By reducing vertical clearance requirements, more aircraft can be in a given airspace at the same time. Aircraft that are not certified for the reduced vertical clearance will be restricted from heavily used routes. The Reduced Vertical Separation Minima (RVSM) program will be implemented in stages beginning with preferred routes across the Pacific in the late 1990s.

Traffic Collision Avoidance Systems (TCAS) add an automated capability to detect a collision course with another aircraft. Additionally, AMC desires the addition of an Intra-Formation Positioning System (IFPS).

Objective 1.2.2
Maximize successful mission performance in degraded operating environments. DOT, FY06

The Joint Precision Approach and Landing System (JPALS) is an Air Force Flight Standardization Agency program to seek a replacement for the Instrument Landing System (ILS) and the Precision Approach Radar (PAR) which will retire in 2010. AMC has a three stage strategy in relation to the JPALs effort. Phase I : The C-17 SPO completed testing of non-precision GPS mission computer approaches and analyzing the data (independent of JPALS). This system should yield confidence for 400-500 ft minimum altitude or better. Phase II: AMC/ESC/AFFSA are managing a near-term Integrated Product Team (IPT) (a subset of JPALs). It was originally chartered to assess availability of precision approach and landing technology for the C-17 with installations in the next 24 months. The AMC/CC directed a program for a core group of 64 aircraft (40 C-17s, 12 C-5s, 12 C-141s) to determine landing system possibilities by November 1997. There are six technologies under consideration. Phase II: AMC will continue to participate in JPALS long-term search for the ILS/PAR replacement for the DoD. Efforts include pursuing a formal acquisition program , combining phases where possible. Ten to fifteen years are required to develop, procure, integrate, and install new systems on the ground and in over 10,000 aircraft.

AMC aircraft are operating in more diverse environments containing a variety of threats ranging from small arms to portable surface-to-air missiles. Since each aircraft's potential exposure to threats is unique, each weapon system must receive defensive systems tailored to its mission. Avoiding detection, threat recognition, avoidance, and degradation are crucial to mobility aircraft survival. Currently, very few strategic mobility aircraft are adequately equipped to detect and defend against these threats. Planned improvements such as the Airlift Defensive System (ADS), accurate threat assessment such as Real-Time Information in the Cockpit (RTIC), and mission planning systems equipment like the Air Force Mission Support System (AFMSS) will also increase AMC's survivability in our ever more threatening operating environments.

In an effort to more efficiently and effectively manage the programs or concepts mentioned above, AMC utilizes Integrated Product Teamss (IPTs). These teams provide a forum for integrating activities in logistics, requirements, operations, plans and serves as a focal point for weapons systems concerns and issues. Cross-functional representation from throughout HQ AMC, HQ USAF, the ARC, AETC, Theater Commands, AFMC, and industry ensures that major players are kept informed while also providing a forum which facilitates faster communication and coordination.

STANDARDIZATION OF NAVIGATION AND SAFETY EQUIPMENT CAPABILITIES

Changes in the global political environment dictate the need for DoD aircraft to fly into austere airfields under all weather conditions in support of humanitarian and other noncombat operations. A concern exists that DoD aircraft may lack the appropriate avionics equipment to safely and effectively transport passengers and troops into these areas.

On 6 Jun 96, AF/XO directed HQ AMC to host a multicommand conference to establish a standard navigation and safety equipment baseline and develop a master plan and roadmaps for equipping DoD passenger/troop carrying aircraft. The conference was composed of representatives from across the Air Force, the Federal Aviation Administration (FAA) and other Services. In developing a standard navigation and safety equipment baseline, the group considered the following: Secretary of Defense and Chief of Staff of the Air Force guidance as outlined in SECDEF memo entitled, "Global Positioning Systems (GPS) and Flight Data Recorders on Military Passenger Aircraft", 26 Apr 96; current Federal Aviation Regulations (FARs) for civil passenger carrying aircraft; mission requirements by weapon system; and finally, an eye towards future growth.

The group recognized the changes taking place in global air traffic management (GATM) environment. Therefore, wherever possible, the group recommended installing equipment which meets or has the upgradability to meet emerging GATM requirements as we now know them.

The group's baseline recommendations include:

- **Safety:** Ground Proximity Warning System (GPWS), Traffic Alert and Collision Avoidance System (TCAS II with Mode-S Level 3), Emergency Locator Transmitter (ELT), Flight Data Recorder (FDR), Cockpit Voice Recorder (CVR), Windshear Detection (reactive or predictive), and Weather Radar.

- **Navigation:** GPS (en route / non-precision approach capability), Area Navigation (RNAV) capability, VHF Omnidirectional Range/Distance Measuring Equipment (VOR/DME), Instrument Landing System (ILS), Nondirectional Beacon (NDB), and Tactical Air Navigation System (TACAN).

This group's efforts will provide a foundation upon which the Services and their respective commands can build, refining the group's Navigation and Safety Equipment Master Plan into a fully executable program. It is anticipated that Headquarters Air Force, after careful review of the group's proposals, will provide succinct guidance outlining the baseline navigation and safety equipment and direct each subordinate command to refine their respective portion of the master plan into a fully executable system acquisition and implementation plan.

MODIFICATIONS APPLICABLE TO MULTIPLE AIRCRAFT

As we modernize cockpits and add new systems, it is critical that weapons systems program managers emphasize management of data available to aircrews. This is especially significant in light of current actions to minimize the number of aircrew members in each weapons system and the increasing amount of information they will need to process. Cockpit systems must provide integration of multiple data-providing systems, easy methods for loading and changing data, and simple process for aircrew members to select and filter data for their use.

- Reduced Vertical Separation Minima (RVSM): Needed to operate aircraft under the RVSM which will be implemented worldwide in 1998. Capability requires that aircraft's mean altimeter system error not exceed +/-80 ft and total error must be less than 245 ft.

- UHF SATCOM Antennas: Permanently mounted UHF SATCOM Antennas which will operate with a transportable SATCOM terminal.

- Global Positioning System (GPS): Worldwide three-dimensional positioning/navigation for military aircraft and civil aircraft in the CRAF.

- Airborne Single Channel Ground and Air Radios (SINCGARS): ARC-222 replaces one ARC-186 VHF radio on C-5B, and C-17 aircraft. Provides interoperability with US Army.

- HF Automatic Comm Processor (ACP): Frequency scanning capability for HF radios, greatly improving long distance communication connectivity. Provides limited anti-jam capability.

- Data Link Capability: Needed to operate in the new air traffic control Automatic Dependent Surveillance system which requires automatic aircraft position reporting via data link.

- ANDVT (Advanced Narrowband Digital Voice Terminal), TACTERMS, MINITERMS Crypto Equip: Installs a series of units to provide COMSEC, voice processing, and modem functions for voice, digital data, and signal information. It is the standard for all airborne and ground HF and UHF SATCOM communications requiring security.

- Aircrew Eye/Respiratory Protection (AERP): Installs smoke mask and communications connectors for issued aircrew protective equipment.

- Misc Low Cost Modifications: Improve reliability, maintenance, mission performance, and reduces logistics costs. Also clean up data for various mods.

- Airworthiness Directives and Service Bulletins: Procure kits, parts, and materials necessary to implement contractor or FAA certified service bulletins.

- Exclusive Call: Simple ground-to-air, coded signaling used internationally by commercial aviation and civil air traffic control stations to selectively alert a particular aircrew that a call is being directed to their aircraft.

- Advanced Infrared Countermeasures: Enhances current ADS system by providing a state-of-the-art infrared missile warning receiver and counter-measures.

- Narrowband Secure / UHF SATCOM: Allows secure transmission through satellite channels.

- Ground Collision Avoidance System (GCAS): Installs a system that alerts the aircrew to flight profiles that project an impact with the ground. This is a congressionally mandated modification.

- Intraformation Positioning/Collision Avoidance System (IFPS/TCAS): Provides a passive, low probability of detection/intercept, 360 degree intraformation positioning system with night and adverse weather capability.

AIR MOBILITY FORCES

FUTURE OF AIR MOBILITY FORCES

Improving the health of the strategic airlift force is one of AMC's top priorities. AMC will modernize and improve the fleet two ways: first, improving the maintainability and reliability of the existing force; and secondly, where repairs, modifications, and improvements are not economically feasible, replacing old, maintenance intensive fleets with more modern and efficient aircraft. HQ AMC created Integrated Product Teams (IPT) to focus on maximizing the effectiveness of the fleet. Toward this goal, the IPT established objectives improve reliability and maintainability, to maintain structural and system integrity, and increase operational capability while reducing costs of ownership.

Emerging technologies offer the opportunity to reduce cost while maintaining or gaining capability. These technologies arise from government laboratories as well as from civilian industry. Some are directly applicable to mobility aircraft while others are not, but may be advantageous in a derivative form. AMC functional areas and the weapon system IPTs, through the Mobility Technical Planning Integrated Planning Team (TPIPT)headed at Wright-Patterson AFB, monitor these technologies for possible application to aircraft.

The improvements have already begun with the repairs and modifications of the C-5 and select C-141s where it is cost effective or required. The projected strategic airlift forces mix is displayed in Figure 5-2 on page 5-15 reflects the scheduled C-141 retirement and a notional replacement for the C-5A.

> Objective 1.1.1
> *Foster innovative new mobility concepts and aggressively investigate new technological opportunities.* XPD, FY03

Since the middle 1960s, the C-141 has served as the workhorse of the strategic fleet. The All Weather Landing System (AWLS) and autopilot system are being replaced to increase supportability until retirement and update the cockpit with current technology. Additionally, transferring aircraft to the UE ARC will decrease the flying hours and reduce aircraft stress. These actions will help the C-141 remain viable through the end of its service life - FY06. The C-141 retirement and the decreased C-17 delivery rate will require reevaluation of options to meet the JCS validated strategic airdrop requirement. Options to meet this requirement are being evaluated and include use of C-5s or augmentation by C-130s. In any event, the UE ARC may become an integral part of this critical mission. We are attacking the impact of the loss of strategic airlift capability from three directions: delivery of the C-17, increasing C-5 reliability, and evaluation of other airlift aircraft.

The first mobility force modernization step is the delivery of the C-17. The Acquisition Decision Memorandum (ADM), dated 25 Mar 94, directed AMC for planning purposes to assume the procurement of 120 C-17s until the Milestone IIIB decision. This weapon system is absolutely essential for AMC to meet its future mobility requirements. It will replace the C-141 in the strategic airdrop mission. The C-17 is capable of operating in an austere environment under a variety of threat conditions, with roll on and roll off capability, and deliver troops, supplies, and equipment via airdrop or airland operations. This core military airlifter will be a deterrent to future aggression throughout the world providing the NCA the means to reach out and touch our opponents quickly and with decisive force.

As part of the ongoing evaluation of future mobility requirements, AMC was tasked to head a Strategic Airlift Force Mix Analysis (SAFMA). This study evaluated the cost and operational effectiveness of various mixes of aircraft and provided decision makers on the Defense Acquisition Board (DAB) with the insight and information necessary to make the Milestone IIIB decision. This decision determined our future mobility needs can best be met with 120 C-17s.

The C-5 Galaxy provides a significant portion of AMC's cargo capability, but of AMC's major weapons systems, the C-5A has the lowest mission capable and departure reliability rates. Because of these problems and the C-5A's increasing operating costs, initial studies are being conducted to help determine the economic service life and to identify the best course of action to includes aircraft replacement. With these studies complete, AMC will formulate and put into place a definite course of action to deal with the C-5A. In the short to mid term, AMC will closely manage the C-5 capital investment plan to improve reliability, lower cost of ownership, and to ensure the best use of resources.

The final component of our mobility plan is the continued participation of civil aircraft in the CRAF. The CRAF concept has been a strong and viable component of our nation's emergency airlift capability since 1952. We will strive to fill established requirements and keep CRAF capability as high as possible by developing innovative incentives for US carriers to participate in the program. By tying eligible DoD and government peacetime business to the CRAF program, we can continue to make the program attractive to commercial carriers. Incorporation of the GSA City Pair and Small Package programs under CRAF are recent examples of increasing the business base. It is becoming difficult to maintain this business base due to defense down-sizing and a reduced presence overseas. Also, AMC must ensure we maintain the correct mix of organic lift and commercial lift. Contracting too many missions to the commercial sector would reduce training opportunities for organic (military) crews which would degrade readiness; however, by not providing enough missions to commercial carriers, we erode the business base and reduce exposure of CRAF carriers to the military support structure. The command is also exploring the benefits of using commercial en route support facilities for servicing organic aircraft, as well as, allowing select CRAF carriers access to DoD airfields to support their commercial operations. We will continue to minimize the adverse effects of potential future CRAF activation, and ensure sufficient peacetime incentives are available to encourage civil carriers to volunteer their assets.

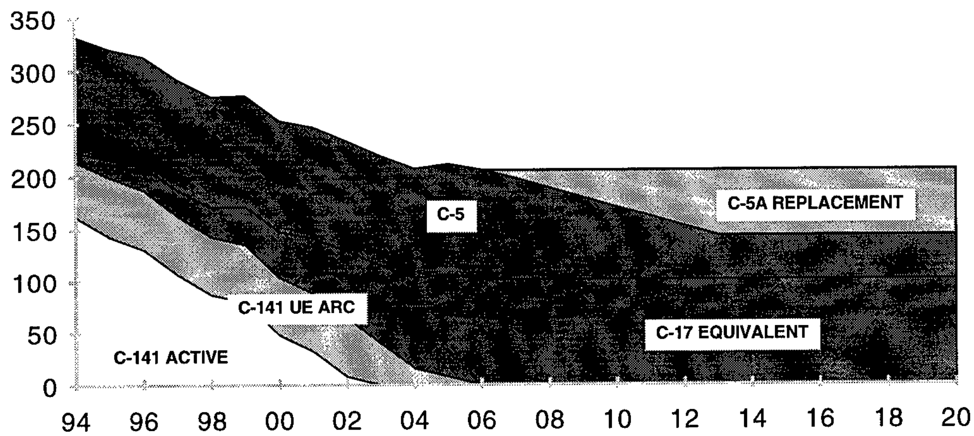


Figure 5-2. Strategic Airlift Forces (Notional past FYDP)

The KC-135 and KC-10 will continue to meet AMC's air refueling requirements and bolster the air mobility system into the next century. Although cargo transportation is not their primary mission, both aircraft are playing an increasing role in cargo operations. Tankers are flying more worldwide, low-volume channel and scheduled cargo missions allowing strategic airlifters to be dedicated to the tasks only they can accomplish. A cargo floor roller system eases the burden of hand loading the aircraft and reduces the time spent accomplishing airlift requirements during unit movements. Procurement of the 60K loader will greatly enhance the en route supportability and cargo loading for the KC-10.

In an effort to improve the capabilities of AMC's core tanker and to provide support to carrier based aircraft, wing mounted drogue refueling pods were installed to provide the margin of safety necessary for over water operations. Additional improvements to the radar system, compass system, aircraft brakes, and air refueling boom will increase aircraft availability by 10 percent.

As demonstrated in DESERT SHIELD/STORM, tankers are a major participant in today's regional contingencies, and future scenarios will continue to call upon tankers to provide much the same service. Given the extensive theater participation of these assets, defensive systems for tankers should become a priority. Consistent with proximity to the battle zone and the extent of operations there, tankers need a basic ability to locate and identify threats. AMC is currently considering several different defensive systems in order to determine the most cost effective means of ensuring the survivability of this limited asset while reducing reliance on external warning systems.

Future air refueling needs will not decrease as AMC reacts to the changing political environment and shifting global alliances. Our air refueling core will make us less dependent on overflight/landing rights when supporting politically or otherwise sensitive areas. The contribution of the ARC cannot be overlooked, as they play a major role in providing air refueling support for AMC.

Finally, the emergence of corrosion as a major factor in the continued service life of the KC-135 forces AMC to place emphasis on the development of corrosion technologies. Until the effects of corrosion can be determined, an accurate economic service will not be known. AMC will plan a replacement schedule as necessary when economic service life is accurately determined by FY00 studies, tentatively scheduled for FY13. The possibility exists that the studies will show an economic service life beyond that of other Air Mobility aircraft.

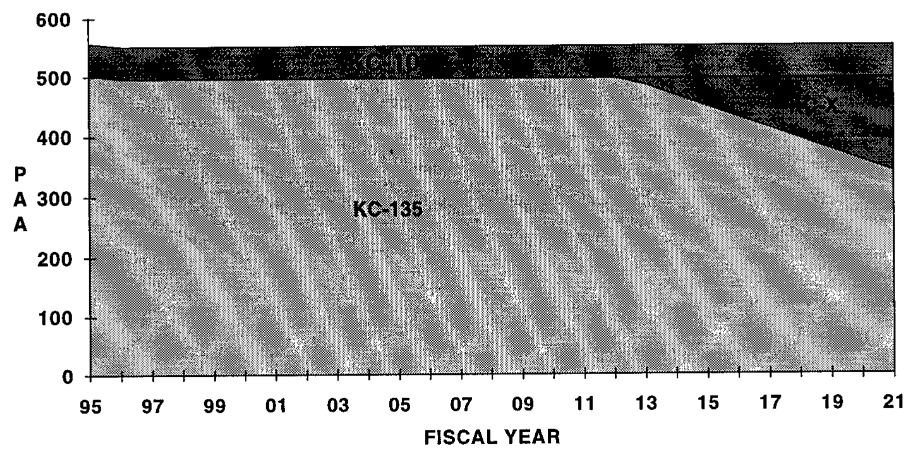


Figure 5-3. Notional Tanker Force Structure

Ongoing changes in the international political arena and in global threat scenarios have all but eliminated the likelihood of massive US casualties generated by a European contingency. The more likely scenarios will continue to be regional contingencies, such as RESTORE HOPE and JOINT ENDEAVOR. During this type of contingency, intratheater AE will be supported by C-130s and theater-assigned C-9s. C-141s and C-17s will support intertheater AE, along with the CRAF, if casualty rates require CRAF activation. As C-17s are added to the AMC inventory, initial activities will focus on orientation and training of AE personnel on the C-17's aeromedical evacuation role and integration of the C-17 into AE planning and mission execution activities. However, future initiatives must focus on increasing the litter carrying capacity since the C-17 has an integral litter capability which is only 25 percent of the C-141 and a maximum litter capacity which is less than half of the C-141.

The SAM fleet, with the exception of the VC-25 and C-20, is tasked to its limit and is costly to operate. The 89 AW achieves almost perfect mission reliability worldwide through the increasing expenditure of time, effort, and money on maintenance and spare parts fabrication. While they can deliver their distinguished passengers anywhere in the world, the cost of guaranteeing their high reliability rate continues to increase. With modernization, almost every aspect of SAM can be improved. A study of the SAM is determining the lift requirements and will provide a baseline for future fleet modernization decisions. A modernized fleet will incorporate improvements in range, payload, maintenance reliability/supportability and the ability to operate independent of ground support equipment. The current fleet is limited from transiting certain airfields due to FAA/ICAO noise standards and is required to stop for fuel on a standard trans Atlantic mission. Additionally, communications capabilities differ widely among aircraft and between aircraft types, reducing the spectrum of communications available to the DV party while en route. A modernized SAM fleet will enable operations into more airfields with fewer stops at less expense than can be currently realized. The UH-1N is also range limited and cannot complete all of its assigned missions under instrument meteorological conditions. As AMC looks to the future, many modernization alternatives will be considered, including the upgrade of existing systems or the purchase/lease of new aircraft.

A replacement program for the C-137 is complete. Funding is currently programmed to begin acquisition of a replacement in FY98. As stated in the AE section of this plan, the C-9A fleet will require modernization in the near future, and the Command should study the feasibility of including the SAM C-9Cs if the specialized airlift fleets are not consolidated. The C-20 fleet should be viable until 2015 or later with communications and avionics upgrades. A Statement of Need has also been validated to replace the UH-1N helicopters. Upgrade of the UH-1N may be accomplished through several methods. Army drawdown of its H-60 fleet could free up airframes for transfer to the 1st Helicopter Squadron (1 HS). In addition, the ongoing Air Rescue Service modernization may provide a vehicle to acquire the H-60 helicopter at reduced costs versus a totally new procurement. Finally, while the V-22 is currently under development, it could provide a more effective platform to fulfill the mission tasks of the 1 HS.

AMC WEAPONS SYSTEMS

C-141 WEAPON SYSTEM

The C-141 is currently our core military strategic airlifter, delivering cargo and troops between theaters of operation. It also provides limited theater airlift, special operations augmentation, primary nuclear airlift, ballistic missile movement, brigade airdrop capability, and aeromedical evacuation. It was originally built in the 1960s and modified in the early 1980s to add an air refueling receptacle and stretch the fuselage 23 feet, giving it a true Global Reach capability. It can carry up to 150 combat troops with gear, 103 litter patients, or 13 standard 463-L pallets.

Reduced ISO Inspection by Field

There is an on-going initiative to reduce the number of isochronal inspections (ISO) performed by the units. As of June 1993, the inspection interval of the C-141 was extended from

300 to 365 days. This was done to align the ISO inspection with the current five-year programmed depot maintenance (PDM) cycle. The movement of the ISO inspection was planned to help facilitate the establishment of C-141 Blue Suit Maintenance at the depot. This program eliminates the duplication of inspection processes that existed between the PDM and ISO inspection packages. Units no longer have to perform an acceptance ISO inspection on an aircraft returning from PDM. This increases aircraft availability by one percent and returns aircraft to service immediately upon arrival at home station.

Reliability

Objective 2.2.1
Increase aircraft availability and reliability to meet command goals and requirements. LGF, FY07

Air abort and break rates continue to improve as the C-141 is modernized with reliable industry standard systems. Continued C-141 modernization will lead to decreasing total not mission capable for maintenance (TNMCM) and total not mission capable for supply (TNMCS) rates to 7 and 5 percent, respectively.

Retaining Retiring C-141s as BAI

This initiative retains up to six retiring aircraft by shifting them into BAI status. This helps mitigate the impact of additional aircraft in depot status undergoing modifications, upgrades, or repair actions such as center wing box replacement or the chordwise-spanwise inspection. This action will bring our units closer to having their PAI available for day-to-day use. Criteria for retaining aircraft slated for retirement as BAI is that no PDM is required during the period and the aircraft has not reached 45,000 damage hours. Upon reaching either of these parameters, the aircraft will be retired and substituted with another candidate.

Modifications

C-141 modifications aim to preserve the remaining force by reliability and maintainability improvements and capability improvements necessary for effective use through 2006. Sixty-three aircraft in the current C-141 fleet will undergo major modification. Each will receive the All Weather Flight Control System (AWFCS) consisting of a digital autopilot, advanced avionics display, and Ground Collision Avoidance System (GCAS). Other major improvements include an Airlift Defensive System, Fuel Quantity Indicating System and GPS modifications. Thirteen of the 63 aircraft will also receive additional SOLL II upgrades under the Special Operations Forces Improvement program. As a general rule, these 63 aircraft are the "youngest" (fewest equivalent damage hours) in the fleet and will carry the weapon system through programmed retirement in 2006.

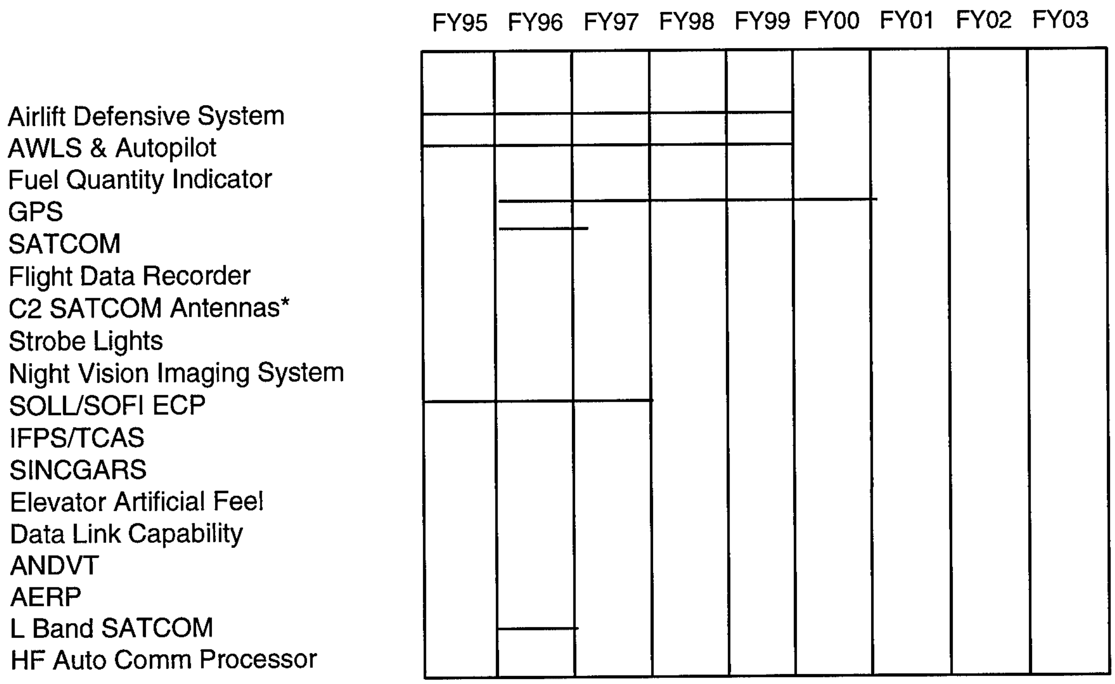


Figure 5-4. C-141 Modifications

(Timelines not shown for unfunded programs)

Modification Summaries

The following paragraphs give a brief synopsis of the major modifications currently programmed for the aircraft.

Airlift Defensive System (ADS): C-141 aircraft configuration limits operations in even low threat environments. The ADS will modify the aircraft with a missile warning receiver and a IR countermeasure dispenser, enhancing survivability against shoulder-fired, man-portable, surface-to-air missiles.

All Weather Flight Control System (AWFCS): The current C-141 Autopilot and All Weather Landing System is becoming unsupportable and will be replaced with modernized equipment to include: autoland capability, Ground Collision Avoidance System (GCAS), RVSM and enhanced aircraft flight display instrumentation. R&M will increase ten-fold. Mean time between failure (MTBF) will increase from 93.1 hrs to at least 750 hrs.

Fuel Quantity Indicating System (FQIS): The present fuel quantity indicating system has low reliability and accuracy causing the C-141 aircraft to use excessive fuel. The results of a Productivity, Reliability, Availability & Maintainability (PRAM) project indicates an $8M annual savings in fuels. This mod will design a digital fuel gauge indicator and totalizer. Improves MTBF from 318 hours to 7000 hours.

NAVSTAR Global Positioning System (GPS): Improves operational flexibility by making the C-141 independent of ground-based navigation aids. Especially critical in austere environments, and on low-level navigation, airdrop and special operations missions.

HF Automatic Communications Processor (ACP). Provides frequency scanning capability for HF radios, greatly improving global command and control. Provides limited anti-jam capability.

AN/ARC-190 High Frequency (HF) Radios: Installs the AN/ARC-190(V) HF single side band radio. Ensures worldwide interoperability with AMC C2 System.

SATCOM (INMARSAT AERO-C): Commercially available, portable AERO-C SATCOM system will provide critical command and control communications.

Weep Hole Rework: Fatigue testing has identified fatigue cracking in the inner wing lower surface weep holes and panel risers. This modification includes quality hole ream-up after 100 percent non-destructive inspection, followed by installation of a protective sleeve, necessary to meet programmed service life.

Special Forces Improvement Modification: Funds improvements to 13 special operations low level (SOLL) aircraft. Improvements include night vision goggle (NVG) compatible internal cockpit and fuselage lighting, NVG heads-up display device, radar warning receiver, and FLIR.

Elevator Artificial Feel: Replaces elevator artificial feel spring cartridge with mechanical components. Current system provides hang-ups due to corrosion and jamming within the spring cartridge.

Strobe Light Installation: This mod provides white on red strobe lights in place of the current anti-collision lights to improve visibility and reduce chance of inflight collision.

Standard Flight Data Recorder (FDR): Present recorder doesn't record parameters necessary to define loading and stress factors resulting from inflight refueling of C-141s. Depot Level Reparable (DLR) savings will pay for installation in two years.

Data Link: Needed to operate in the new air traffic control Automatic Dependent Surveillance system which requires automatic position reporting via data link. Required for future global operations. Unfunded program. AMC funding approved to do a study in FY98.

C2 SATCOM Antennas: Permanently installs UHF SATCOM Antennas which will operate with a transportable SATCOM terminal. Enhances global command and control operations in austere environments. Installation completed on 179 C-141s. Waiver request to 5 year mod rule to do an additional 27 was approved on 30 Aug 95.

Airborne Single Channel Ground and Air Radios (SINCGARS): ARC-222 replaces one ARC-186 VHF radio on C-5B, C-141B, and C-17 aircraft. Provides interoperability with US Army. This is an unfunded program.

Intraformation Position/Traffic Collision Alert and Avoidance System (IFP/TCAS): Provides a passive, low probability of detection/intercept, 360 degree intraformation positioning system with night and adverse weather capability.

Integrated Product Team

The C-141 IPT focuses on maximizing the effectiveness and the efficiency of the fleet as it approaches retirement. To work towards this goal, the IPT established primary objectives which are to maintain structural and system integrity, restore aircraft availability and readiness, and maintain operational capability while reducing costs of ownership.

Sustaining Engineering

To sustain the baseline capabilities of the C-141 and associated non-aircraft systems, the command is contracting engineering services. Contractors will analyze reliability, maintainability, supportability, and performance deficiencies. The engineering efforts requiring funding are identified in the sustaining engineering requirement plan (SERP) and are listed below. The studies will verify the need for change, develop life-cycle costs, and perform trade-off analysis. The studies may lead to further research, development, testing, and evaluation (RDT&E) initiatives and future modifications to the aircraft. This effort covers the future-years defense program (FYDP) period.

<u>TASKS</u>
Aircraft Structural Integrity Program
Engineering Services Support
Service Revealed Deficiencies
Accident Investigation
Automatic Test Equipment

Service Life

Recently, the C-141 went through a series of major repairs. Wing Station 405 and windshield post crack repairs are complete. The center wing box repair is to be completed in 1997. However, problems such as the weep holes on the lower surface of the wing show the age and deterioration of this well used aircraft. As the aircraft continues to age, it is quite possible new structural problems may limit the readiness of the force. To slow aircraft aging of the active duty fleet, 56 PAI aircraft have been transferred to the UE ARC as of FY95. Additionally, the process of retiring high flight hour equivalent aircraft will culminate with the retirement of the entire AMC active duty fleet by FY03.

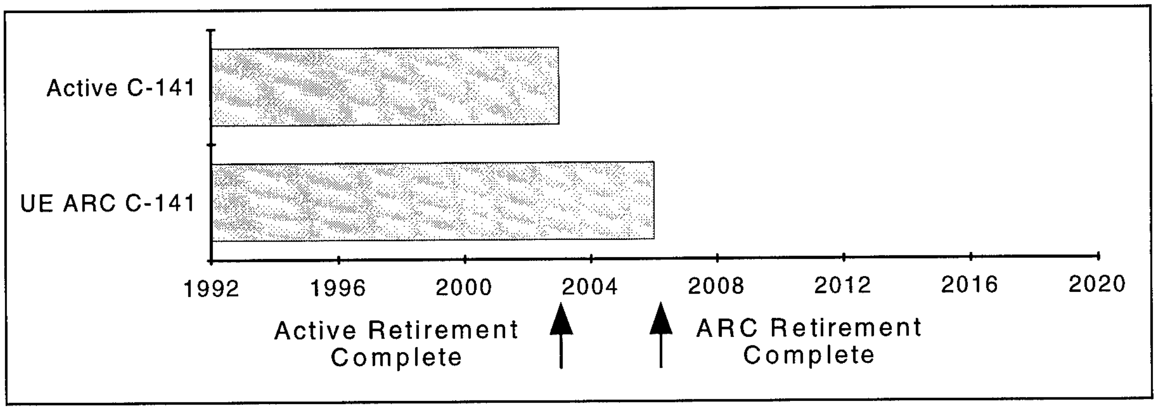


Figure 5-5. C-141 Service Life

C-17 WEAPON SYSTEM

Objective 1.3.4 *Achieve the strategic air mobility requirement established by MRS BURU and the Defense Planning Guidance* XPD,FY05
Objective 1.3.5 *Replace C-141 aircraft capabilities to meet the broad spectrum of customer airlift requirements.* XPQ, FY05

The C-17 is our follow-on core military airlifter and will replace the C-141. Initial squadron operations began Jun 93 with the delivery of the first aircraft to Charleston AFB, and AMC declared initial operational capability on 17 Jan 95. The C-17 brings to life the concept of direct delivery--the air movement of cargo and/or personnel from an airlift point of embarkation to a location as close as practical to the customer's final destination. It is the only aircraft capable of routine delivery of outsize cargo to small, austere airfields. It is also capable of aerial delivery, night vision goggle operations, nuclear weapons transportation, and aeromedical evacuation. The C-17 provides the flexibility to support both intertheater and intratheater missions, and will allow AMC to significantly improve throughput during contingencies. The aircraft is designed to carry up to 102 troops, 48 litter patients or 18 standard 463L pallets.

Maintenance

The C-17 maintenance concept uses an analytical condition inspection (ACI) program instead of programmed depot maintenance to ensure the long-range health of the fleet. The ACI program is designed to hold maintenance cost to a minimum and reduce impact on aircraft availability.

Reliability

The C-17 reliability has recently been proven during its Reliability, Maintainability, and Availability evaluation, achieving a 99.2 percent departure reliability record. As the C-17 fleet matures, aircraft improvements by experience or technological opportunities will continue to increase reliability. Modernizing by timely modifications/upgrades can simplify or eliminate maintenance and inspection requirements. The goal is to keep the air abort rate to 1 percent and maintain a mission effectiveness rate of nearly 100 percent.

Modifications

Modification programs will keep the aircraft in line with current and future requirements for threat avoidance, navigation, communications, and enhanced capabilities. These modifications should include global air traffic management (GATM) and automatic dependent surveillance (ADS) to meet anticipated navigation requirements. Commercially available avionics and mission computer upgrades are being investigated to reduce life cycle costs and improve performance. Also, upgraded communication systems to enhance worldwide voice and data (including secure) transmission will support command and control.

The C-17 will incorporate enhancements in support of the two-level maintenance concept. Modifications to increase R&M while reducing life cycle costs are being studied. Overall modification strategy must focus on maintaining the C-17s technological capabilities.

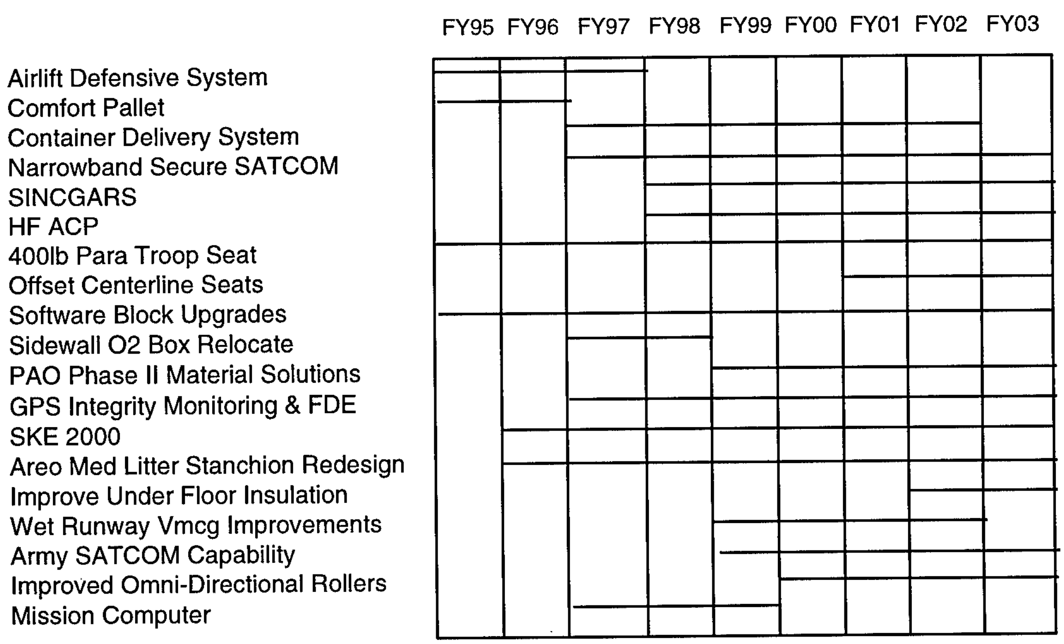
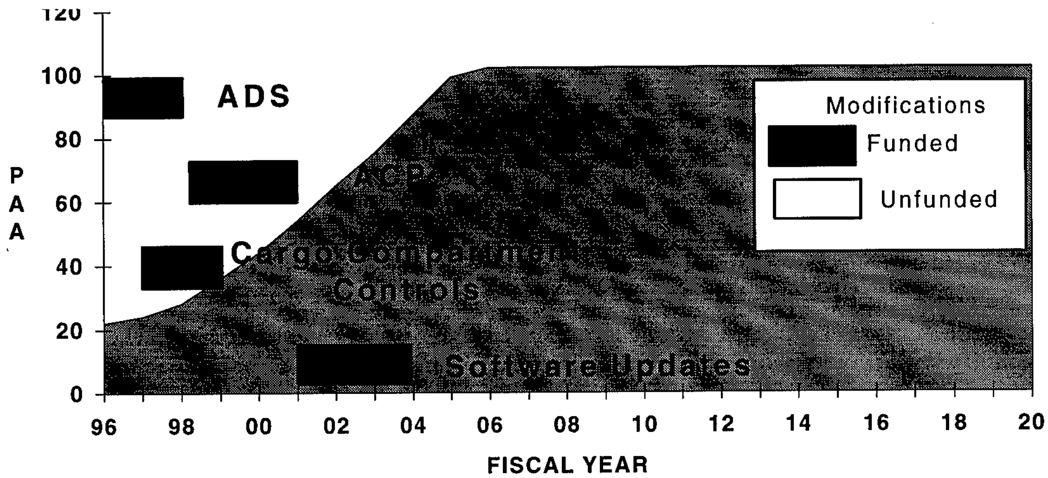


Figure 5-6, C-17 Mod Table

(Timelines not shown for unfunded programs)



NAME	DESCRIPTION	STATUS
ADS	Airlift Defensive Systems	F
ACP	Automatic Communications Processor For HF Radio	F
Cargo Comp Controls	Allows temperature control of aft cargo compartment	F
Software Updates	Software updates to maintain systems	F

Figure 5-7. C-17 Modifications

Modification Summaries

The following paragraphs give a brief synopsis of the major modifications currently programmed for the aircraft.

ADS: Installs missile warning receiver and countermeasures dispensers. Entire fleet completed by CY06.

HF Automatic Communications Processor (ACP): Provides frequency scanning capability for HF radios, greatly improving global command and control. Provides limited anti-jam capability.

Cargo Compartment Controls: The cargo compartment from the wing area aft becomes excessively cold at cruising altitudes at all settings of the pilot's overhead environmental panel. Cargo compartment is unsuitable for long range passenger transport due to unacceptable temperature control. Severely limits ability to perform aeromedical evacuation missions. Decreases range and payload capability. AMC initiated AF Form 1067 requesting SPO to work with contractor to ensure environmental system meets specifications.

Software Updates: Computers manage all avionics, communications, navigation, flight controls, warning and caution systems, and aircraft/propulsion data in the C-17. Software upgrades are required to maintain these systems and incorporate new systems or changes to existing systems that effect computer functions.

Oxygen System Deficiencies: The forward loadmaster's station doesn't have an emergency MA-1 portable oxygen bottle. Access to a portable bottle is limited and is not in arm's length. Retainer straps securing the MA-1 portable oxygen bottles throughout the cargo compartment prohibit quick-don capability. Stowage retainer straps are needed for the oxygen sweep-on masks in the crew bunk area and the aft loadmaster's station.

Self-Sufficiency: The auxiliary hydraulic system capacity is inadequate for routine ground operations and maintenance. Flight control checkouts without hydraulic power are limited at reduced rates of travel. Routine maintenance during home station checks require flight control checks. Engine running flight control checks impact ground times and aircraft fuel use. Need current APU upgraded for additional capacity and to convert two of the auxiliary hydraulic pumps from electrical to mechanical drive from the APU. The current APU has no electrical growth capacity.

Advanced Infrared Countermeasures: Proliferation of man-portable missiles subjects airlifters to this threat during most operations. Enhances current ADS system by providing a state-of-the-art, infrared missile warning receiver and countermeasures.

Automated G-files (AGILES): Electronic technical orders will replace several hundred pounds of paper manuals with electronically stored information. Allows aircraft to carry additional cargo instead of paper technical manuals.

SKE 2000: Present SKE system has low reliability and requires two separate units, a color decoder and a receiver/transmitter, as well as heavy antenna cable for operations. Production cut-in and retrofit of an advanced SKE system would increase reliability five fold.

Real Time Information in the Cockpit (RTIC): RTIC is a situational awareness capability to receive, process, and display real-time and near real-time information overlaid on photos and charts. The technology includes flight following, two and three-dimensional threat displays, terrain perspective views, and mission rehearsal. The system loads and stores multi-spectral and high-resolution imagery received to update the data base. Near real-time ELINT is received and its symbology overlaid onto stored images and charts, indicating parameters and lethality ranges in two and three dimensional representations.

Internal Gust Locks: Permanently installed accumulators will provide automatic gust damping of the flight controls without requiring routine maintenance. Wind gusts in excess of 14 knots can cause structural damage to the primary flight control surfaces. An interim system has been fielded to provide a limited capability for gust damping on initial aircraft. The interim system must be connected prior to operating aircraft engine driven hydraulic pumps or serious aircraft damage can occur. It must be removed and replaced prior to every flight (manpower intensive) and there is no on-aircraft storage provisions. If aircraft are not retrofitted with the permanent solution, AMC will have to support a split aircraft configuration.

400 Pound Paratrooper Seat: Procures and installs paratrooper seats on each aircraft. Supports US Army requirements.

Container Delivery System: Increase container delivery capacity from 30 to 40 containers per aircraft by improving container restraint. All C-17s. (FY97-03)

Aeromedical Litter Stanchion Redesign: Present aeromedical evacuation litter design meets specification. However, the C-17 aeromedical evacuation configuration was designed using 4 litters per stanchion set, vertically separated by 16 inches. This presents a minimum spacing issue. AMC/SG requires (non-waiverable) 21 inches minimum spacing.

Data Link: Allows operation in the new air traffic control Automatic Dependent Surveillance System, requiring automatic aircraft position reports via data link. Unfunded program. AMC funding approved to do a study in FY98.

Improved Under Floor Insulation: Install durable insulation that doesn't require removal to perform aircraft bilge (aircraft belly) cleaning. The existing insulation isn't durable and when soiled it cannot be cleaned and is normally thrown away. It lays in the bottom of the bilge and must be removed for periodic bilge cleaning. The new insulation should be designed to hang from the bottom of the floor and not require removal to accomplish bilge cleaning.

Minimize Vmcg on Wet Runways: Studies determined that the Mission Computer data was too conservative. Software changes are in progress to give aircrews more accurate data.

Narrowband/DAMA SATCOM: Provides 5KHZ frequency selection with demand assigned multiple access (DAMA) capability for secure satellite communications. Required to comply with JCS directed command and control compatibility.

Comfort Pallet Electrical Provisions: Provides electrical system upgrade to interface with AMC passenger comfort pallet.

Airborne Single Channel Ground and Air Radios (SINCGARS): ARC-222 radio will be added to the communications suite on the C-5B, C-141B, and C-17 aircraft. Provides interoperability with US Army.

Windshear Protection: The C-17 is especially vulnerable to windshear/microburst conditions due to its high gross weight, low approach speeds, and slow spool-up time for the turbofan engines. For the near term, a reactive windshear system will be installed through a software change. Long term, a predictive system will be pursued in conjunction with new weather radar requirements.

Armor Plating System: Improves aircraft survivability and aircrew safety while performing C-17 designed missions (direct delivery to austere airfields).

Offset Center-Line Seats: Allows side by side seat and pallet configuration. Increases operational capability of core airlifter.

Service Life

Based on a buy of 120 aircraft, the last C-17 delivery will be in 2006. The original specification from McDonnell Douglas defined a service life of 30,000 hrs. Using present flying hour projections, the force will not begin to reach its service life within the timeframe of this plan. However, studies beginning in 2015 to determine if any major updates or modifications should be carried out (Figure 5-8).

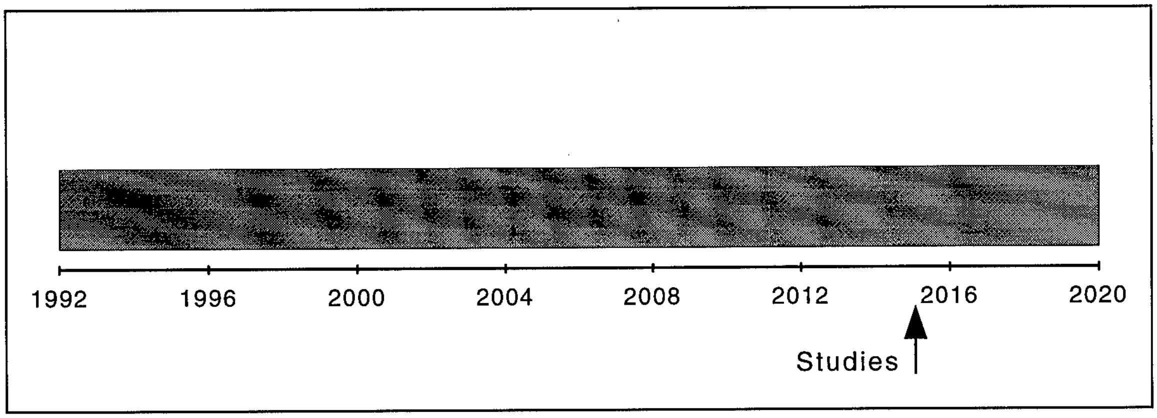


Figure 5-8. C-17 Service Life

C-5 WEAPON SYSTEM

The C-5 is a vital asset, capable of deploying combat and support personnel, supplies and equipment, particularly outsized and heavy cargo between CONUS and overseas locations. The C-5A entered service in 1969 with 50 additional C-5Bs entering in service in the mid 1980s. Until the C-17 is fully fielded, the C-5 represents most of AMC's capability to carry outsize cargo. It can routinely carry 73 troops and 36 standard 463L pallets. There is a limited airbus configuration to carry 346 passengers; however, there are only 4 kits in the Air Force inventory. Because of its size and lack of ground agility, routine C-5 operations are restricted to main operating bases.

Extended Programmed Depot Maintenance (PDM) Interval

After 72 months in service, only minor defects were found on the first eight C-5B PDM baseline inspections. Considering the results of these inspections, the inspection interval has been changed from 72 to 84 months in FY95.

Reduced ISO Inspection by Field Units

With the establishment C-5 Blue Suit Maintenance Teams at San Antonio Air Logistics Center, AMC units no longer accomplish an ISO inspection on their aircraft upon returning from PDM. The Blue Suit Maintenance Team accomplishes an ISO on each aircraft as it goes through PDM. This program increases the aircraft availability by 0.4 aircraft per day.

Reliability

Reliability of the C-5, in particular the A-model, is a top concern of the command. The mission capable rate for the A-model continues as the lowest in the command at 58.8 percent (CY95) and is approximately 10 percent below the B-model. Departure reliability also lags behind other aircraft on average by 3 to 13 percent (CY95). Air abort and break rates should decrease as the C-5 is modernized with systems which meet the mean time between failure performance typical of the aviation industry. However, due to the funding and implementation time associated with modifications, it will be several years before their effects become evident. Continued modernization of the C-5 aircraft should lead to decreasing TNMCM and TNMCS rates of 8 and 5 percent respectively by FY15, with aircraft availability improving by 10 percent as well by this time. These improvements will increase departure reliability rates, however, concern for the C-5A still remains. With this improvement, the A-model still would not meet the AMC MC rate planning factor of 75 percent. The reliability performance of the A-model is poor enough that the ability to operate it in a cost effective manner in the future is questionable.

Modifications

Objective 2.2.1
Increase aircraft availability and reliability to meet command goals and requirements. LGF, FY07

Ensuring the C-5 remains a viable mobility asset requires ongoing updates, repairs and improved (preferred) spares. The capital investment plan for the C-5 is developed through the C-5 IPT with input from Air Staff, AMC, AFMC, SA-ALC, and industry. The IPT is guided by four objectives. The first objective, improving reliability and maintainability, is our biggest concern and receiving the most priority at this time. The second is to maintain the weapon system's integrity - avoiding problems similar to those that the C-141 experienced. The third objective is to reduce the C-5's operating costs which often goes hand in hand with improving reliability. The final objective is to increase capability. Airdrop modifications for the C-5B are critical to AMC meeting the strategic brigade airdrop requirement. Program management through the C-5 IPT will work to ensure a viable service life through cost effective modifications.

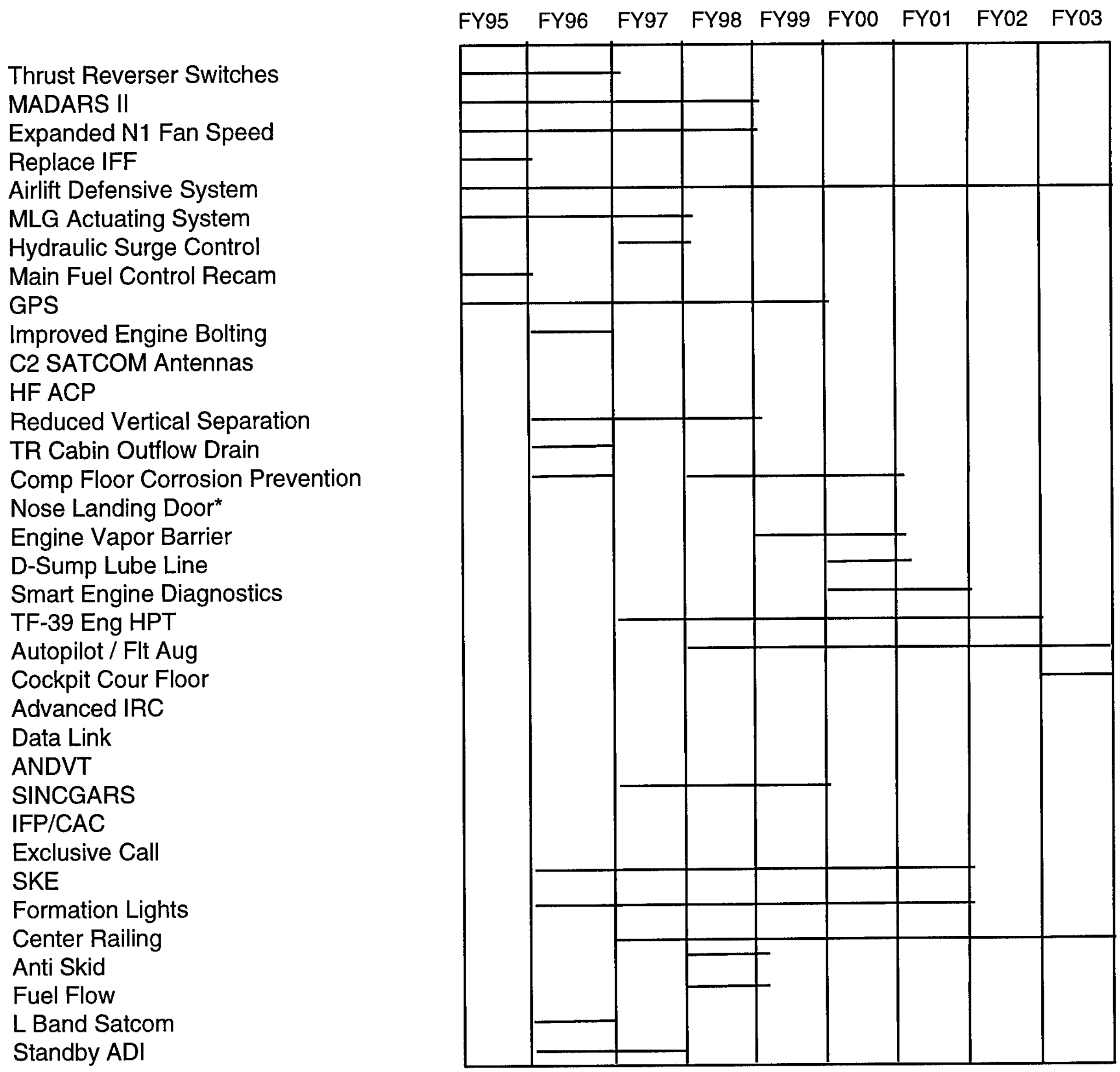


Figure 5-9. C-5 Modifications

(Timelines not shown for unfunded programs)

Modification Summaries

The following paragraphs give a brief synopsis of the major modifications currently programmed for the aircraft:

Fan Blade Repair: The stage two fan blade mid span has had several inflight failures causing fan blades to depart the engine and on two occasions penetrate the fuselage. The solution is to reinforce the fan blade with a titanium insert. This insert will strengthen the fan blade by 40%.

Autopilot / Flight Augmentation / ALDCS: Replaces unreliable autopilot, and flight augmentation systems with highly reliable digital technology.

Engine High Pressure Turbine: Replaces a high failure rate turbine with a more durable turbine which also allows rated thrust takeoffs at higher temperatures.

Engine Vapor Barrier: Mishap investigations have recommended improvement of the current system to prevent migration of combustible fluids to the hot section of the engine. Lockheed is presently testing a new differential pressure ducting to alleviate this problem. Initial testing is scheduled to be complete in Nov 95.

Pylon Fire Safety Improvement: Safety mod provides fire barriers to prevent chimney effect, reroutes wing fire suppression system sensors to extend into pylon lower cavity, develops independent optical fire detection system, and adds four new fire indicators on flight engineer's panel.

MADARS II: Replaces unreliable MADARS with more effective MADARS II. Reconfigures C-5A avionics bays, avionics cooling system, navigator's circuit breaker panels, center console, aircraft interphone system, and flight engineers' station to C-5B configuration.

Replace C-5A IFF System: Replace the existing AN/APX-64 identification friend or foe (IFF) transponder with AN/APX-100. The AN/APX-64 is obsolete and logistics support costs are rising. MTBF increases from 193 hrs to 1000 hrs.

C-5A Expanded Fan Speed N1 Indicator: The engine pressure ratio (EPR) system is very unreliable. When EPR is unavailable, N1 is used for setting power. C-5B configuration has no EPR system. Until modification is complete spares must be maintained for both systems.

Multiplexer Processor Upgrade: This mod retrofits 48 MADARS II bubble memory multiplexer processors to complementary metal oxide semiconductor (CMOS) configuration.

Airlift Defensive System (ADS): Provides a missile warning system with a flare/chaff dispenser to allow operations in a threat environment.

Exclusive Call: Installs ground-to-air coded signaling used internationally by air traffic control stations to selectively alert a particular aircrew that a call is being directed to their aircraft. Eases crew fatigue during extended over-water flights routinely performed by airlift aircraft.

HF Automatic Communications Processor (ACP): Provides frequency scanning capability for HF radios, greatly improving long distance communications connectivity. Provides limited anti-jam capability. Enhances global mobility operations.

Main Landing Gear Actuation System: Modifies unreliable C-5A system to C-5B configuration, eliminating 8 gearboxes and several torque tubes. Greatly simplifies landing gear R&M. Increases MTBF from 70 to 625 hours.

Easy Open Hydraulic Valves: Installs hydraulic selector valves designed to open at a slower rate to eliminate surges and pressures spikes associated with the opening of the selector valve on the landing gear, cargo doors, and ramps.

Fuel Flow Transmitter: Replaces current transmitter with a new state-of-the-art transmitter with less movable internal parts that can be used with either present fuel flow indicators or the new liquid crystal display indicators.

C-5 Tire Deflation System Deletion/Hub Redesign/Anti-Skid Detector: The C-5 fleet requires a reliable anti-skid system. The air valve that is used to mount the skid detector sometimes leaks resulting in tires being removed prematurely. Many man hours are expended to rig skid detectors. The tire deflation is identified as a major contributor to the skid detector failures. The tire deflation system on the fleet has been deactivated for years. Delete the requirement for the existence of the tire deflation system and replace the current antiskid with a more reliable system.

Pitch Trim Manifold: New pretested manifolds eliminate #2 hydraulic system surges during the operation of the pitch trim system. This mod will increase availability, reliability, and maintainability, increasing MTBF from 119 hours to a 2-year, no-fail guarantee.

Advanced Infrared Countermeasures: Proliferation of man-portable missiles subjects airlifters to this threat during most operations. Enhances current ADS system by providing a state-of-the-art, infrared missile warning receiver and countermeasures.

TF-39 Engine Anti-Ice Valve: Installs an improved anti-ice valve increasing service life by changing the material of the servo housing and improving the design of the electrically operated components. Increases MTBF from 450 to 4000 hours.

Main Fuel Control Recam: Improves the engine flame-out margin during throttle chops, prevents hung starts by allowing a new start range schedule and adds design wear improvement to extend the main fuel control service life. Increases MTBF from 1500 to 4300 hours.

Troop Compartment Floor Corrosion Prevention: Replaces the leak-prone A-model troop latrine with a one piece fiberglass floor pan, fiberglass walls, and a larger holding tank to stop leaks and prevent corrosion of the compartment floor. This floor area is composed of stress panels for the aircraft.

Cockpit/Courier Floor Stress Panel: Damaged flooring and substructures will be replaced with materials similar to those on the C-5B. The cockpit, relief crew, and courier floors and subfloors require extensive repair due to corrosion and delamination. Replacement of materials will mitigate this damage.

Real Time Information in the Cockpit (RTIC): RTIC is a situational awareness capability to receive, process, and display real-time and near real-time information overlaid on photos and charts. The technology includes flight following, two and three-dimensional threat displays, terrain perspective views, and mission rehearsal. The system loads and stores multi-spectral and high-resolution imagery received to update the data base. Near real-time ELINT is received and its symbology overlaid onto stored images and charts, indicating parameters and lethality ranges in two and three dimensional representations.

Global Positioning System (GPS): Provides worldwide three-dimensional positioning/navigation for military aircraft. Will be future primary navigation aid. Allows mobility operations in a no-navaid environment.

Improved Bolting Nozzle Seal: Prevents engine replacement due to damaged low pressure turbine blades caused by failure of the stage two and stage three interstage seal bolts.

Thrust Recovery / Cabin Outflow Drain: Moves a water drain line and adds flapper valves to prevent clogging of the drain. Clogging of this drain causes water to collect in the underfloor and promotes corrosion of the pork chop fittings. This low cost mod ($1.3M for the entire fleet) prevents having to do expensive structural repair at a cost of over $1M per airplane.

D-Sump Lube Tube: This modification reroutes the D-Sump oil line. The oil line is chaffing against the pylon apron allowing oil to leak and causing a bearing failure. The engine has to be dropped to accomplish needed repairs. Rerouting of the D-Sump line will eliminate problems.

Reduced Vertical Separation Minima (RVSM): Allows aircraft to operate under the reduced vertical separation minima which will be implemented worldwide by 1997-1998. Requires aircraft's mean altimetry system error not exceed +/-80 ft and total error be less than 245 ft.

UHF SATCOM/ANDVT/DAMA: Provides COMSEC, voice processing, and modem functions for voice, digital data, and signal information. It is the standard for all airborne and ground HF and UHF SATCOM communications requiring security.

C2 SATCOM Antennas: Provides permanently mounted UHF SATCOM Antennas which will operate with a transportable SATCOM terminal. Greatly enhances mobility C2, even in austere communications environments. Estimated completion FY96.

Airborne Single Channel Ground and Air Radios (SINCGARS) (ABS): ARC-222 will be added to the communications suite on the C-5B, C-141B, and C-17 aircraft. Provides interoperability with US Army.

Stage 2 Fan Blade Retainer: Prevents relative motion between the blades and disk. This will eliminate the wear on the mid span platform surfaces and reduces maintenance costs.

Intra Formation Position System (Stationkeeping Equipment 2000 (SKE 2000): Provides a IFR formation flight system for C-5B aircraft to perform night and all-weather formation heavy equipment airdrops. Program includes development, integration, qualification and installation of antennas, SKE 2000 equipment, and radomes. System will support effort to certify aircraft for strategic brigade airdrop.

Formation Lights: Allows C-5B aircraft to fly heavy equipment airdrop under night and adverse weather conditions while in formation. Electro-luminescent lighting will be placed on outside of aircraft. Lights will support effort to certify aircraft for strategic brigade airdrop.

Smart Engine Diagnostics: This modification provides "smart engine diagnostics" capability to give more accurate and precise data for maintenance which will reduce aircraft and engine downtime. The current MADARS monitoring and diagnostics system uses outdated technology which results in increased maintenance man-hours and aircraft downtime.

Sustaining Engineering

To sustain the baseline capabilities of the C-5 and associated non-aircraft systems, the command is contracting engineering services. Contractors will analyze reliability, maintainability, supportability, and performance deficiencies. The engineering efforts requiring funding are identified in the sustaining engineering requirement plan (SERP) and are listed below. The studies will verify the need for change, develop life-cycle costs, and perform trade-off analysis. The studies may lead to further research, development, testing, and evaluation (RDT&E) initiatives and future modifications to the aircraft. This effort covers the future-years defense program (FYDP) period.

<u>TASKS</u>
Aircraft Structural Integrity Program
Functional System Integrity Program
Environmental Protection Directives
TPS/OFP Software Deficiency Analysis
Mishap Investigations
Mission Critical Rapid Response
Systems Engineering Support
Landing Gearing Engineering Support
Engineering Configuration Support
Corrosion Control Program
Modernization Feasibility Support
Trainer Engineering Support
Technology Applications Program
Ground Support Equipment Program

Service Life

The Air Force took delivery of the first C-5A in 1969. The force was then retrofitted with a new wing in the mid 1980s. With a projected structural service life of 30,000 hours, the C-5 could last structurally well into the next century, depending on the model and other factors. However, system obsolescence, reliability and maintainability, operating cost, impacts of corrosion, and required repairs all factor in the service life of an aircraft. Currently, the C-5 has the highest operating cost of any weapon system, and the trend is a rise in tariff rates and reliability and maintainability costs for the C-5. The current maintenance man hour per flying hour illustrates the difficulties in the C-5 force. The A models consume approximately 56.2 maintenance man hours per flying hour, 29.3 for the B model. With the retirement of the C-141 force, the C-5 will take a larger role in peacetime movement of cargo over the next few years. This means our mobility customers will face a more expensive option with the C-5. Over the past years, our depot levels have increased to over 20 percent of our total aircraft relative to the planned 15.4 percent BAI levels. Also, the daily mission capable rate over the past years has continued to fall, with the A-model averaging about 13.5 percent below the B-model. These problems raise concern for the economic life of the C-5 A-model.

To a large extent, the economic service life will depend on our ability to modernize the fleet with technology that improves structural integrity, restores aircraft reliability and availability, and reduces cost of ownership. With inputs from the C-5 IPT, AFMC, the depot, and Lockheed Corporation, AMC will determine a specific course of action for both the A and B models that works toward these objectives. The question still remains, given the A-model's high operating cost and low mission capability rate, can it maintain economic viability? Studies and analysis will examine different options dealing with the C-5A problem and weigh the costs of replacement verses continued high operating costs and required repairs and modifications. Notionally, if the C-5A is retired at the same age as the C-141, it will begin retirement from service in FY07.

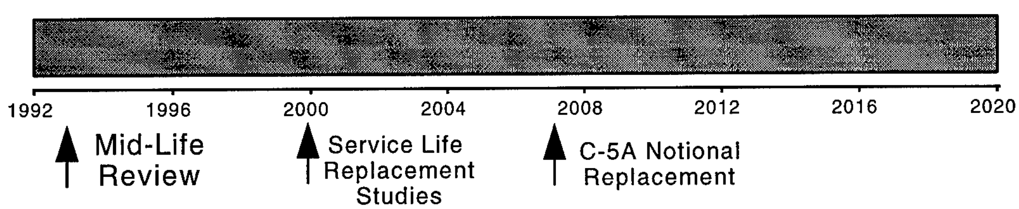


Figure 5-10. C-5A Service Life

KC-135 WEAPON SYSTEM

The KC-135 is AMC's core tanker. The core tanker must be capable of meeting the following requirements: 1) deploying, employing, and redeploying the full range of US and allied aircraft in support of combined, joint, and special operations in any environment; 2) completely supporting the SIOP mission; 3) surviving in a wartime threat environment; and 4) providing a large fuel offload with maximum flexibility. Additional tanker roles include training, peacetime contingency operations, cargo movement, and conventional taskings. In the future, KC-135s may perform an aeromedical evacuation role.

The KC-135 fleet has also begun regular cargo channel missions after successfully validating cost effectiveness and establishing a concept of operations. The test program established operational procedures and resulted in an overall improved cargo carrying capability for the aircraft. The development of a cargo roller system was an important step that allowed the KC-135s to provide a channel for low volume, high priority cargo. Acquisition of cargo rollers continues, but since the majority of KC-135s are dedicated to wartime air refueling, their impact to wartime airlift is limited.

Fleet Makeup

As of FY96, the KC-135 refueling fleet consists of 496 PAI. All A and Q model conversions to R models are complete. Some E models will be converted to R models. A mix of three different KC-135 models are now in use and are manned by both active duty and ARC aircrews. The description of the different models is below:

Table 5-1
KC-135 MODELS

KC-135E:	TF-33 turbofan engine with thrust reverser
KC-135R:	Reengined / Modernized KC-135A/E
KC-135T:	Reengined / Modernized KC-135Q, which can isolate body fuel tanks and offload specialized fuels

Maximum cargo weight of the KC-135 is approximately 55,000 pounds; however, maximum loads are usually limited to approximately 35,000 pounds due to cargo volume and floor loading limitations. They can carry a maximum crew/passenger load of 58. Both cargo and passenger loads affect the maximum fuel load of approximately 200,000 pounds (R/T-model). These aircraft are capable of offloading to receivers with either the flying boom or the drogue basket. However, the KC-135 crew must know the receiver type prior to takeoff, because drogue/boom changes cannot be made inflight.

Depot Status

The number of aircraft in depot status and the duration of each PDM will be reduced. The PDM cycle will be extended from 4 years to 5 years and the current 9 months in PDM should be reduced to 7 months by FY97. These reductions will be achieved by the existing AFMC flowday reduction plan.

Reliability

Objective 1.3.3
Modify the aging air mobility fleet to maintain the capability to meet future requirements. XPQ, FY03
Objective 2.2.1
Increase aircraft availability and reliability to meet command goals and requirements. LGF, FY07

Mission capable rates are good (83.2% CY96) and will continue to be driven upward through careful analysis and application of reliability/maintainability processes. Mission Capable Rates for Jan-Jun 96 are averaging 87.1%. Systems already identified for improvement are the radar system (APN59), the compass systems, the FSAS system, the aircraft brakes, the aircraft battery, and the air refueling boom. Improvements in the reliability/maintainability of these systems should reduce TNMCM and TNMCS rates to 7 percent.

Modifications

Completion of the R conversion is a crucial near-term step, significantly improving the KC-135's overall technology. Given the age of the basic aircraft, modernization of the avionics and communication equipment must keep pace with technology to keep this system as a viable force multiplier well into the future. A major effort to upgrade the KC-135 centers on the cockpit. Projected shortages in the navigator crew force, reduction in Specialized Undergraduate Navigator Training (SUNT) production, and the need to modernize the KC-135 cockpits caused us to re-examine the way we will conduct air refueling. The overall plan is divided into two phases: relocation of the navigator's avionics to the pilot's station and an avionics modernization.

Avionics Relocation: This program will modify/relocate those items necessary to make the aircraft flyable without a navigator. A total of 224 active duty aircraft will be modified. This includes all active KC-135s that are modified with the Fuel Systems Advisory/Cockpit Avionics System (FSA/CAS). The requirements are divided into two major areas: precision navigation capability and equipment relocation for pilot accessibility. The following specific changes are planned:

- Second inertial navigation unit (INU) replaces doppler navigation computer (DNC).
- Additional control display unit (CDU) added for the pilot.
- IFF relocated from the navigators panel to the copilots side panel.
- Additional electronic cabinet cooling caution light added to copilots side panel.
- Small radar control panel with function, range, gain and tilt controls fabricated and attached to the right-aft of fuel panel. The navigator equipment will remain operable to give commanders the option of having a navigator for complex missions.

PACER CRAG (Compass, Radar, and GPS): This program modifies the entire KC-135 fleet to satisfy human factor and mission requirements for completion of the most complex missions. One integrating contractor will accomplish the three separate programs -- 1) KC-135 Compass Replacement, 2) 135 Radar Replacement and 3) GPS. The Compass Replacement program provides the additional inertial navigation unit and the Radar Replacement program provides the color weather radar and electronic HSIs. The GPS program provides the receiver, antenna, flight management computer, smart CDUs, and data loader. PACER CRAG also accomplishes avionics relocation actions to aircraft that did not receive the relocation modification.

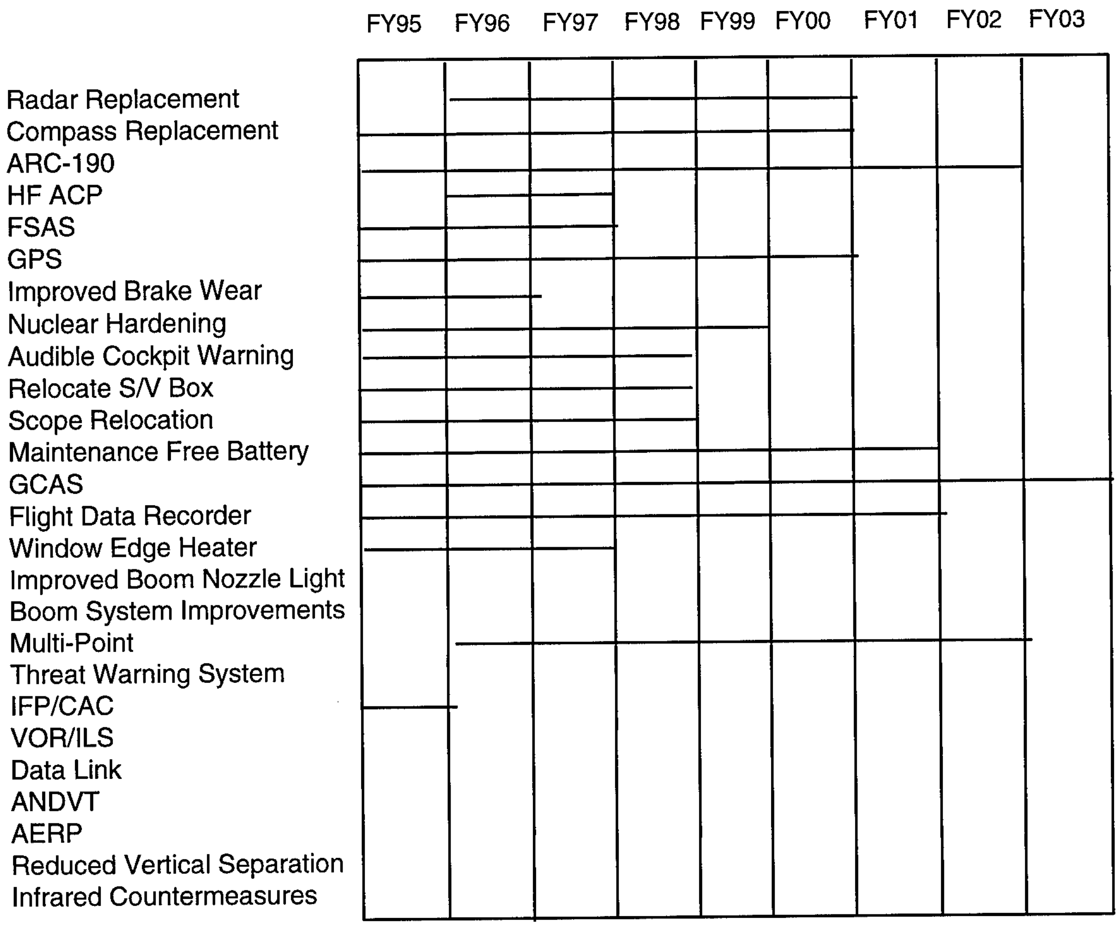


Figure 5-11. KC-135 Modifications

(Timelines not shown for unfunded programs)

New Air Refueling Pumps: Current pumps still have potential for overheating even after being modified with an auto-shut-off system designed to shut off pumps in a dry tank. AMC imposed operational restrictions on current pumps not allowing crews to go below 1000 pounds in the fuel tanks. New hydraulically cooled pumps will allow the lifting of current operational restrictions.

Avionics Relocation: With navigator reduction, cockpit equipment must be relocated or control functions duplicated so they can be controlled by the pilot and copilot positions. Relocation of equipment is needed to ensure continued operation once navigators are removed from the cockpit.

KC-135 Replacement Radar: Replaces existing radar system with a state-of-the-art modular system. Concurrent modification with GPS and replacement compass system.

NAVSTAR Global Positioning System (GPS): This mod provides worldwide three-dimensional positioning/navigation for military aircraft. GPS designated as future primary navigation aid.

Allows mobility operations in an environment without navigational aids. Concurrent modification with replacement radar and compass system.

Replacement Compass System: Replaces unreliable, maintenance-intensive compasses with digital compass system. Increases MTBF from 200 (N-1), and 400 (J-4) to 1,200 flight hours. Concurrent modification with GPS and replacement radar.

Improved Interphone: Replaces existing interphone system with a more reliable interphone with individual volume controls.

Re-Engine KC-135Q/E: Replaces existing J-57/TF-33 engine with the more powerful, efficient CFM-56 engine. Increases fuel offload capability by 50 percent, reduces fuel consumption 25 percent, and reduces takeoff distance 20 percent. The quieter, cleaner CFM-56 meets or exceeds all FAA/ICAO Stage III noise and pollution standards. Seven KC-135Es are currently scheduled to be re-engined.

HF Modernization: Adds an additional ARC 190 HF radio with Automatic Communications Processing (ACP), and adds Selective Calling (SELCAL) to the existing HF radio. Increases C2 capability by speeding communications between airborne crews and command elements.

Fuel Savings Advisory System (FSAS): Replaces fuel panel switches and gauges and installs onboard computerized fuel conservation system. FSAS includes the 1553 data bus that is required for future avionics modernization. Increases MTBF from 350 to 2,500 flight hours. The following are companion modifications: Radar Scope relocation, Nuclear Hardening, Audible Cockpit Warning, and relocation of the Survivability/Vulnerability Box.

Ground Collision Avoidance System (GCAS): Installs a system that alerts the aircrew to flight profiles that project ground impact. Congressionally mandated.

Intraformation Position/Traffic Collision Alert and Avoidance System (IFP/TCAS): Provides a passive, low probability of detection/intercept, 360 degree intraformation positioning system with night and adverse weather capability. Allows safe formation positioning without emitting easily recognizable emissions.

Real Time Information in the Cockpit (RTIC): RTIC is a situational awareness capability to receive, process, and display real-time and near real-time information overlaid on photos and charts. The technology includes flight following, two and three-dimensional threat displays, terrain perspective views, and mission rehearsal. The system loads and stores multi-spectral and high-resolution imagery received to update the data base. Near real-time ELINT is received and its symbology overlaid onto stored images and charts, indicating parameters and lethality ranges in two and three dimensional representations.

Cargo Roller System: This modification will install cargo rollers and Omni rollers into the cargo compartment of the aircraft, adding capability to transport up to six 463L pallets. Height restrictions allow vertical loads up to 60 inches. Increases self-deployment capability and allows for cargo only operations when not air refueling.

Maintenance-Free Battery: Replaces existing aircraft, INS/DNS, and APU batteries with highly reliable maintenance-free batteries. Increases battery life 2 to 5 years over existing batteries.

Window Edge Heater: Installation of window edge heaters will extend service life of cabin windows by negating the moisture intake around the window edge. Increases MTBF from 1,500 to 20,000 flight hours.

Data Link Capability. This capability is needed to operate in the new air traffic control Automatic Dependent Surveillance system which requires automatic aircraft position reporting via data link. FAA and ICAO will implement this system in the North Atlantic in 1997 and progressively spread it worldwide. Without data link capability, aircraft will be excluded from all routes where Automatic Dependent Surveillance has been implemented. Data link is unfunded. AMC funding approved to do a study in FY98.

Multi-point Refueling. Adds wing tip pods with refueling drogues so KC-135 can refuel with boom and/or drogue on same flight. Increases capability by providing redundant A/R points on a single tanker and increases interoperability with Navy, Marines, and allies.

Aircrew Eye/Respiratory Protection: Installs chemical defense mask and communications connectors for issued aircrew protective equipment. Critical subsystem of on-board nuclear/biological/chemical defense capability.

Reduced Vertical Separation Minima (RVSM): Part of the FAA's future air navigation standards. RVSM is slated for worldwide implementation in 1998. Aircraft without this capability will be excluded from the optimum routes.

A/R Boom System Improvements: Improves ruddervators, pivot joints, and boom nozzle with an independent disconnect capability for the boom operator. Enhances safety by adding the independent disconnect capability and will decrease the amount of inadvertent disconnects by increasing the usable air refueling envelope.

Improved Main Landing Gear Brake Wear: Installs self-adjusting piston to the brake assembly, reducing wear and extending brake life 30 percent.

Improved Boom Nozzle Light: Replaces existing lighting with an improved, redundant source of lighting. Improves boom operator's ability to conduct safe night refueling.

Improved Latrine: With the KC-135 being used for airlift, the latrine is inadequate for carrying passengers on long missions. Need an expanded latrine with external dumping capability.

Standard Flight Data Recorder (SFDR): Provide a SFDR based on tri service specification (Army, Navy, Air Force aircraft), to provide aircraft structural analysis and other pertinent data. Replaces existing MXU-553 ASIP recorder increasing MTBF from 3,599 to 5,200 flight hours.

Engine Stall Warning: Audible and Visual warning device that prevents extensive engine damage by alerting crew to RPM OFF/IDLE stall condition.

New Air Cycle Machine (ACM): Current ACM is a high failure item because of the oil cooled bearing design. Failure rates increase when it is used on the ground for cooling. The new ACM will come with a 5,000 flight hour warranty, and have unlimited use on the ground. It has a magnetic bearing design which eliminates wear and is anticipated to never need replacement once installed.

Follow-on Studies: Begin studies to examine follow-on tanker options. Long lead time for modifications and acquisition require studies to begin early to ensure continued capability.

Sustaining Engineering

To sustain the baseline capabilities of the KC-135 and associated non-aircraft systems the command is contracting engineering services. Contractors will analyze reliability, maintainability, supportability, and performance deficiencies. The engineering efforts requiring funding are identified in the sustaining engineering requirement plan (SERP) and are listed below. The studies will verify the need for change, develop life-cycle costs, and perform trade-off analysis. The studies may lead to further research, development, testing, and evaluation (RDT&E) initiatives and future modifications to the aircraft. This effort covers the future-years defense program (FYDP) period.

The highlight of the KC-135 sustainment program is its aging aircraft initiative CORAL REACH. As this program matures, new nondestructive inspection programs, new/improved structural repair processes and replacement procedures, and parts never before stocklisted and procured will be identified.

TASKS
System Engineering
Safety
Aircraft Structural Integrity Program
CORAL REACH
Circuit Breakers
Electrical Wiring Replacement Program (EWRP)
Sustainment
Reliability & Maintainability
Functional System Integrity Program (FSIP)

Service Life

Most experts agree that the R-model and T-model will continue to operate economically well into the next century. The R-models maintenance capability and reliability rates are among the highest of any weapon system AMC operates, and its operating cost is the lowest. The E-model economic service life is markedly different because of the difference in age and technology of some of its major components, most notably the engines. The basic airframe should, in theory, last as long as the R-model, but the age of the engines points to the likelihood that upkeep could become expensive (in terms of parts and maintenance man-hours). The TF-33 (E-model) engines were previously used but refurbished to an expected 6,000 hour service life. At current use rates, the TF-33 will need another major overhaul around the turn of the century. Additionally, since the TF-33 does not meet FAA Stage III noise requirements for the year 2000, more time and money must be expended to ensure compliance. Oklahoma City-Air Logistics Center (OC-ALC) is pursuing a solution to TF-33 compliance in conjunction with the OPEN SKIES modification efforts. Considering most E-models operate from joint use fields, FAA Stage III compliance is a must. The R-model conversion with its improved CFM-56 engines meets FAA Stage III noise requirements, promote commonalty, and offer the necessary service life extension to keep pace with the rest of the KC-135 fleet. In the absence of the R-model conversion, studies should begin now to determine the feasibility of continuing to operate the E-model into the 21st century.

Aircraft corrosion presents a significant challenge to AMC. It is presently difficult if not impossible to model this major life limiting factor over long periods of time. As we operate aircraft for an unprecedented number of years, we find ourselves dealing with an old problem with no apparent new answers. Technologies required to deal with corrosion have not evolved, leaving AMC with a deficiency-that of not knowing exactly how long its older aircraft will operate economically.

At current use rates, KC-135 aircraft are projected to be in Air Force service well into the next century. In fact, calculations using a predicted service life of 70,000 hours (structural data only) and based on current annual flight hours reveal a notional service life extending into the 2200 century. However, these numbers taken alone are misleading as they do not include the effects of corrosion. While it is not known how much corrosion will affect service life, it is certain there will be some affect. The corrosion factor causes us to doubt whether the KC-135 can continue to operate economically over the next 25 years.

AMC therefore places special emphasis on the development of technologies required for accurate service life predictions with the effects of corrosion included. Depending on the speed of technology advancement, OC-ALC may be able to determine the economic life of the weapon system in FY97. These efforts notwithstanding, AMC's goal is to accurately define the KC-135's service life, with the effects of corrosion included, by FY00. Until corrosion studies can validate an accurate KC-135 economic service life, AMC will fully validate a potential retirement and replacement date for the KC-135.

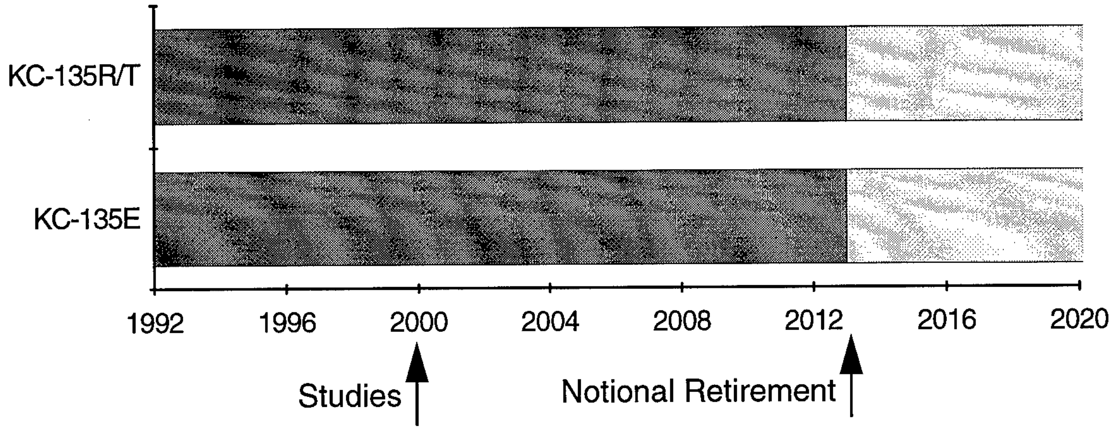


Figure 5-12. KC-135 Service Life

SWING ROLE TANKER - KC-10 WEAPON SYSTEM

The KC-10 is a swing role tanker/airlift aircraft that can be used to simultaneously support aircraft deployment and cargo transport. The aircraft can use either its flying boom for receptacle-equipped aircraft or its internal hose reel drogue unit for probe-equipped aircraft (changes in the offload system can be made inflight). The KC-10 has a 342,000 pound fuel capacity and is itself inflight refuelable. The KC-10 crew/passenger maximum is 79, or a maximum cargo weight of 170,000 pounds on 27 463L pallets. Twenty-three pallets is the normal maximum when carrying passengers. Again, heavy cargo weights may reduce the maximum fuel capacity, but the air refuelability of the KC-10 provides more planning options.

The KC-10 fleet has 54 PAI, all assigned to active duty units with collocated Reserve Associate squadrons. The crew ratio for active duty units is 2.0 while the Reserve Associate crew ratio is 1.5.

Missions

The traditional missions of the KC-10 are the same as those of the KC-135. The size of the KC-10, however, makes its contribution in each area so impressive. Fulfilling the roles of deployment, employment, and redeployment, the KC-10 offers longer range, greater offload capability, and can carry more cargo at the same time in a dual role capacity.

Adding drogue refueling pods to KC-10 wings will increase its capability to support navy and allied aircraft. The KC-10 will take on an even greater role in future transportation of cargo and may possibly perform an aeromedical evacuation role. These expanding roles of the KC-10 ensure its continued contribution to the full range of air mobility.

Depot Status

Depot-level support is provided by CLS. KC-10 depot programs consist of three main areas: "C" check, paint, and contractor field team repair/modification. Capability exists for "drop-in" depot maintenance at an approved repair facility. "C" check calendar inspections were being accomplished at 25-week intervals at the start of the KC-10 program in 1979. Currently, calendar inspections are accomplished at 36 week intervals. Inspection requirements are defined by weekly interval calendar work cards. Depot inspections last six to sixteen working days. Most depot-level time compliance technical orders are accomplished during "C" check maintenance. KC-10 aircraft are painted every eight years requiring six weeks to accomplish. Contractor field team work is available through prime logistics support contractor and can be performed through sub-contractors. Repairs or modifications are performed at the main operating base or at a deployed location. There are no future plans to change or modify the KC-10 depot program.

Reliability

KC-10 systems are functioning very efficiently. HQ AMC standard mission capable rate for the aircraft is 85 percent. Mission capable rate over the last 12 months varied from 82 to 94 percent. Minor improvements in the reliability/maintainability of the aircraft systems will decrease the aircraft not mission capable rates which in turn will increase the mission capable rate. The improvements should lead to a TNMCM rate of 5 percent and a TNMCS rate of 2 percent.

Modifications

As one of the newest aircraft in the Air Force inventory, the KC-10 requires little maintenance and modifications when compared to older military systems. However, an aggressive program must be pursued to ensure the KC-10 maintains its FAA certification and stays abreast of evolving technologies. In order to keep costs at their minimum, near term modifications should take advantage of commonalty with commercial counterparts where possible. A comprehensive review is recommended in FY00 to provide guidance for long-term modification programs.

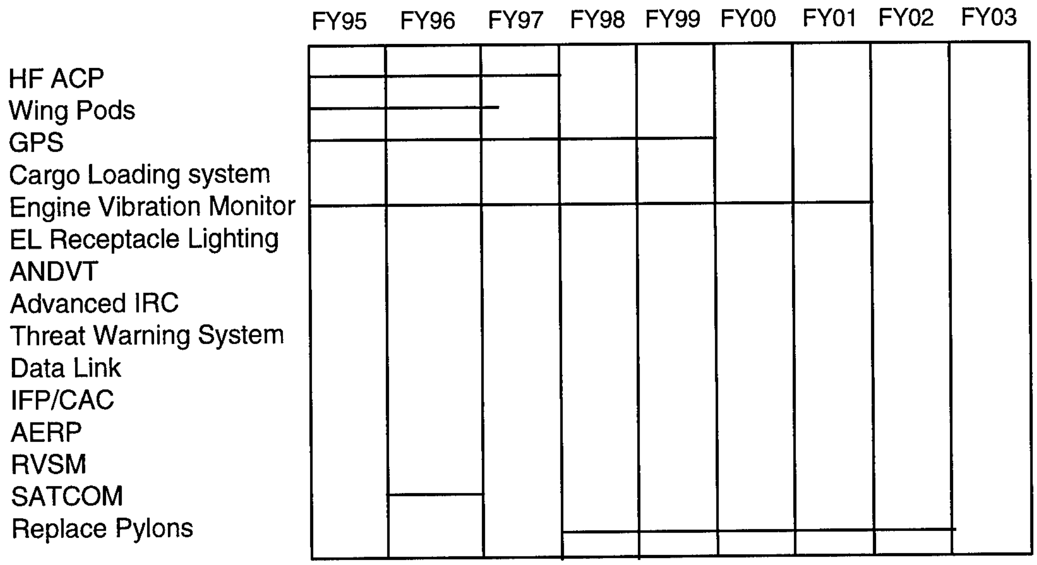


Figure 5-13. KC-10 Modifications

(Timelines not shown for unfunded programs)

HF Modernization: Adds an additional ARC 190 HF radio with Automatic Communications Processing (ACP), and adds an exclusive calling function to the existing HF radio. Increases C2 capability by speeding communications between airborne crews and command elements.

SATCOM (INMARSAT AERO-C): Recent incidents have highlighted the need for direct communications and control. A commercially available AERO-C SATCOM system will provide this capability for the KC-10.

Engine Vibration Monitoring System: The system consist of an accelerometer that measures turbine midframe vibration for each engine and provides it to the flight engineers' indicator. Previous system proved to be extremely unreliable, causing false readings resulting in unwarranted engine removals.

Multi-Point A/R Pods: Provides wing-tip mounted hose/reel air refueling system for probe and drogue refueling, increasing interoperability with Navy, Marines, and Allies. Fifteen sets of pods will be procured and 20 aircraft will be modified.

Real Time Information in the Cockpit (RTIC): RTIC is a situational awareness capability to receive, process, and display real-time and near real-time information overlaid on photos and charts. The technology includes flight following, two and three-dimensional threat displays, terrain perspective views, and mission rehearsal. The system loads and stores multi-spectral and high-resolution imagery received to update the data base. Near real-time ELINT is received and its symbology overlaid onto stored images and charts, indicating parameters and lethality ranges in two and three dimensional representations.

NAVSTAR Global Positioning System (GPS): Provides worldwide three-dimensional positioning/navigation for military aircraft. Will be future primary navigation aid. Allows mobility operations in an environment without navigational aids.

Data Link Capability: This capability is needed to operate in the new air traffic control Automatic Dependent Surveillance system which requires automatic aircraft position reporting via data link. FAA and ICAO will implement this system in the North Atlantic in 1997 and progressively spread it worldwide. Without data link capability, aircraft will be excluded from all routes where Automatic Dependent Surveillance has been implemented. Data link is unfunded. AMC funding approved to do a study in FY98.

Intraformation Position/Traffic Collision Alert and Avoidance System (IFP/TCAS): Provides a passive, low probability of detection/intercept, 360 degree intraformation positioning system with night and adverse weather capability. Allows safe formation positioning without emitting easily recognizable emissions.

Reduced Vertical Separation Minima (RVSM): Part of the FAA's future air navigation standards. RVSM is slated for worldwide implementation in 1998. Aircraft without this capability will be excluded from the optimum routes. KC-10's current equipment may meet RVSM standards but will require certification.

Follow-on Studies: Begin studies to identify requirements of KC-10 upgrade/replacement. Long lead times for modification or new acquisition require studies to begin early to ensure continued capability.

Service Life

The KC-10 complies with FAA Stage III noise standards. Designed with a service life of 30,000 hours, projected structural service life of the KC-10 extends to 2043. State-of-the-art technology and commonalty with commercial counterparts ensures operations in the near future will remain economical. However, as the commercial fleet reaches maturity, major operators will discontinue DC-10 use, leaving smaller airlines as the only remaining civil users. The first round of commercial retirements by 2010 will undoubtedly impact the economy of future Air Force KC-10 operations. Studies to assess that impact and to reevaluate the economic and structural service life will be required. A comprehensive review of this system and spares supportability should begin around 2000 to allow for corrective action if required (Figure 5-14).

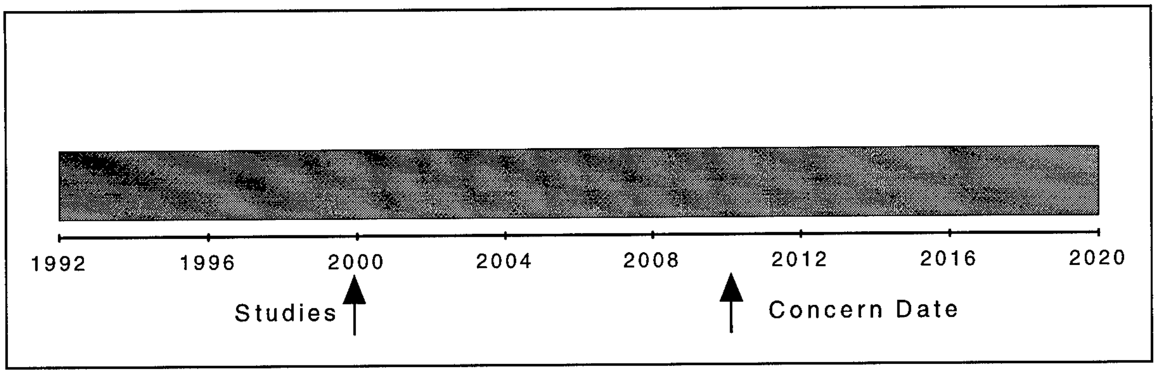


Figure 5-14. KC-10 Service Life

CIVIL RESERVE AIR FLEET (CRAF)

The CRAF augments organic airlift capability with civil aircraft, aircrews, and support structure during times of national emergency. The CRAF totaled 595 aircraft for all segments in FY96. As of this writing the long-range International Section represents 26.7 Million Ton Miles/Day (MTM/D) and 135.2 Million Passenger Miles/Day (MPM/D) capability, however, this amount varies annually. Aircraft volunteered to the International and Aeromedical Segments of CRAF are manned at a 4.0 crew ratio per aircraft and must be capable of meeting a minimum utilization rate of 10 hours per day. Aircraft volunteered to the National Segment require only enough crews to sufficiently complete each assigned mission. Prior to August 1990, CRAF had never been activated. In past contingencies, civil carriers volunteered sufficient airlift to preclude the requirement for activation. Because of the amount of airlift required for DESERT SHIELD/STORM, voluntary civil airlift was insufficient and the CRAF was activated. CRAF is composed of the following three segments:

- International Segment:
  - Long-range International Section supports global operations with aircraft capable of flying a productive payload a distance of 3,500 nautical miles.
  - Short-range International Section supports short haul operations from the CONUS to the Caribbean, Central America, Greenland, and Iceland.
- Aeromedical Segment:
  - Supports worldwide aeromedical evacuation.
- National Segment:
  - Domestic Services Section supports CONUS passenger, cargo, and aircrew movement requirements.
  - Alaskan Section supports unique requirements of the Alaska theater.

CRAF Capability

CRAF's three segments may be activated incrementally within its three stages to meet varying levels of defense emergencies. All three stages may be activated by USCINCTRANS with SECDEF approval. Stage I is composed of long-range assets only. After Stage I is activated, carriers are given a minimum of 24 hours after mission assignment to respond to the initial mission onload site. If Stage I assets are not sufficient to meet airlift requirements, Stage II can be activated. Stage II, which is composed of aircraft from all three CRAF segments, is normally associated with partial mobilization. Stage II has a 24-hour response time after mission assignment with the exception of its aeromedical segment which has a 48-hour response time. Finally, the full CRAF capability is represented in Stage III. Stage III has a response time of 48 hours. CRAF capability is indicated in Table 5-2 below.

Table 5-2
CRAF CAPABILITY (on contract as 1 Oct 96)

	STAGES		
LONG-RANGE CAPABILITY	I	II	III
Million Passenger Miles/Day	21.3	60.8	135.2
Million Ton Miles/Day (Cargo)	5.2	12.8	26.7

Although the CRAF Stage III on contract for 1 Oct 96 is 26.7 MTM/D, AMC relies on the amount of CRAF that closes the gap between organic airlift and 49.7 MTM/D. This is done because CRAF capacity can fluctuate significantly each year and the traditional CRAF contribution has never equaled 100% of the CRAF contract. For example, in FY96, one CRAF carrier reduced its commitment from 45 WBEs to 19.8, only to increase back to 49 WBEs for FY97. Also, 12 carriers have committed their entire fleets to the CRAF, and it may not be realistic to activate all the capacity of these carriers if there are other high priority US emergency transportation requirements which must be filled by Department Of Transportation allocation. The 26.7 MTM/D CRAF capacity is added insurance that AMC will be able to obtain 20.5 MTM/D during a national emergency.

CRAF forms the vast majority of our passenger airlift capability, as proven during DESERT SHIELD/STORM, when 62 percent of the passengers in the deployment phase and 84 percent in the redeployment phase were moved by commercial air. CRAF cargo aircraft are capable of moving all bulk and some oversized cargo, but because of structural limitations, they cannot carry outsize cargo. During DESERT SHIELD/STORM, CRAF moved 27 percent of the cargo deployed to the Gulf by airlift. For the redeployment, CRAF moved 40 percent of the cargo. For FY97, all passenger, cargo, and anticipated aeromedical evacuation lift requirements will be met. Future efforts must focus on maintaining the necessary commitments through adequate incentives.

CRAF Modification

There is concern that CRAF carriers will be unable to support the AMC mission if they are not provided the P(Y)-code capability for their GPS. This is a more robust, encrypted system which provides improved anti-jam performance and is less susceptible to spoofing. AMC, in concert with AFMC, has initiated a study to determine the feasibility of providing this capability to the CRAF.

AE Role

CRAF aircraft will also provide the primary dedicated strategic AE capability in major regional contingencies. Thirty-four Aeromedical Evacuation Shipsets (AESS) are available to convert CRAF B-767 aircraft for the aeromedical evacuation role. Use of commercial aircraft will reduce reliance on the C-17 and C-141, improve initial patient intertheater distribution efforts, and facilitate return of AE crews and medical equipment to a theater of operations. Planned use of AE CRAF permits focused planning to ensure AE Operations Teams with required equipment and Aeromedical Staging Facilities are positioned to support patient reception. As this will only be a contingency AE aircraft, management actions are continually required to ensure AE crewmembers and support personnel are trained to facilitate integration into military AE operations during major regional contingencies. Under the FY97 CRAF contract, there are 33 B-767 aircraft committed to meet the anticipated new JCS CRAF Stage II requirement of 31 (for global war scenario). The Command is actively working to evaluate new world requirements (current OPLAN, BURU, and BURU with 180K Army additive) to identify the quantity of AE CRAF needed to meet each scenario. Command efforts are underway to increase the level of volunteered aircraft to the required number by enhancing the incentives for volunteering. A study completed in April 96 indicated the AESS could be installed in DC-10 aircraft. A statement of objectives was completed, but no prototype was produced. The plan was shelved pending future requirements for a DC-10 AE aircraft since all FY97 AE lift requirements will be met with the B-767. The B-767 casualty transport system has been evaluated and found to be insufficient. A replacement patient loading system is being developed to improve the ability and efficiency to on/offload patients.

OPERATIONAL SUPPORT AIRLIFT (OSA)

OSA aircraft fly Air Force-directed missions during wartime, contingencies, and peacetime. These missions include priority movement of personnel and cargo to meet specified mission requirements.

Peacetime Mission

OSA's peacetime mission is to provide low-cost flying experience for pilots, enabling them to transition quickly to more complex weapon systems. As a by-product, this system produces transportation for military and government officials on official business travel. Additionally, OSA provides peacetime airlift of individual emergency AE cases and time-sensitive supplies, such as blood and organs.

Wartime Mission

OSA's wartime mission complements mobility forces by providing movement of critical personnel and cargo with time, place, or mission-sensitive requirements. This mission satisfies high priority, small volume airlift requirements that cannot efficiently be moved by other means. Specific wartime missions include transporting:

- Emergency resupply of parts and maintenance recovery teams.
- Intelligence materials such as targeting imagery and film.
- Collocated operating base beddown and reception teams.
- Emergency AE and high priority medical needs.
- Cryptographic and computer materials.
- High priority government, command, and staff personnel.
- Special team travel with immediate transportation needs.

Aircraft

The CONUS OSA fleet is made up of the C-21 and C-26. These weapon systems provide support to a variety of customers. Nearly 50 active duty aircraft are dispersed at 9 installations in units ranging from 4 PAI detachments to squadrons with up to 8 aircraft. The crew ratio varies from 1.0 to 2.0 depending on aircraft type, location, and desired utilization rates. Design Operational Capability (DOC) statements are tailored to suit wartime mission needs, meaning some units are deployable while others are not. The OSA fleet does not generally have BAI, because the fleet is largely maintained by full Contractor Logistics Support (CLS). The C-21 fleet logistical supported entirely by Contractor Operated and Maintained Base Supply (COMBS). This aircraft meets FAA Stage III noise requirements for 2000. The C-21 has at least a 20,000 hour service life and should remain operational until at least the year 2015. Flying hours are budgeted to minimum levels for aircrew training with the using command paying for any additional hours. Qualification training is conducted in some model design series (MDS) while in others it is contractor provided. Table 5-3 details AF OSA force structure as planned for FY96.

Table 5-3
CONUS OSA FORCE STRUCTURE

MDS	Component	PAI	Log Support	Crew Ratio
C-21A	Active/ANG	51/4	CLS	1.1-2.0
C-26A/B	ANG	31	ANG	1.5

Although a considerable portion of OSA capability is maintained in the Air National Guard, it is not generally available for common user airlift. For this reason, the AMMP only addresses the AMC active duty assets when assessing the OSA mission.

Logistics

Contractors perform routine and depot level maintenance for the entire C-21 fleet and maintain a parts supply function under CLS agreements. The aircraft's wartime mission is supported by the contractors who are tasked to provide total parts and personnel support package. Mobility is an integral part of these programs, and the contractor is tasked to meet the unit's DOC statement tasking.

Modifications

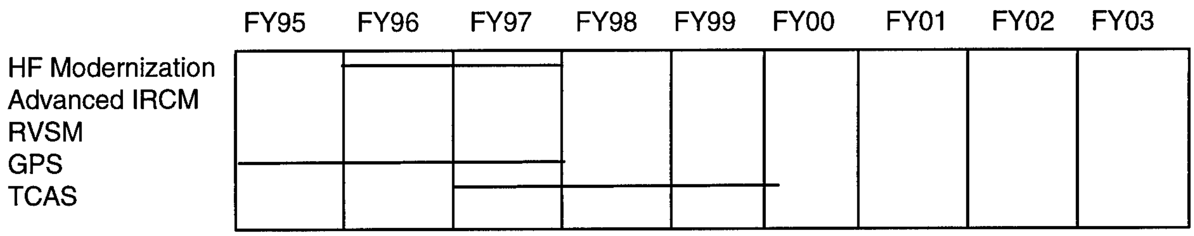


Figure 5-15. OSA Modifications

(Timelines not shown for unfunded programs)

Modification Summaries

The following paragraphs give a brief synopsis of the major modifications currently programmed for the aircraft:

Intraformation Position/Traffic Collision Alert and Avoidance System (IFP/TCAS): Provides a passive, low probability of detection/intercept, 360 degree intraformation positioning system with night and adverse weather capability.

Global Positioning System (GPS): Provides worldwide three-dimensional positioning/navigation for military aircraft. Will be future primary navigation aid. Allows mobility operations in a no-navaid environment.

Operation DESERT SHIELD/STORM experience indicates there is a valid need for OSA. Eight C-21s deployed to Saudi Arabia to provide direct support to the USCENTCOM staff. Additionally, C-12s deployed within the CONUS to provide support to key facilities. Other OSA aircraft supported the contingency in various ways without being deployed, proving OSA's ability to provide in-place "wartime" support. DESERT STORM lessons learned highlight a deficiency in crew ratio for deployed aircraft.

AEROMEDICAL EVACUATION (AE)

The nation has an overriding moral responsibility to guarantee its armed forces the quickest, most humane casualty evacuation system possible. This guarantee enhances the morale of the troops in the field and the American public. This enhanced morale translates into increased staying power on the battlefield and the home front.

Ninety-three percent of the current AE force structure is incorporated in ARC units. Four active duty AE squadrons provide both a baseline support capability for contingency transition and day-to-day urgent, priority, and routine aeromedical evacuation operations within Europe, the Pacific, CONUS and near off-shore locations. The ARC supports these active duty units by providing AE crew members for 85-90 percent of the intertheater AE mission, 100 percent of the off-shore AE missions (e.g. Alaska and Panama), and approximately 25 percent of CONUS missions.

AF reorganization efforts moved overseas active duty aeromedical evacuation squadrons under their respective theaters and intratheater AE forces to HQ ACC, but AMC remains responsible for providing intertheater and CONUS AE and will serve as the AF advocate for aeromedical evacuation. As such, AMC will continue to be a central focus for issues affecting the worldwide AE system, ensuring that separately operated theater AE systems can interface globally, standardizing doctrine, publications, force equipping, training, and organizing of the worldwide system with input from each theater and ACC for intratheater-specific elements. Management and planning activities will require continual coordination and cooperation between the six MAJCOMs and the ARC which provide aeromedical forces.

There are currently 18 PAI C-9A aircraft in the AF inventory, 11 of which are assigned to AMC. AMC-owned aircraft are manned at a 3.5 crew ratio (2.0 active plus 1.5 Reserve Associate). The ratio for FY97 will adjust from 3.5 to 3.3 (1.55 active plus 1.73 Reserve Associate). For FY98, the ratio will reduce from 3.3 to 2.9 (1.0 active plus 1.9 Reserve Associate). These aircraft are the only dedicated AE aircraft and supported by CLS at the depot level. Air Force support consists of organizational and limited intermediate-level maintenance, restricted to a "remove and replace" concept. Supply support is provided by COMBS.

C-141 aircraft perform weekly strategic AE missions supporting USEUCOM, USPACOM, USCENTCOM, and USSOUTHCOM. While C-130s are not normally scheduled for peacetime AE missions, they occasionally provide backup support to C-9As. However, C-130's would be the primary means for moving casualties out of the combat zone during contingency operations. The C-17 will provide follow-on strategic support as the C-141 fleet is retired and can support intratheater AE in accordance with the theater coordinated concept of operations. C-5, KC-10, and KC-135 aircraft are potential sources of emergency AE lift if the need arises. Other aircraft that can support the AE mission include: C-21 and C-12, which may be used for unscheduled, immediate AE requirements. A staff effort is under way to determine aircraft availability, conceptual feasibility, aircraft/medical compatibility, and cost.

In addition to this organic capability, the DoD relies on the capability of the aeromedical segment of the CRAF, composed of commercial passenger Boeing-767s, which can be configured with specially designed aeromedical ship sets to carry up to 111 litter patients. The B-767 offers effective, modern AE capability. It will also be used to reposition medical crews, equipment, and supplies to the theater, but more importantly, it frees strategic aircraft to perform strictly in the mobility role.

Modifications

AE presents the dual challenge of keeping up with technology in both aviation and medicine. The command will remain dedicated to keeping its aircraft and aeromedical capabilities up to date. The fleet received an interior refurbishment to ensure it remains capable of meeting future passenger and patient requirements.

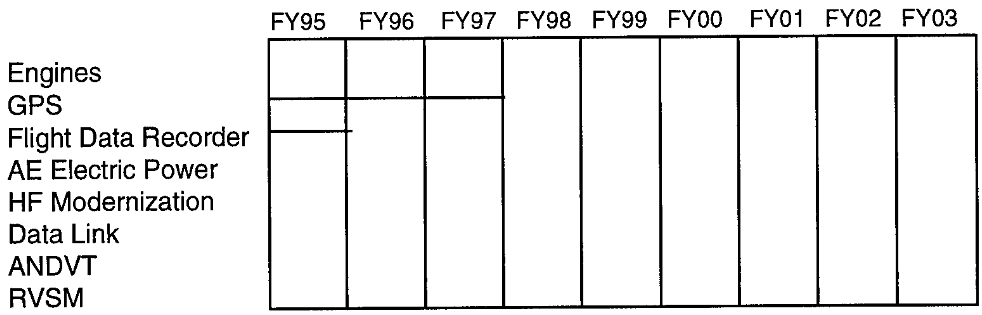


Figure 5-16. C-9A Modifications
(Timelines not shown for unfunded programs)

Modification Summaries

The following paragraphs give a brief synopsis of the major modifications currently programmed for the aircraft:

Intraformation Position/Traffic Collision Alert and Avoidance System (IFP/TCAS): Provides a passive, low probability of detection/intercept, 360 degree intraformation positioning system with night and adverse weather capability.

Global Positioning System (GPS): Provides worldwide three-dimensional positioning/navigation for military aircraft. Will be future primary navigation aid. Allows mobility operations in a no-navaid environment.

Flight Data Recorder Replacement: Replaces the analog electromechanical flight data recorder with a new digital system.

Replacement of C-9A with a commercial derivative aeromedical aircraft.

Medical Equipment for all AE Aircraft:

Advanced Hybrid Oxygen System (AHOS): Generates gaseous oxygen via molecular filter, then liquefies and stores the oxygen in liquid oxygen containers. Exceeds requirements for hospital grade oxygen by producing 99.7% pure oxygen. May fulfill aircrew and passenger oxygen requirements also.

Aeromedical Evacuation Portable Ventilator: Portable system will provide flight-certified ventilator support for routine and emergency care of adult and infant patients with pulmonary complications while being transported to medical centers.

Aeromedical Electrical Power (AEP): Aircraft power must be changed from 400Hz to 60Hz on C-130, C-141, KC-10, and KC-135 aircraft to meet requirements for most medical devices. Commercial, carry on frequency converters will likely satisfy this requirement.

Future

The C-9A entered service in 1968. Considering service life based on flying hours, these aircraft could theoretically fly beyond 2020 (Figure 5-17). However, it may not be economically prudent to do so. As the fleet continues to age, the issue of supportability and maintainability will become more and more important. The aircraft manufacturer, McDonnell Douglas, has acknowledged this fact by instituting an aging aircraft program for the DC-9. The Oklahoma City Air Logistics Center monitors this aging aircraft program to determine which are applicable to AMC operations. The C-9 relies heavily on a commercial logistics support base. As first tier civil carriers retire their aging C-9 fleets, it may become prohibitively expensive for AMC to maintain its small, unique fleet. In addition, FAA noise compliance regulations are implemented at the turn of the century. For this reason, Aeronautical Systems Center performed an economic analysis in 1992 to compare the future life cycle cost of maintaining the C-9 fleet, upgrading it, or replacing the C-9 with current technology aircraft. Results indicate approximately equal costs for re-engineering or installing hush kits on C-9s. This is a lower cost option than buying new aircraft. Therefore, we have initiated a working group to develop the best course of action for meeting mission, as well as FAA/ICAO noise requirements.

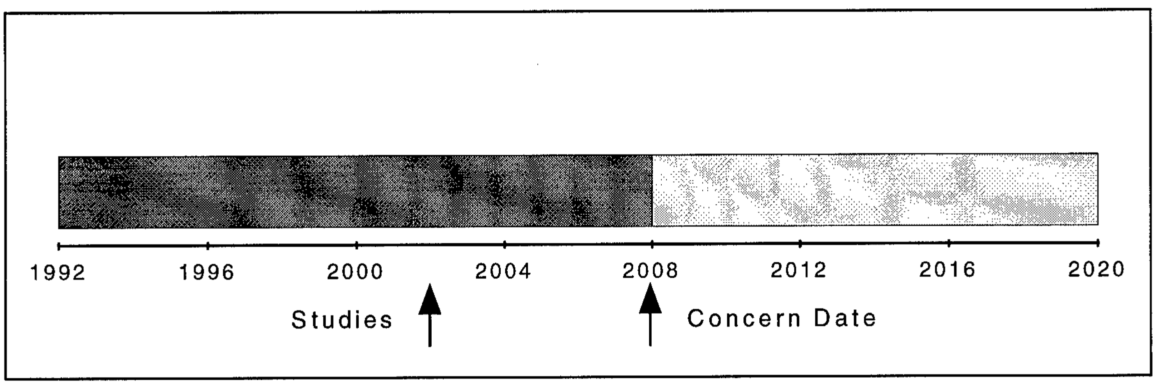


Figure 5-17. C-9 Service Life

SPECIAL AIR MISSION (SAM)

SAM aircraft provide safe, comfortable, and reliable air transportation for the President, Vice President, Cabinet, members of Congress, and other high-ranking American and foreign dignitaries. Flying worldwide, SAM aircraft represent the highest level of DV travel and must meet stringent schedule and protocol requirements under intense media scrutiny. The 89th Airlift Wing provides this service with 20 aircraft dedicated to the SAM and 19 helicopters supporting federal emergency requirements.

Mission

SAM is especially essential in wartime when diplomacy and negotiation become critical elements of national security strategy. World events may, at any given time, require the nation's leaders to be dispatched simultaneously on diplomatic missions around the world. Physical and communications security are integral to the mission. SAM passengers conduct highly sensitive business while en route, and their objectives must not be compromised. Mission protocol dictates the use of civilian airports almost exclusively. Because SAM aircraft are the official transportation for leaders of the United States Government, they are a highly visible symbol of the United States of America. National pride dictates these aircraft portray the highest American standards. SAM mission areas may be divided into the following categories:

- Presidential Mission: A mission directed by the White House to transport the President of the United States or members of the First Family.

- Special Air Mission: A mission operated by the 89th Airlift Wing by direction of the USAF Vice Chief of Staff (CVAM). Primary passengers are the Vice President, Cabinet secretaries, and senior officials of the Executive Branch, as well as Congressional delegations and foreign senior statesmen.

- Helicopter Special Mission: The mission of the 1st Helicopter Squadron is to provide emergency helicopter transportation for officials of OSD, JCS, the Services and civil departments of the federal government to relocation sites during a national crisis.

Current Capabilities

The SAM fleet is a diverse mix of long, medium, and short-range aircraft, suitable for both large and small passenger loads. Logistics support for SAM aircraft is a combination of military and contractor support. Aircraft maintenance is handled by an Aircraft Generation Squadron and a Maintenance Squadron, as well as CLS for the C-137, C-20 and C-9. Supply support is a coordinated effort between Base Supply for the H-1, and Contractor Operated and Maintained Base Supply (COMBS) for the VC-25, C-137, and C-20. Current force structure is listed in the table below:

Table 5-4
SAM FORCE STRUCTURE

	PAI	Crew Ratio	Normal Pax Load	Max Load
H-1N	15	1.5	6	8
C-9C	3	2.0	42	42
C-20B	5	2.0	12	12
C-20C	3	2.0	12	12
C-20H	2	2.0	12	12
VC-25A	2	2.0	74	74
C-137B	1	1.5	55	60
C-137C	4	1.5	55	60

An additional wartime capability maintained by the 1st Helicopter Squadron (1 HS) is the ability to provide immediate transportation for government officials within the eastern US. While training for contingencies, the 1 HS generates a significant number of missions in the Washington DC area. A collateral benefit of this training is the transportation of government officials on time-sensitive schedules throughout the eastern seaboard of the US.

Depot

The depot maintenance on this fleet is performed by contractors. The cycle is negotiated in the contract and complies with the FAA approved maintenance program. The variety of airplanes cause some difference in the depot cycles, but the average is about 36 months for depot maintenance including aging aircraft maintenance.

Modifications

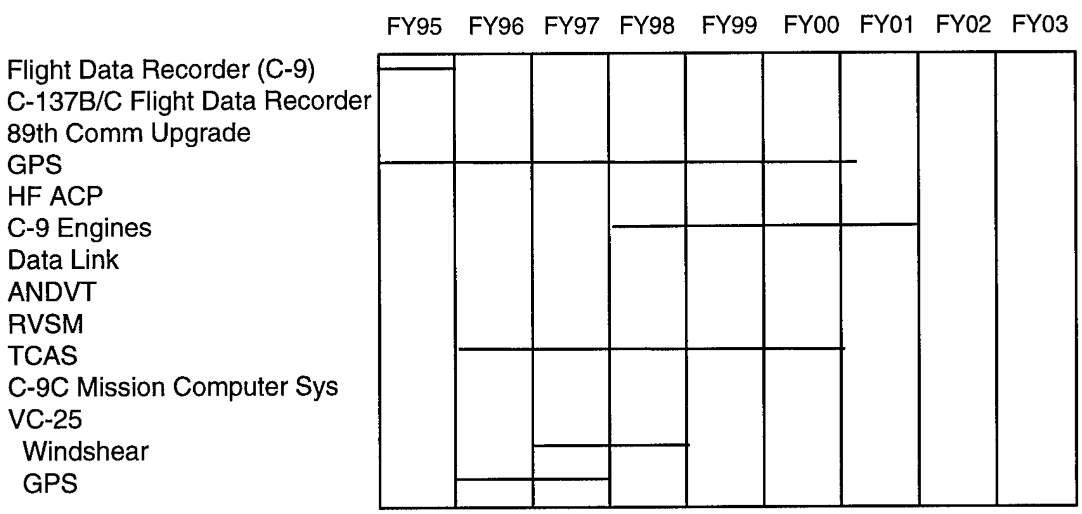


Figure 5-18. SAM Aircraft Modifications
(Timelines not shown for unfunded programs)

Modification Summaries

The following paragraphs give a brief synopsis of the major modifications currently programmed for the aircraft:

Communications Upgrade: Provides the necessary secure high quality communications for senior government officials, regardless of aircraft location. Includes INMARSAT (C-137/C-9) and FLITEFONES (C-137/C-9/C-20).

Re-engine/Hushkit (C-9C): Place hush kits on current C-9C engines in order for aircraft to meet FAA Stage III noise restrictions beginning in the year 2000.

Intraformation Position/Traffic Collision Alert and Avoidance System (IFP/TCAS): Provides a passive, low probability of detection/intercept, 360 degree intraformation positioning system with night and adverse weather capability.

Global Positioning System (GPS) (VC-25/C-9C/C-20/C137): Provides worldwide three-dimensional positioning/navigation for military aircraft. Will be future primary navigation aid. Allows mobility operations in a no-navaid environment.

Future

SAM's role is not expected to diminish over the next 20 years and may in fact increase as American security interests evolve to a focus on regional conflicts. The requirements for special airlift from qualified customers has always expanded to meet the organization's capacity due to the prestige, flexibility, and security it offers. With the delivery of the VC-25, Presidential airlift has improved significantly. However, other aircraft still need considerable modernization, such as the 1960's era C-137s and UH-1s.

Service Life

The SAM fleet is a prime example of low utilization rates leading to extremely long theoretical structural service lives. The Presidential VC-25 has a structural service life of 60,000 hours and is not expected to reach that milestone until 2141. The C-9C aircraft, likewise, will take until 2094 to reach its service life of 75,000 hours. We must study additional factors to determine a realistic economic service life for these aircraft.

VC-25 aircraft are extensively modified B-747-200s with the basic airframe technology of the 1960s. The aircraft incorporates state-of-the-art avionics and communications equipment with Stage III compliant engines. Boeing is currently delivering B-747s throughout the world, so the logistics support base appears secure for the foreseeable future. With the continuing march of technology and the prestige attached to the US Presidential airlift fleet, this plan recommends a system review date of 2010. At this point, the aircraft will have been in service 20 years, and commercial operators will have retired their B-747-200s counterparts from front-line service.

C-137 aircraft are modified B-707 aircraft, with 1950's airframe technology that do not comply with FAA Stage III restrictions. Additionally, the FAA mandated aging aircraft inspections requirements negatively affect the maintainability and availability of the C-137 fleet. These aircraft are already expensive to fly, needing fuel stops and ground support equipment, and the resultant additional security and time required. A Statement of Need and Operational Requirements Document has been validated for replacing the C-137 with a VC-X aircraft. Therefore the 89th Airlift Wing will receive four new Boeing 757-2000 aircraft in 1998 to be designated C-32As.

C-20B/C aircraft are modified Gulfstream IIIs, employing state-of-the-art technology, and will reach their 20,000-hour service life in about 2014. Gulfstream's current production of G-IVs appears to secure the logistic support base for C-20s for the foreseeable future. Although the

C-20B/C is not Stage III compliant, the C-20H (G-IV) does meet future FAA noise requirements. The Command should study the C-20 aircraft and mission in 2005.

The C-9 fleet is flown at less than half the C-9 aeromedical evacuation fleet utilization rate. It faces the same FAA Stage III noise compliance challenges and should receive the same engine modifications as the AE fleet. Modifications currently programmed for the C-9 are the same as for the C-9 listed in the previous AE section.

The UH-1N aircraft are modified helicopter gunships using 1960's technology. They surpassed their useful service life of 20 years by 5 years and have not had a structural upgrade/overhaul. While helicopters are not yet restricted by noise abatement regulations, the UH-1N has the second largest noise footprint of all helicopters flown in the US. The economic service life will decrease dramatically if the Navy's UH-1N supply tail closes as projected in 2003. A validated mission need statement points out that the UH-1N does not meet mission needs and should be upgraded or replaced.

LOGISTICS INITIATIVES

AMC supports the AF Logistics Strategic Plan goals of:

***Lean*:** We must fulfill our mission with the minimum use of resources.
***Mean*:** We must be responsive to operational requirements and measure success accordingly.
***Green*:** We must protect, preserve, and restore our environment.

These three goals guide air mobility logistics initiatives.

LOGISTICS VISION

Future contingencies and humanitarian operations will require Air Mobility Command to operate more frequently at remote airfields with little or no infrastructure. We will be using many of the same aircraft and much of the same support equipment well into the future. To meet that challenge, we must increase the reliability and maintainability of our aging systems and improve the processes supporting them. Otherwise, we will increasingly find our weapon systems broken and awaiting parts or technicians in remote locations.

While we cannot choose our equipment, we must pursue modifications and upgrades to significantly improve reliability and maintainability. Examples of capabilities that increase reliability are built-in redundancy and self-diagnostics. A system might degrade, but a pending failure should be identified in time to repair or replace it without impacting mission success. Capabilities that increase maintainability include common test equipment and architecture among weapon systems (i.e., the same HF/UHF radios on multiple weapon systems), which also increase interoperability and decrease costs (acquisition, training, maintenance, etc.) In addition, systems must be designed for quick and simple repair through component replacement on the flight line.

We must incorporate these concepts into our weapon systems, and make sure they are designed into any new systems we acquire. Our quest must be to transition from mostly unscheduled repairs to a logistics architecture built on a cornerstone of scheduled maintenance.

We must also creatively reengineer and continuously improve our support processes to ensure necessary support is available when needed. Our training process must not keep technicians away from their jobs. Multi-media and just-in-time training can reduce the amount of time away from the job, provide training at the time and place best for each individual, and better tailor training for individual and mission needs. The data and collection process must be reengineered to facilitate (simplify) timely collection, eliminate inaccuracies, and directly support our business and decision-making processes. Systems supporting data collection and decision making must share data and be accessible from a single device in the user's normal work environment. Our deployment process must allow us to deploy quickly but with fewer people and less support equipment. Finally, repair processes must be simplified to virtually eliminate human error. In short, we must continually look for new ways to improve all support processes.

The AMC Logistics Team: Reaching to be there before you need us. We will need all capabilities described here, and more, to make this vision a reality. We must continuously strive to improve our support processes and increase the reliability and maintainability of our systems. To truly meet the challenges of the future, we must eliminate logistics problems that degrade mission accomplishment.

LOGISTICS AUTOMATION

To better manage information and communications, we are adapting existing technology. We are converting technical data to CD-ROM and adding CD-ROM and radio frequency (RF) capability to laptop computers for flight line mechanics. These improvements allow the mechanic to carry all technical data in a briefcase (over 600 pounds if printed), access and update the maintenance and supply information systems, determine local parts availability, order parts, and receive parts, all without leaving the aircraft. Such process improvements reduce repair times by hours and even days. We will strive to identify and implement additional process improvements to enable us to meet mission requirements of 2025.

TRANSPORTATION

Large numbers of a few types of equipment versus the current small numbers of many types of equipment will enhance our global mobility capability in the future. We are reducing variations in make, model, design and series of vehicles through equipment standardization. Off-the-shelf purchases add to simplification and ease in obtaining necessary equipment and parts. This standardization will give technicians time to develop new procedures for repair through simplified parts requisition and acquisition and reduced training time for new personnel.

A paramount concern in procuring new MHE (4K and 6K forklifts for warehouse use; 10K through 50K forklifts; small to large K-loaders for cargo loading operations). A tighter partnership between operators and maintainers in designing this new equipment will guarantee mission success in any theater at anytime.

Parts acquisition will see welcome changes. Touch screen parts research and ordering technology will replace frustration in getting the correct part to complete a job. Warehouses will be free of unnecessary parts, thanks to a standardized fleet. Vehicle mobility readiness spares packages will always be deployment ready, containing exactly what is needed to repair already highly reliable vehicles.

Vehicle deployment success is assured with the inclusion of a mobility designed mobile maintenance truck complete with generator, air compressor, tools, parts and computerized technical data. For protracted mobility assignments, vehicle maintenance shops will be deployed. These multi-purpose, jointly developed and operated shops will be capable of repairing all deployed vehicles and aircraft aerospace ground equipment. Vehicle history micro-mass storage devices maintained on each vehicle will ensure valuable maintenance and operational data are continually updated and retrievable even on long deployments. This micro device will also contain deployability data including center of balance, special loading instructions, shoring, and tie-down information.

User friendly, automated documentation is replacing several systems: Automated Fleet Information System, MAJCOM Automated Fleet Information System, and On Line, Vehicle Information Management System. Vehicle performance and mechanical updates will come from individual vehicle micro-mass storage devices. Extracted data will aid technicians in analyzing and repairing mechanical failure as the mean-time-between-failure rate is pushed up towards 1,000 hours per vehicle. Data will also be used by engineers, mechanics and operators to develop next generation equipment. Vehicle accounting and authorization, at base and MAJCOM levels, will be fully integrated and offer managers on-line, real-time data. This automation ensures rapid, same day action on vehicle requests and guarantees an evenly distributed and utilized fleet.

Enhanced computerization and maintenance will help us to better serve our customers. We are establishing a one stop customer service center at each base. Customers will drop off and pick up vehicles and discuss vehicle problems at one location. With rapid technological maintainability advances being made, most customers may wait only a few minutes while repairs are made.

Vehicle communications systems will maximize the benefits of the explosion of technology. Cellular communication will replace the bulky "brick" system in wide use today. Future vehicle communication systems will rival aircraft systems for size, weight, reliability, operational distance, clarity, and security. On board dispatch computer links will reduce unnecessary trips, reduce customer "wait" frustration, and save time and fuel.

SUPPLY

"AMC is a major player in the process to introduce and implement the automated Air Force Equipment Management System (AFEMS). AFEMS is the concept used at all bases, major commands, HQ Materiel Command, and HQ USAF to manage all nonexpendable equipment and some expendable items such as hand tools, individual issue equipment, and war reserve materiel. AFEMS provides for the modernization of today's 10 equipment management data systems and cradle to grave management of support equipment. They also provide for the weapons systems capability assessments, Air Force requirements computations outlays, and tracking of all support and mobility equipment. A stress test of a potential replacement processor system resulted in a decision to contract for a larger processor. Extended cost is $6 million with funds provided from 3080 funds. Full implementation is set for FY96. An AFEMS functional training guide was distributed to all AMC bases.

Regionalized supply concepts will combine centralized command and control with Just-In-Time inventory concepts to reduce inventories and improve stock availability. Expert systems will distribute available stock to maximize aircraft availability throughout the Air Force. This shift should provide the flexibility needed to optimize AMC's operational capabilities. This concept of "Lean Logistics" is also discussed in Section 1 under 'Logistics (Direct Mission Support).'

AMC will implement a command supply support structure that features consolidated stock control at regional supply centers and a form of Just-In-Time inventory management. Most stock would be stored at the centers, which would be located at or near a transportation hub. Requisitions would be processed by a flightline or unit supply function directly to the regional center, which would place the item in the transportation network. Delivery time would normally be one day. Depot level reparables would be managed by the command whose responsibilities would include arranging for repair (including contract repair) and allocating serviceable items to meet command requirements. Advantages include inventory reduction, personnel reduction, improved support, and simpler data system requirements.

HQ AMC/LGS is the lead agency for developing a proposal for improved deployed/transient aircraft supply support. The draft concept will allow supply transactions for off-station aircraft to be processed to the home station in lieu of the host base transient alert account. Accounting information would initially be contained in a microchip affixed to the aircraft. Maintenance technicians would use a hand held reader to capture the data and download to the supply data system. The issue transaction would trigger an inventory adjustment at the host base but would pass accounting information to the home station. This concept would eliminate the need for "up front" funding of deployments and would properly charge the consumer versus the supplier for transient aircraft support.

There are ongoing initiatives to reduce on-base pipeline time for reparable items being returned to repair depots. Currently, the flightline maintenance technician turns reparable items in to the back shop for testing. The back shop forwards true reparables to Base Supply, who updates the accountable records and takes the item to the Traffic Management Office (TMO) for shipment. An initiative, called Express Package Processing (EP2) establishes EP2 workstations at strategic airlift wings within the supply dedicated support elements eliminating TMO shipment processing. This initiative supports Two-Level Maintenance and lean logistics programs. Streamlined evacuation processes would reduce on-base repair cycle time for reparables, which would improve reparable item support and reduce inventory.

Acquisition of hydrant servicers is required to connect the fueling system to the aircraft. Use of commercial type servicing vehicles enable filtration of fuel as close to the receiver aircraft as possible. This concept will enhance fuel quality and provide maximum protection to the aircraft and crew. Additionally, hydrant servicers are more economical than pantographs and can be purchased with optional defuel and highlift capability.

SPARES

The basic premise of this plan is to demonstrate the direction in which AMC intends to go, then base management decisions on that plan. As AMC's involvement and visibility in routine and contingency operations increases, the importance of funding the spares requirements grows. It is not possible to continually increase the pace of operations, increasing parts usage, while funding at a percentage of the established requirement. To ensure AMC's capability to support operations across the spectrum, funding requests will include the requirements to support normal peacetime operations, contingency operations, and wartime operations. If these requirements are under-funded, the command may not be able to meet all of the requested support.

Efforts are under way to improve field-level repair authorizations through innovative programs such as Fast Fix. This program focuses on ideas and suggestions generated and presented by the people who work closest to the problem, the mechanics. An integral part of this process is the active participation of senior-level maintenance managers from the MAJCOM and the Air Logistics Center (ALC) engineers responsible for a particular weapon system who listen, discuss, and ultimately approve/adopt the ideas and suggestions on the spot during a conference. This program greatly enhances maintenance efficiency, decreases cost, promotes quality management, and improves customer satisfaction. Ultimate results are less time and money spent repairing items using available capabilities.

Supply support efforts for critical aircraft spares will go well beyond the top NMCS drivers. Current projected asset shortages will be identified for each weapon system. These items adversely affecting the weapon system will be aggressively managed through the Air Force Critical Item Program. The Supply staff will continue to coordinate with ALC item managers to establish long-range plans on items which do not make the top problem item list but still affect the performance of the weapon systems. This close, constant teamwork will enhance the spares situation as the MAJCOM and the ALC work to establish a system of priorities to support the overall mission.

To achieve an economy of scale and use excess capacity of some facilities, repair of LRUs will be consolidated at regional repair facilities. The consolidation of several units at one location will realize a savings in manpower and facility operations costs. The reparable items will be shipped to the regional repair facility, repaired, and then stored for issue at a collocated regional supply. In addition to the manpower and facility savings, this process will result in improved weapon system support through MAJCOM control of repaired item distribution.

WAR RESERVE MATERIAL (WRM)

There is presently no funding (PEC 28031) to inspect, purchase, store, transport, or maintain WRM.

WRM is the material required, in addition to mobility equipment and primary operating stocks, to support wartime activities reflected in the USAF War and Mobilization Plan until the industrial base can meet wartime demands. These requirements are identified by determining the differences between authorizations for peacetime operating stocks and mobility equipment and the actual OPLAN taskings.

WRM is divided into two basic categories; equipment and consumables.

WRM equipment, particularly material handling equipment (MHE) and maintenance equipment, is used to provide immediate support during contingencies and other specified periods of increased operational requirements. Present on-hand WRM assets includes 420 pieces of support equipment, MHE, and general purpose vehicles. Based on 1995 OPLAN requirements, this amount will more than triple to 1,132 pieces. Pallets and nets are also required for WRM use in addition to normal operational requirements.

The WRM war consumables distribution objective (WCDO) is composed of expendable items (i.e., petroleum, lubricants, munitions and rations) directly related to supporting a weapon system or combat support activity. Consumable requirements are determined by extracting data directly from the Wartime Aircraft Activity Report, and factoring it with expenditure per sortie data used to compute each type aircraft's wartime needs. This also includes Civil Reserve Air Fleet (CRAF) requirements.

WRM requires funds for equipment procurement; maintenance or storage facilities to include contracted facilities, TDY for WRM management; inspection, inventory, and rotation of shelf life items; transportation costs to preposition or redistribute WRM, packing and crating supplies; and storage aids used for WRM preservation and storage. Also, funding is required for equipment and vehicle maintenance supplies, spare parts, and POL products used to inspect and repair WRM assets. It is also needed to fund WRM shortages when not for initial buy, or when assets cannot be charged to a using organization, etc.

PEC 28031 provides funding for WRM equipment, spares, rations, operation, storage, maintenance, parts, corrosion control, reconstitution, transportation, inspections, and manpower. This command has not previously requested funding for WRM. The maintenance of WRM has come from base level O & M funds. As a result, funding for WRM maintenance at base level detracts from other program allowances.

AMC requires a minimum of $1.3 million annually to support and maintain present WRM requirements. This does not include the purchase of new equipment to fulfill new war plan requirements, nor maintenance support of these new items.

Impact If Not Supported

Increased aircraft activity requires additional support for loading, unloading, and turning aircraft as quickly as possible. Non-availability of WRM consumables impacts support of airlift and tanker refueling operations, requiring critical airlift missions to carry additional consumables. During the early phases of deployment, increasing lift requirements to relocate resources directly impacts closure of combat forces. Based on 1995 War Plans Requirement Report requirements, if WRM equipment is not available, it will require 17 C-141s and 4 C-5s to transport additional equipment to support contingency operations (this does not include MHE requirements). If funding for WRM is not approved, it will force us to use decreasing O & M funds to support WRM programs. Our present assets will deteriorate, particularly those assets stored at non-USAF locations.

Summary

This initiative is submitted in order to increase support for the WRM program within this command. Lack of adequate budgeting has resulted in units using their O & M funds for necessary WRM expenditures. Without the existence of a long-range WRM program and with the expenditure of minimal amounts each year, neither the condition nor quantities of available WRM will improve. At non-USAF locations this lack of funding translates into the potential for unserviceable AF equipment during a wartime scenario increasing with every passing year that funding is not available. Securing much needed funding of this program will not only correct a long-standing disconnect, but will also eliminate the inappropriate expenditure of O &M monies for WRM assets.

DEPOT MAINTENANCE

Objective 2.2.1
Increase aircraft availability and reliability to meet command goals and requirements. LGF, FY07

Abnormally high numbers of AMC's airplanes are routinely in some form of depot maintenance due to unscheduled maintenance, modifications, and heavy industrial repair of deficiencies (cracks in surfaces, center wing box replacement/repair, and window post replacement). Several initiatives are being undertaken to decrease the portion of the fleet tied up in depot.

Weapon system managers and depot schedulers are working together during Maintenance Requirements Review Boards to eliminate redundant inspections performed at both depot and wing-level, thus improving the flow of airplanes through depot maintenance. At the same time, individual requirements of each inspection will be reviewed to determine the necessity of performing that action at a particular time and place. If the owning unit has the expertise, equipment, and training to perform the inspection, they should do so. If the time interval of the inspection can be changed without sacrificing safety, weapon system managers, in conjunction with the system program director, will lengthen the time frames. These actions will ensure that we are looking at the right item at the right time with the right mix of experienced people and equipment.

Another initiative for C-5 and C-141 aircraft is placing bluesuit maintenance teams at the depots to perform organizational-level maintenance actions such as: preparing the aircraft for entry into depot; performing any required isochronal inspections while the airplane is grounded at depot, and preparing the airplane for return to the owning unit. This initiative will eliminate the grounding of an airplane when it returns to home station for an isochronal inspection. It will also provide a workforce which is experienced in wing and depot level repair in times of contingency. This initiative is not cost effective for the KC-135. The manpower cost required to support three depot facilities will not be offset by the benefits gained.

OPERATIONS INITIATIVES

COCKPIT VISION

Future total force, air mobility forces must take full advantage of advances in cockpit technology to maintain our ability to achieve Global Reach. As we see a decline in the defense budget and a reduction in manpower, mobility forces will need to look at reducing the overall ownership costs of the existing fleet. Reliability, maintainability and deployability (RM&D) will become even more important in this future environment. R&M costs of keeping cockpit mechanical round dial instruments flying are constantly rising and will become economically and physically non-supportable within the next decade.

Enhancing mobility and operational capabilities to achieve Global Reach by taking full advantage of advances in cockpit technology to increase aircrew situational awareness and reducing system costs is critical to the national security of the United States. Advances in cockpit design methods and technology offer the opportunity to improve air mobility cockpits. This will significantly increase aircrew effectiveness while reducing overall crew workload and ownership costs.

AMC/CC issued "Air Mobility Command's Vision to Support Mobility Cockpits in the 21st Century." This laid the foundation for AMC to acquire new electronic cockpits, avionics, and mission management systems that will significantly increase the amount of information available to the crew. The future of mobility cockpits will depend on a systems approach to cockpit development where the cockpit is considered a fully integrated system of the aircraft. New techniques are being developed and will improve in the near term that should allow us to properly manage this information and provide it to the crew in an as needed time-frame. In addition, we'll achieve a level of commonalty among the fleet with these new cockpit and avionics systems. The primary goal of this cockpit vision is to reduce training costs, lower crew workload, reduce logistic support and maintenance requirements, improve RM&D, and decrease crew size.

AIRCREW TRAINING

Aircrew training is an absolute prerequisite for establishing and maintaining combat capability for AMC forces. Continuous evaluation of current training procedures and media, and exploitation of future technologies will ensure AMC provides the most cost effective training available. The following premises are fundamental to this process as outlined in the AMC Aircrew Master Training Plan:

- Technological advances will provide AMC with options to accomplish quality training in ground based trainers, freeing up aircraft to fly joint training and direct customer support.

- Training devices should be common to all AMC weapons systems to the maximum extent possible.

- Training devices must be upgraded simultaneously with the supported weapons system.

- Any future training plans and programs must be validated with mobility customers and operators in order to meet future requirements.

Some of the potential areas for future programs include:

- Virtual Reality. Potential benefits include integration of all crew members during a training session, cost savings over current media with visual capabilities, and a shift of appropriate tasks currently accomplished in simulators which will free up simulators for more complex training.

- Mission Rehearsal. Using various forms of ground based trainers, mission planners and aircrews need the capability to build mission data and rehearse missions in support of potential operations. Networking of various devices will offer mission commanders the opportunity to rehearse large-scale, multi-force operations.

COMBAT OPERATIONS

Threats to national interests come from any point on the globe, often unexpected and simultaneous. Because of America's acknowledged leadership role in the international community, air mobility will continue to be called upon to respond to crises the world over. The high global level of conflict, tension, and turmoil continues to spark flash points worldwide. These situations often call for AMC crews to operate under combat situations or increased threat conditions to include small arms and surface to air missiles. In order to protect crews and assets, and to accomplish the mission effectively, special equipment needs must be met. Armor plating, fuel tank fire suppression systems, critical real time information to the cockpit, and equipment to detect, avoid and defeat threats all are ways to give an edge to aircrews. Two missions, special operations and airdrop, by their very nature call for operating in a combat environment.

AMC maintains a capability to augment special operations missions through the insertion, resupply, or extraction of special operations forces augmenting USSOCOM with greater range, speed, or lift capabilities than inherent in their own organic aircraft. The C-141 and C-5 are the primary aircraft but KC-135 crews specially trained in minimum communication, minimum lighting air refueling also participate in the special operations mission. Currently, only the C-141 is receiving precision navigation systems, night vision compatible lighting, infrared detection, and defensive systems for night low level operations. This equipment is being incorporated in the Special Operations Forces Improvements (SOFI) modification for 13 C-141s. C-5s are currently not fully equipped to effectively accomplish and survive the SOF augmentation mission. With the drawdown and pending retirement of the C-141, a replacement must be named.

Strategic brigade airdrop includes airdrop and airland insertion of a mix of equipment and personnel over great distances. Many of the Army forced entry concepts rely heavily on airdrop capabilities. The capability to airdrop troops and equipment is a crucial capability that remains an integral part of Army doctrine. The airdrop aircraft must be capable of flying in environments with navaids, conduct formation air refuelings, and participate in formations of up to 100 aircraft. Airdrop crews and the airborne troop commanders need near real-time situational awareness of the battlefield and assured communications with ground forces in order to react to the dynamic character of combat operations

Improvements to Combat Operations Capabilities

Night Vision Goggles (NVG)

Night vision goggle (NVG) use is essential to complement the full spectrum of air mobility nighttime missions. Air Force Doctrine Document 30 (AFDD30) (Airlift operations) states, "US military forces emphasize night operations. Airlift must be capable of operating during periods of darkness and reduced visibility to deliver their load during either an airland delivery or an aerial delivery." The Army plans to conduct 85 percent of its future operations at night.

AMC currently possesses a limited number of ten-year-old technology NVGs, and there is insufficient quality and quantity of NVGs and NVG-compatible lighting to deploy forces. The best night vision possible without NVGs is 20/200 while older version NVGs improve acuity to 20/40 or less. New technology systems have resolution near 20/20 which dramatically improve DZ/LZ identification, and safer night formation flying. Funding for the new night vision systems should begin FY99.

Airlift Defensive Systems

The Airlift Defensive Systems (ADS) program began in 1989 to protect airlift aircraft from the increasing threats. ADS automatically detects the launch of infrared-guided, shoulder-launched, surface-to-air missiles, alerts the crew, and automatically or manually dispenses flares to decoy missiles away from the aircraft. The system, consisting of an AN/AAR-47 Missile Warning System and an AN/ALE-40 or AN/ALE-47 Countermeasures Dispenser System, is scheduled for installation on a select number of active duty and ARC C-5, C-17, and C-141 aircraft. Installation should be complete in on C-141 and C-5 aircraft in FY99; the C-17 portion of the program should finish in FY04.

Mobility Aircraft Small Arms Protection

> Objective 1.2.2
> *Maximize successful mission performance in degraded operating environments.* DOT, FY06

AMC involvement in PROVIDE PROMISE highlighted a requirement for small arms protection for mobility aircraft. The Air Staff approved an AMC expansion of the ACC Armor Combat Mission Need Statement in Jun 93 to buy 13 C-141 armor kits. On 1 Feb 94, AMC decided to pursue the concept of quick acquisition via Los Alamos National Laboratory.

Los Alamos provided five quick kits of steel armor for C-141 deployment to support PROVIDE PROMISE. These first five kits were delivered 19 May 94. These kits were designed to defeat a 7.62 X 54R ball round with a mild steel penetrator. Three more kits of ceramic/steel were delivered 19 Aug 94. The last five kits were a ceramic composite and stopped a 7.62 X 54R armor piercing round. These kits were called the "optimum solution" because they were lighter. An additional 13 kits of the "optimum solution" kits are being purchased.

Real Time Information in the Cockpit (RTIC)

The RTIC is a situational awareness capability to receive, process, and display real-time and near real-time information overlaid on photos and charts. The technology includes flight following, two and three-dimensional threat displays, terrain perspective views, and mission rehearsal. The system loads and stores multi-spectral and high-resolution imagery received to update the data base. Near real-time ELINT is received and its symbology overlaid onto stored images and charts, indicating parameters and lethality ranges in two and three dimensional representations. Flight following includes GPS input/update. Off-line mission rehearsal fly-throughs can be generated as can interactive, operator-controlled fly-overs. A complete system requires the RTIC processor terminal, multi-band multi-channel radio frequency receiver, GPS receiver, crypto, keyboard, monitors, and GPS and SATCOM antennas. Additional monitors can be added to provide information to the troop compartment if required.

CSAF approved AMC C-MNS 002-93 to procure 15 prototype demonstration RTIC suites to help us further define requirements and operational concepts. Ultimate plans are to develop requirements for a smaller version and procure through normal channels. The current RTIC system (MSTS) is large, difficult to set up, and cannot receive feeds from CIS. A follow-on system will soon replace MSTS. It must address these shortfalls if RTIC is to become a reality across the command.

Air Force Mission Support System (AFMSS)

Air Force Mission Support system (AFMSS) is an Air Force program established for automating unit-level (crew/wing staff) mission planning and data preparation that will support all mobility missions. The acquisition of AFMSS and electronic data transfer devices will reduce mission planning time, centralize planning efforts, and consolidate essential information into one product, allowing aircrew emphasis to shift to mission accomplishment. Mission planning activities include flight planning computations, electronic combat asset planning, route selection in a threat environment, air drop planning, combat mission folder preparation, aircraft/weapon system avionics initialization, and down-loading of post-mission maintenance and operational data. AFMSS is considered the "common" Air Force mission planner and will replace most unit/wing non-integrated systems in existence today. Deployment of ground systems started in FY95 with programmed deliveries each FY through 2000. Initial operational capability is FY96/2. Currently, AFMSS lacks a seamless flow of intelligence to include color Multi-Spectral Imagery (MSI) and order of battle updates. We must resolve this problem if AFMSS is to meet its full potential.

A complete ground system has two workstations with the capability of planning many different types of aircraft or "flights" of aircraft in two different AORs, independently of each other, providing route deconfliction, flight plan, maps/charts, multi-spectral images, radar predictions, pilot perspective views, communications data, Takeoff and Landing Data (TOLD) for various conditions, and Special Instructions (SPINS) for each mission. AFMSS is deployable and can be used as a stand alone mission planning system. AFMSS has true multi-media capability; LAN/WAN, modem, CD-ROM, 3.5 floppy and 5.25 floppy disks, 4MM tape, six removable hard drives, and Electro-optical disk drives. AFMSS uses standard Commercial Off-The-Shelf hardware, open systems architecture, and non-proprietary software, as much as possible. It is designed to user Multi-Level Security requirements.

The Portable Mission Planning System (PMPS) is also part of the AFMSS development program. The PMPS will be a one-person portable, single user system providing a subset of the ground AFMSS capabilities. It will consist of a "laptop" style keyboard and screen, a text printer, 1553 interface bus, and a Data Transfer Device (DTD) loader/reader device (if required) and is capable of interfacing with the ground AFMSS directly, by modem or 3.5 floppy disk. The PMPS will also incorporate the Personal Computer Memory Card Inter-national Association (PCMCIA) memory card standard. One PMPS is scheduled to be bought for each AMC owned aircraft with the C-17 supplied with two each. Thirty PMPSs are already available with the rest being distributed for operational use by FY99/4

Objective 1.4.4
Provide global voice/data connectivity to aircraft and worldwide locations. DOU, FY02

Communication to the Cockpit

In response to DoD budget reductions and overlapping responsibilities within communications programs, AMC formed the Assured Communications to the Cockpit Integrated Product Team. This IPT will develop programs to improve communications to and from the cockpit. The challenge is to emphasize AMC cockpit communications requirements while ensuring no duplication of effort. Four specific areas require additional attention:

- Limited communications capabilities between the TACC and aircrews: This problem is being satisfied in the near-term by the Snap-On International Maritime Satellite (INMARSAT) program. The HF Automatic Link Establishment (ALE) program will provide for long-term capabilities.

- Data link, or automatic ATC position reporting: This initiative has not been defined by the FAA, consequently, the program was not funded in the FY96 POM.

- Limited aircrew/ground unit communications connectivity: The Airborne Single Channel Ground and Airborne Radios (SINCGARS) program was designed to provide adequate communications between Army ground units and Air Force aircrews, however it was not funded in the latest POM.

- On-demand information: Capability for commanders to pull information as desired providing a "global view" perspective.

SUPPORT EQUIPMENT

MAINTENANCE EQUIPMENT

Weapon systems today require unique support equipment. Much of our existing support equipment is bulky and performs a single function. Over the years, follow-on buys have resulted in many different manufactures for the same type of equipment, creating a large logistical trail of parts, special tools, and technical manuals to accompany deployed equipment. To minimize the number and type of assets moved during deployments, AMC will look for units which can support several different weapon systems. These units will be multi-functional, such as supplying air conditioning, electrical power, and ram air for engine starts. Characteristics such as weight, size, capability, ease of use, and cost will be determining factors in acquisition. These units should also be designed for ease of maintenance, similar to airplanes, and not require frequent, man-hour intensive inspections.

Objective 2.2.2
Modify/sustain support equipment to improve reliability and availability. XPQ, FY07

To improve refueling capabilities, hydrant servicing vehicles (HSVs) are being procured as the vehicle of choice for hydrant refueling/defueling. AMC currently has eight HSVs (military version) allocated for delivery through FY97. Beyond FY97, we have proposed procurement of commercial off-the-shelf HSVs as the most advantageous and expeditious means of filling future requirements. These units will have refuel, defuel, and highlift capability to support requirements identified by individual bases.

Objective 1.3.1 *Acquire/modernize the MHE fleet to meet user requirements for two nearly simultaneous MRCs.* XPQ, FY01

MATERIEL HANDLING EQUIPMENT (MHE)

Today's MHE is a mixture of several types and models. This composition creates a critical drain on airlift capability. Having to use enormous amounts of airlift to put these loaders into position at various contingency locations prohibits movement of other time-sensitive cargo.

Additionally, the overall health of the MHE fleet limits our current capability. The average age of the 40K loader is 23 years, using original registration numbers, while their life expectancy, when purchased, was 8 years. Sixty-nine percent of the 25K loader fleet is comprised of old, deteriorating Emerson and Con Diesel loaders that are reaching the end of their service life extension. Heavy usage over the last few years has led to structural metal fatigue and frame cracks. The fleet requires intensive maintenance programs to meet normal equipment standards.

Configuration of a modern, common core fleet with multi-loading capabilities will enhance cargo handling productivity, reduce the repositioning burden, and free valuable airlift capacity for other critical supplies and equipment. An acquisition strategy started in the mid-80s for a new super loader (60K), one that could replace the 40K, yet reach wide-body aircraft.

To keep the current MHE fleet operational for the short-term, WR-ALC is pursuing an aggressive overhaul program. Overhaul programs currently exist for the 40K and older 25K loaders and will continue until 1999. These programs will ensure adequate coverage until the new 60K loader and new small loader are on board.

The 60K loader will replace the aging 40K loader fleet and a portion of the WBELs. It will be able to service both military and wide-body aircraft and is air transportable on the C-5, C-17, and C-141. In April 1994, the contract for the 60K loader was awarded to Southwest Mobile Systems Corporation. Requirements for the 60K loader were reviewed and validated after the May 1994 Worldwide 463L MHE Conference and are projected at 318 loaders. The 60K delivery profile runs from 1996 to 2003. We plan to begin retirement of the 40K loaders when we no longer have a K-loader shortfall, approximately 1999.

A challenge for the mid-range is finding a replacement for the aging 25K loader. Current 25K models in the fleet are logistically more supportable than the 40K, but old technology and operating limitations give them increasingly less utility as time goes on. The next generation small cargo loader (NGSCL), a replacement strategy for the 1960's vintage 25K loaders, will be air transportable on the C-130 and capable of servicing both military and wide-body aircraft. The Mission Need Statement for the NGSCL was approved by CSAF in July 1994. The acquisition plan is being finalized and recommends procurement funding in FY98 with deliveries to begin in FY99. AMC is currently exploring a Non-developmental Item (NDI) loader as the NGSCL.

In the long-range, changes in user profiles, aircraft configurations, and expected operating parameters will likely make it necessary to identify and procure follow-on replacements for all loader types.

SECURITY POLICE EQUIPMENT

Changes in force structure, reduced budgets, and rapidly changing political environments have challenged security planners to seek different, more efficient and improved ways of securing vital AMC resources. Better technology will enable Security Police to more accurately assess potential military and terrorist threats to mobility operations and employ effective defenses against them. Today's Security Police home station and contingency forces require the following equipment modernization:

AMC SP will advocate and support procurement of tactical vehicles for deployment during initial stages of high risk contingency operations. SP forces cannot effectively accomplish this mission if deployed units do not have tactical vehicles immediately available for mounting heavy weapons and for mobile patrols. The AMC/SP goal is to have SP contingency forces deploy with their own tactical vehicles.

Acquire standardized Closed Circuit Television camera system (CCTV) for all AMC installations. CCTV capability is critical to successful flightline security and safety programs. The CONUS threats in which CCTV must deter is accidental intruders or curiosity seekers, common criminals, disgruntled workers or political activists. Acquiring CCTV will give the security police greater flexibility in the use of manpower, enhance security response, and provide immediate assessment of flightline resources.

Airfield security personnel require a rapidly deployable, easily transportable and quickly re-locatable integrated security system which can be tailored to a wide variety of semi-permanent, portable, and tactical applications in peacetime and wartime. Currently, security forces do not have the capability to detect and assess intrusions into large, loosely defined security areas. The Tactical Automated Security System (TASS) will meet many of these requirements.

Acquire a man portable multi-role weapon with day/night line of sight aiming to neutralize enemy attacks before they can bring weapons to bear on USAF resources. This weapon must fire anti-personnel and anti-armor rounds, as well as possess re-fire capability. AMC will continue to advocate acquiring the multi-role weapon system.

Identify and acquire commercial off-the-shelf body armor for Law Enforcement personnel. They are involved in missions that require the use of inconspicuous ballistic protection. Law Enforcement personnel involved in daily enforcement and protective services are exposed to Level III threats which consist of the 44 Magnum and the high velocity 9mm weapons.

Deployed SPs require a higher level of body armor which gives them protection against 7.62mm, RPG, and fragmentation ammunition. Continue the procurement of commercial off-the-shelf body armor to increase SP survivability during high risk contingency operations until a next generation of body armor is developed.

Acquire new All Terrain Vehicles, AMC NICKNAME: CLAW (Carrier, Light Auxiliary Weapon) to serve as a short-range, multi-purpose vehicle capable of operating in all terrain and weather conditions. The CLAW will provide increased mobility for deployed forces in runway control, convoys, resupply, ramp control, and supervisory duties.

FORCE PROTECTION EQUIPMENT

Force protection advisors are constrained by equipment shortfalls. During previous deployments, shortages were experienced in two categories: basic deployment equipment and equipment needed to perform the force protection mission. Since force protection advisors work extensively off-base in the deployed areas, they need secure land mobile radios to rapidly communicate threat information or request assistance. Force protection advisors also lacked dedicated transportation to perform the off-base movements necessary to collect threat information and conduct vulnerability assessments. These shortages decrease the amount and quality of threat information provided to the deployed AMC commander. The 3 FIR, with AMC's assistance, is working to ensure this equipment is acquired.

INTELLIGENCE EQUIPMENT

AMC/IN is working with the CIS Program Office to ensure our intelligence support requirements for hardware utility, reliability, and maintenance are met. We will acquire the systems necessary to provide global connectivity and day-one intelligence to air mobility operations. This includes not only standard CIS terminals for each unit and en route location, but also a deployable (laptop) CIS. In addition, AMC will acquire a robust, dial-up modem capability to ensure Quick Dail-Up Capability (QDUC) is a reality for all in-garrison and deployed intelligence operations. We will further enhance intelligence support to deployed operations through use of a compact, high-bandwidth SATCOM capability. This will ensure reliable connectivity to theater and CONUS intelligence agencies. The laptop CIS, modem, and SATCOM will be key elements of a fly-away intelligence systems package for use at mature, austere, and bare-base locations. While the standard CIS at each unit will allow intelligence personnel to "Reach Into" theater databases in support of air mobility operations, these deployable systems will allow deployed personnel to "Reachback" to CONUS for support from and interface with the AMC staff. This global connectivity for intelligence databases and systems will ensure delivery of timely and tailored data to AMC aircrews and staffs worldwide.

EXPLOSIVE ORDNANCE DISPOSAL (EOD) EQUIPMENT

EOD teams will deploy with vehicles and equipment to support a rapid force deployment. These teams disarm unexploded ordinances delivered or placed by enemy forces. They also render safe ordinances made dangerous by accidents. The EOD teams currently do not have sufficient quantities of the right type of vehicles. Existing vehicles are powered by gasoline, which may not be available at forward locations. This deficiency severely impacted the initial deployment and limited the overall effectiveness of the EOD teams in Somalia. The needed vehicles are M-1038 High Mobility Multi-Wheeled Vehicles (HMMWV) and M-101 High Mobility Trailers to allow a drive-on drive-off and multi-fuel capability. Vehicles are scheduled for delivery in late FY96 and FY97.

MEDICAL EQUIPMENT

Equipment considered for purchase today and in the future will be consistent with the scope and standard of practice. Factors considered for purchase are quality of care, patient access, and cost. AMC/SG Health Care Resources is developing a method to calculate the return on investment for equipment purchases. This will be used to help achieve the balance between cost, quality, and service.

AEROMEDICAL EVACUATION EQUIPMENT

AE acquisition and procurement processes will continue to be affected by changes in the mission, available technology, and aircraft in the AMC inventory. AMC aircraft modifications and acquisition/procurement programs must maintain a systemic interoperable focus.

Delivery of 44 AE ship sets will provide a dedicated intertheater AE capability.

Our AE programs are at varying stages in the acquisition and procurement processes: Spinal Cord Injury Transport System (SCITS) is in milestone II, Continuous Intermittent Suction Unit (CISU) is pre-milestone zero. Current modification proposals for Alternating Current Interface Unit (ACIU), and the KC-135 for an integral AE capability. An AE portable electrical power source is being procured to provide increased flexibility in patient support. AE certified portable ventilators will enable us to enhance our current inventory and offer new technology for our infant and adult ventilator dependent patients. New integrated vital signs monitor units have allowed us to increase our monitoring capability while decreasing our equipment weight and cube.

Tactical and strategic inflight kits have been combined and will be logistically managed to support the needs of one mission. Changing the design of the kits enhances deployment efforts. The kit will be deployed with aircrews.

DEPLOYABLE MEDICAL EQUIPMENT

Deployable equipment packages must support the forces of AMC's Global Reach Laydown concept. Traditional Air Transportable Clinics (ATCs) and Air Transportable Hospitals

(ATHs) are not flexible enough to meet current needs. To satisfy this requirement in the short-range, SGP is developing equipment packages to provide medical support short of an ATC or ATH for AMC Global Reach. These will provide flexibility to meet widely varying contingencies. The ability to build specifically tailored contingency support packages from off the shelf modules will be considered before stand alone development.

The need for integrated data bases is critical in today's competitive, cost-constrained environment. Current technology exists to allow computer based patient records which apply in peacetime (Managed Competition) and wartime. However, computer based patient records systems must integrate with the proposed MARC system or identification cards and TRAC2ES for patient movement. Bar code and magnetic strip reading capability are required in the short-range.

AIRFIELD OPERATIONS EQUIPMENT

Air Traffic Control functions apply to all deploying military and civil missions for both terminal and en route services. In the en route arena, air traffic controllers, qualified as combat airspace managers, work with host nation and the ICAO for ingress and egress routes and procedures and with neighboring nations for clearance authority. They also work with them to determine instrument approach capability and with the FAA for flight inspection of navigational aids. They provide expertise for airfield assessment and survey as well. In the terminal environment, air traffic control operates deployed navigational aids while controllers provide both visual and instrument landing capability at air bridge, staging, and destination locations. These controllers may operate from fixed bases, using in-place or deployed equipment to augment theater and host nation controllers, or at austere airfields using mobile air traffic control and landing systems (ATCALS) equipment. They depend heavily on communications links, HF, SATCOM, and land lines to coordinate the transit of missions through adjacent airspace.

Air Traffic Control And Landing Systems (ATCALS)

Fixed Base

Today, ATCALS support meets mission requirements; however, concerns surface regarding equipment modernization and acquisition. USAF involvement in the National Airspace modernization/upgrade process will be crucial for system integration with the FAA. For our aircraft to be compatible with worldwide travel/navigation, our airframes must be equipped with systems like Mode S, Data Link, Automated Dependent Surveillance, and other satellite based systems. Concurrently, we must pursue the related ground based systems to support the advanced technology avionics systems.

As the FAA continues to phase out TACANs and our precision landing systems reach obsolescence, these aging systems must be replaced with state-of-the-art technology. The FAA determined Global Positioning Systems will be the standard for navigation systems under the Future Air Navigation System.

In the short-range, Global Positioning System (GPS) is the preferred navigational aid with differential GPS for precision approach and landing guidance. AMC avionics and associated ground equipment must keep pace with FAA and ICAO requirements and capabilities implementation. In the long-range, GPS is technologically sound. AMC aircraft and ground systems will be in place and efficient. With the envisioned changes and growths in technology, ATCALS will meet future Global Reach requirements.

Bare Base

Since AMC currently owns no mobile assets, the command relies on ACC to supply mobile ATCALS equipment. AMC/DOA has initiated action to utilize ANG air traffic control cells to provide mobile ATCALS in support of AMC GRL. Additionally, CRAF and civilian airline contract support for contingency operations require navigational aids compatible with their avionics. Today's incompatibility validates the need for mobile VORTACs. Currently, no mobile VORTACs exist in the DOD inventory; however, AMC has submitted a CSRD to acquire two mobile VORTACs.

AMC must pursue acquisition and ownership of mobile ATCALS resources to be truly in control of contingency operations. Along with this comes the responsibility to establish mobile units where equipment can be used for training or, stored and maintained in a deployment ready state. This will require a large expenditure of people and money.

In the short-term, the mobile/tactical systems in the ACC inventory are rapidly approaching obsolescence. Mobile radars, towers, and TACANs will be required at increasing rates to fulfill wartime/contingency requirements. Our two mobile VORTACs will be high demand items.

In the mid-term, AMC must continue to stay closely attuned to mobile assets required to successfully conduct contingency operations worldwide. AMC's mobile unit's readiness must be fine tuned in preparation for deployment to worldwide locations.

In the long-term, GPS must be added to the inventory of mobile ATCALS equipment. When mobile radars and towers have been improved and AMC owns/control mobile ATCALS, our Global Reach requirements will best be met.

Airfield management functions apply to both terminal and en route services in support of any DOD deploying aircraft, CRAF mission, or Allied military aircraft. The services provided include domestic and international flight plan processing and diplomatic clearance coordination. These services are sound and will continue to meet mission requirements into the foreseeable future.

Austere Field

Although hardly a new problem, the difficulty of landing in low-visibility, adverse weather was highlighted during the 1995 deployment to Bosnia. Aircraft, including the C-17, were unable to land in the low-visibility conditions typical in the Balkans, which were especially severe that season. (C-130s with special equipment and a navigator experienced more success, but not all which could be desired.)

Instrument Landing System/Precision Approach Radar systems, which are typically unavailable at forward operating locations, could have relieved the problem; however, these systems require 6-7 C-130 loads of equipment and are not at all what could be termed "portable." They also require a good deal of time and personnel to deploy, setup, and operate and don't contribute to "first-in" capability. These systems lack full multiservice interoperability, and thus fall short of the ideal in a deployed expeditionary force environment.

AMC began its search for a solution in Jan 1996. Advocating the start of the long-unfunded Joint Precision Approach and Landing System program, AMC/CV initiated discussion with SAF/AQ. The program was subsequently funded for FY96. That effort is searching for a replacement for ILS/PAR systems DoD-wide and is a Category I-D (major) acquisition program.

To provide a quicker, incremental fix, the C-17 SPO has accelerated efforts to test the C-17 GPS mission computer *nonprecision* approach capability. Successful conclusion of testing and post-test analysis should yield confidence that decision heights of 4-500 feet are feasible. Planned upgrades to mission computer software should result in the 99.9 percent integrity required by the FAA for such non-precision GPS approaches.

Simultaneously, AMC, in partnership with Electronic Systems Center and Air Force Flight Standards Agency, began the search for technologies to provide at least a Category I (200 ft decision height) *precision* approach capability within the next 24 months. This effort is part of JPALS, and is meant to be compatible with, or at least complementary to, the outcome of the overall JPALS program.

Though AMC desires a fully autonomous system requiring no local ground equipment, it is likely no near-term fix has that configuration. Another sticky issue is flight checking; even with a fully aircraft-autonomous system, it's doubtful the first landing can be made without an in-advance flight check (implying an overflight). Naturally, AMC is concerned with the flight check issue as its conduct delays the initiation of landings and also alerts hostile forces as to increased ops tempo at that location.

Another complicating factor: Regardless of technology, the landing zone must be precisely known. (It is of little utility to know precisely where you are if you don't know where you're going.) Thus, the early discussion about "first-in" capability (requiring no advance ground survey or ground equipment for the first aircraft to land) yielded to a desire to minimize logistics and setup. AMC/DO further articulated the need by stating that AMC needed a system which was not vulnerable to local weather conditions. One way to provide that characteristic is to locate your ground equipment far from the airfield. That suggests wide-area systems.

In April 1996, AMC/CC received a briefing sponsored by Dr. Gene McCall, Chairman of the USAF Scientific Advisory Board, regarding the technical feasibility of a wide-area differential GPS (WADGPS) precision landing capability on the C-17. Dr. McCall's proposal, based on the SRI WADGPS concept, was endorsed by CSAF; scoping of the effort is now underway. WADGPS requires four ground stations located in a continent-sized area to provide correction to GPS signals. Theoretically, WADGPS is sufficient for Category IIIa (50 ft) decision height. Outcome of the demonstration will be used as proof of concept as well as data for the JPALS effort.

In the area of way point navigation, the AMC Air Traffic Control and Landing System office continues its efforts in conjunction with Sacramento Air Logistics Center to develop and field two deployable VHF Omni-Range Tactical Air Navigation (VORTAC) systems, thus providing a transportable way point navigation capability. Funds were requested in the POM beginning in FY97 for two years to integrate the VORTACs into deployable shelters.

In summary, although AMC is vigorously pursuing austere field, adverse weather approach and landing capability, the issue requires a systems approach to the problem. Way point navigation is one issue; landing in adverse weather is another. Threats must be considered. Further, AMC must consider the concept of operations, training, and logistics of precision approach capabilities to choose the right systems for both near- and long-term use.

WEATHER EQUIPMENT

AMC weather personnel use a wide range of equipment to provide weather observing and forecasting services. In the future, more automated systems will improve the accuracy and timeliness of the weather products. Air Weather Service, as the standard systems manager for weather equipment, programs for and oversees the acquisition of most weather equipment used by AMC.

Fixed-Base Weather Systems

Airfield observing equipment includes sensors and associated hardware needed to determine weather conditions that may impact air and ground operations. These systems operate independently and do not share common processors or display hardware. This configuration requires excessive time to make and disseminate observations.

State-of-the-art automated observing methods will soon become more efficient than the manual methods now in use and will provide a continuous weather watch with real-time automatic notification of critical weather events. In addition to replacing existing sensors, future weather observing capabilities will provide lightning detection for ground refueling and support to base computer facilities, measurement of wind and temperature vertical profiles for wind shear detection and warning, and measurement of slant range visibility to improve flight safety. Conversion to integrated, automatic observing systems is set to occur by the early 2000s under the Meteorological Operations Capability (MOC) program. MOC is in the early planning stages and program funding is in doubt. Program delays could leave AMC dependent on aging equipment with decreasing reliability.

Already, MOC program delays have magnified a shortfall in AMC weather observing capability. Lightning detection and thunder ranging have long relied on human observation, which has proven inadequate. With the advent of lightning detection equipment and a national lightning network, subjective determination of lightning potential and range is being replaced by precise identification. Although most AMC bases have purchased lightning detection equipment and network services, implementation of this capability has been piecemeal and is currently restricted to in garrison.

All AMC bases have weather radars to detect and display storms. Some of the radars are based on 1960s technology and have minimal storm analysis capability. All AMC bases will have the WSR-88D Next Generation Weather Radar (NEXRAD) by the end of 1996. NEXRAD uses Doppler technology to enhance storm detection and severe weather prediction. Projected radar initiatives include replacement of obsolete components using upgraded technology on the WSR-88D. Upgrades should include modifications to system software to improve weather detection algorithms. These algorithms identify characteristic radar signatures associated with tornadoes, hail, downburst wind shear, aircraft turbulence, and icing. The WSR-88D, with periodic life cycle and technological upgrades, should satisfy the weather radar detection needs at fixed bases through the year 2015.

The Automated Weather Distribution System (AWDS) provides weather stations the capability to disseminate forecasts, warnings, and advisories locally and longline. It also allows the forecaster to analyze and manipulate worldwide weather data, prognostic charts, and satellite imagery on a graphics work station to prepare and display forecasts and briefings. Near-term enhancements to AWDS include a faster processor, an out-of-station briefing capability, improved and more frequent weather satellite imagery displays, and an interface to user C4I systems. As a backup to AWDS, forecasters can access AF and Naval dial-up weather services to obtain forecast products via microcomputers.

In addition to an automated observing capability, MOC includes a replacement for AWDS. This aspect of the MOC program will transition forecast support capabilities fielded in the late 1990s for deployed environments back into the base weather station to ensure combat and peacetime support systems are as similar as possible. Reaching final operational capability by FY04, the MOC forecast system will replace or upgrade existing meteorological data manipulation and display systems and will include an integrated platform dedicated to the collection, assimilation, processing, and dissemination of all required weather information.

Deployable Weather Systems

Deployable weather observing systems currently include semi-automated and manually operated sensing equipment. While only recently fielded, many of these systems experienced excessive failure rates during DESERT STORM and RESTORE HOPE and continue to be plagued with problems. System modifications underway at the Sacramento Air Logistics Center should provide a sufficient number of reliable sensors to meet AMC requirements for the next several years.

AMC weather teams need a long-term replacement for existing deployable observing systems. The Manual Observing System (MOS), formerly part of the Combat Weather System (CWS) program, will partially satisfy this requirement. The lightweight MOS features substantial state-of-the-art improvements over the existing handheld systems for providing basic weather measurements (temperature, wind, pressure) and will be available for deploying forces in 1996. In addition, the more durable deployable sensors, originally scheduled for replacement as the Tactical Ground Observing System, are now slated for modification only beginning in FY98 due to budget reductions in the CWS program. Finally, as mentioned in the previous section, a deployed lightning detection capability is completely lacking in AMC.

As a first-in capability, AMC weather personnel may also deploy with a laptop/notebook microcomputer equipped with a modem to access textual and graphical analysis and forecast products and data from CONUS Naval and AF dial-in systems using phone capabilities at the deployed location. Additionally, some weather teams deploy with a Quick Reaction Communications Terminal (QRCT) which can receive textual and graphical facsimile weather analysis and forecast products from military and civil HF weather broadcasts.

Transportable AWDS (TAWDS) is the deployable version of the fixed-base AWDS and provides sustainment capability. Functionality is similar to the AWDS with the additional capabilities of the QRCT, voice HF, and a Pilot-to-Metro Service (PMSV) radio. AMC presently does not own any TAWDS but would task up to three if needed.

The AF Meteorological Information Terminal (AFMIT) provides the capability to receive, display, and manipulate processed geostationary imagery and National Oceanic and Atmospheric Agency (NOAA) polar orbitor imagery in the deployed environment. The more robust AF Small Tactical Terminal (STT) program will provide the capability to receive both processed geostationary and direct-readout Defense Meteorological Satellite Program and NOAA polar orbiting satellite imagery and data beginning in FY96.

The Tactical Forecast System (TFS) will take advantage of advanced data processing capabilities to enhance support to deployed operations. TFS will receive, ingest, fuse, and process differing weather data sets, and disseminate weather and space environmental forecasts. The system will be lightweight, modular, and rapidly deployable, and will include a link to user C4I and mission planning systems. The system will also provide weather personnel the ability to display, manipulate, and develop forecast products. TFS configurations will be flexible to meet specific deployment requirements. The TFS should incorporate all functionality of TAWDS and the QRCT, and also have an in-theater, stand-alone weather analysis and prognosis modeling capability. With time and technological upgrades, these analyses and prognoses should be accurate enough and on a resolution fine enough to provide deployed users high quality forecasts with minimal human input or modification. Fielding of TFS is planned to begin during FY96 and continue through FY97. The TFS, with periodic life cycle and technological upgrades, should satisfy the weather forecasting needs at deployed locations through the year 2015.

LIFE SUPPORT EQUIPMENT

The life support equipment modernization plan identifies key shortfalls which must be funded today and in the short- to mid-term. Shortfalls include: passenger and aircrew life support equipment.

Passenger Life Support Equipment

Smoke and fume protection devices provide safety and protection of passengers when we are transporting hazardous cargo. AMC is currently operating under an AFMC/CC waiver to AFJMAN 24-204 until we field a suitable PSFPD. A PRAM initiative is underway to determine if industry can fulfill the AMC need for this equipment. We expect the device to replace all existing dixie cup oxygen systems with a vacuum packed, self-sustaining oxygen source. The device will be easily donned/doffed and offer visual acuity for emergency escape or survival in a rapid decompression or toxic smoke and fume environment

Condemnation rates of current multi-placed life rafts are extremely high, inspection tasks are labor intensive, and require specialized maintenance facilities. In many instances, condemnation rates exceed industries ability to produce as evidenced by many AMC organizations with 3-yr delivery delays. AMC is executive command in the developmental cycle to vacuum pack this life raft and eliminate these problems. Additionally, this will provide a significant return on investment ($2.365 million) over the 6-year buy cycle and an estimated $5.910 million over the 15-year cycle.

Passenger life preservers throughout the command experience high condemnation rates coupled with low depot/manufacturing quantities. This will impact our passenger-carrying capability during heightened readiness. Non-inflatable type materials exist that can replace current floatation devices. Such an approach may reduce workload and the need for specialized facilities while increasing combat readiness flexibility. An AF approved unsolicited proposal is pending and scheduled for a form fit and function test Jul-Sep 95. Following these tests, applicability decisions will be made and forwarded to the life support depot at Kelly AFB TX (SA-ALC/LDI).

Aircrew Life Support Equipment

Aircrew chemical defense equipment shortages for sustained operations is an AF-wide problem. AMC is currently short 18,300 aircrew protective hoods, 482 MBU-13/P CBO masks, and 566 CRU 80/P filter pack assemblies. An additional deficiency identified during DESERT SHIELD/STORM is the shortage of chemical warfare defense ensembles for CRAF crew members. AMC initiatives are being taken to acquire a supply of stock and preposition them at specified AMC locations.

Current aircrew nuclear flash blindness protection devices worn by KC-135 aircrews are non-supportable due to lack of replacement parts/repair capability. This will have a potentially negative impact on SIOP mission supportability. Cannibalization efforts are used to maintain the current inventory. Assets available as a result of AF downsizing are expected to last until the end FY95. Repair parts will be required in the near future. Industry is being sought for refurbishment of the existing system.

Depot-supported equipment, such as: parachute canopies, packs, harnesses, risers, hardware, survival radios, beacon batteries, life raft accessory containers, inflation bottles, are examples of life support equipment the depot has been unable to sustain. The impact has amounted to the gradual erosion of quality of the life support systems.

Chemical Warfare (CW) Defense Equipment

The ability of currently fielded systems to provide warning of low dose CW agent hazards is virtually nonexistent. Equipment and procedures based on today's technology fall significantly short in providing suitable detection and decontamination support for our fast-paced operational tempo. Present chemical detection equipment is labor intensive and time consuming. All Services can conduct minimally effective liquid detection using M-8 paper or M-9 tape, and chemical agent vapor detection using M8A1 or M-256 kits. In addition, AMC can use the Chemical Agent Monitor (CAM) and M-90 detectors for vapor detection. The M-90 only exists in limited quantities. The CAM must be constantly observed for an indication of a chemical agent and has a sensitive range problem and operational down-time after being saturated by a high agent concentration. Both are not sensitive enough to provide warning of low dose hazards which can lead to negative ocular effects on aircrews. We must correct known deficiencies and make improvements in aircraft interior detection capabilities. In the meantime, AMC's aircraft operators, maintainers, cargo handlers, and Dugway Proving Ground personnel are working to validate near-term cargo aircraft contamination control procedures. Additionally, AMC is participating in a Joint Service initiative to develop and field a sensitive CW agent detector called the Joint Chemical Agent Detector for use inside command aircraft.

Our current capability to decontaminate aircraft interiors, cargo, and equipment without degrading surfaces is extremely limited, and for some applications within aircraft, nonexistent. Current decontamination methods may involve weathering, soap and water or application of forced hot air. These conventional methods to rid aircraft interiors of contaminants creates a high cost delay and adverse impact on the throughput movement of cargo/passengers. This in-turn translates to an adverse impact on mission performance throughout the enroute system and supported combatant commands. Movement of high priority retrograde missions will be limited or non-existent until the fleet is contamination free. AMC is taking action to establish a Joint Service initiative for development of a CW decontamination capability for aircraft interiors, cargo and other equipment. This effort to develop an aircraft interior decontamination system (AIDECONS) is paramount in our chemical defense effort.

TRAINING EQUIPMENT

The objective of Air Mobility training modernization is to improve the quality of training by using computers and simulators. Use of these devices is less resource intensive, in terms of manpower, airframes, and actual dollars, than actual hands-on training.

Ground Based Training (GBT). Technological advances in GBT devices provide opportunities to optimize aircrew training in cost effective ways through realistic training scenarios. GBTs include stand-alone computers, computer networks, part task trainers, interactive video devices, and simulators. Training syllabus can be tailor made to meet students needs and provide flexibility in scheduling individual training.

Media. Current ground based media such as slide-tape and video presentations are cumbersome and expensive to update. Slide-tape programs lack versatility and, coupled with the loss of the AF Media Center capability, expensive contracts for upgrade. CD ROM and Laser Disks are readily available today however they have limitations. AMC, working with AETC and the AF labs, can exploit emerging technologies to build the "electronic classroom" based on interactive video and CD-ROM flexibility and efficiency.

All AMC weapons systems currently have programming plans to increase the use of simulators as outlined in the AMC Aircrew Master Training Plan. This plan discusses appropriate media for each training event and identifies media deficiencies for each weapons system. Current shortfalls include the lack of FAA class C motion standards and mission rehearsal capabilities required for high fidelity training which can be readily transferred to the weapons system.

Aircrew Training

Simulators: Simulators include operational flight trainers and weapon system trainers designed to replicate aircraft systems' operations and instrument presentations throughout all phases of ground and flight operations. These systems are excellent for task integration training in a real-time simulated operational environment. Late generation simulators include realistic visual displays, motion, and may have the capability to network with other simulators.

Virtual reality and interactive video offers potential to fully integrate all crew positions in realistic scenarios, reduce training costs, and the opportunity to shift training from simulators which will free them up for more complex training tasks.

AMC requires organic capability to build mission data bases for mission rehearsal in ground based training devices. Networking of these devices will allow all AMC aircrews to interact with combat air forces and other AMC aircrews for large scale operations.

Current initiatives to improve weapons systems trainers must remain on track. Increasing simulation capability through motion and visual devices will allow a shift of some training from the aircraft which will free up aircraft flying time for joint training, exercises, and customer support. Further improvement for night vision device training, mission rehearsal, and system networking will enhance combat capability.

C-141 simulators are inadequate to train C-141 basic aircrews and SOLL II aircrews in Night Vision Goggle (NVG) procedures. General deficiencies noted are that there is only a partial station for navigator training and that the navigator portion of the enhanced/upgraded C-

141 simulator is unfunded and cockpit lighting is not NVG compatible. The software presentation in the current configuration has NVG capability only in the "dusk" mode. The "night" mode does not give the required terrain features. Potential solutions include: adapting visual software to be NVG capable in "night" mode to practice night operations (e.g., drops, landings, low level), incorporate simulated IR light beacon and landing box scheme so crews can practice ARAs and landings.

Except for the C-17 program, AMC simulators currently do not meet FAA 120-40B, Level C+ equivalent. AMC has designed an extensive simulator upgrade program to exploit technological capabilities which began in FY94. Simulator modifications include improved visual systems, motion, digital control loading, integration of new aircraft systems. AMC has a three-phase approach to upgrade the fleet of simulators. Phase I and Phase II are funded at $256M for upgrades of simulators from FY94-01. Remaining unfunded requirements for the KC-135 will be completed in Phase III.

Part Task Trainers (PTT): PTTs include special purpose simulator systems, mockups, static aircraft, and cockpit procedural trainers. These devices are good for teaching specific mission tasks, switchology, physical/spatial environment awareness, checklist procedures, cockpit design, and system operations and malfunctions. PTTs can be networked for multi-ship, similar and dissimilar aircraft interactions. Programmed upgrades include:

KC-135 Pilot: New cockpit procedure trainer for initial qualification of pilots and copilots.

KC-135 Boom Operator (BOPTT): A proposal is being considered to network the BOPTT with the weapon system trainer. The KC-135 BOPTT is old, but highly reliable; it has been moved from Castle AFB to Altus AFB.

KC-10 Boom Operator: The KC-10 BOPTT is old and logistically unsupportable. AMC/DOT is planning a modernization and upgrade to begin in FY97. Additionally, the BOPTT will be modified to add the Wing Air Refueling Pod System

C-5/C-141 Air Refueling PTT (ARPTT): The C-5/C-141 Air Refueling PTT (ARPTT) supports formal school and continuation training Air Refueling training requirements. The ARPTT aerodynamic model does not accurately replicate the aircraft and tanker interaction and requires improvement. Data gathering for aerodynamic improvements to the ARPTT is programmed to begin in FY95.

Maintenance Training

<u>Maintenance Instructional Systems</u>

The AETC Training Detachment (TD) maintenance training devices were fielded between 1987 and 1992. They are designed to provide training to the “fully qualified level”. They are used for follow-on weapon system specific training, task certification, and troubleshooting.

The C-17 maintenance training program will emphasize task oriented training and effective training devices to produce the required C-17 personnel skills. The C-17 is designed for a reduced maintenance manning level composed primarily of lower skill level personnel (such as three-level or first term five-level airmen). Maintenance training devices are the prime source of follow-on training in lieu of actual aircraft to minimize the impact of training requirements on operational aircraft availability. The requirement is to provide devices in the classroom capable of fully qualifying and certifying technicians. The maintenance training program (courseware and training devices) will use the Instructional System Development (ISD) process.

C-141 trainers are 1960s technology and provide minimal troubleshooting training. Trainer supportability is a problem. Primarily these trainers have kept pace with aircraft modifications with the exception of the auto pilot and fuel quantity systems (due to cost effectiveness). If the C-141 is retained, renovation of these trainers will be required.

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ACRONYMS

5D	Demand Driven Direct Digital Dissemination
AAA	Anti-Aircraft Artillery
AAFES	Army and Air Force Exchange Service
AATTC	Advanced Airlift Tactics Training Center
ABS	Airborne Single Channel Ground and Air Radios Sincgars
ACC	Air Combat Command
ACDE	Aircrew Chemical Defense Equipment
ACI	Analytical Condition Inspection
ACIA	Adaptive Communications for Integrated Avionics
ACIND	Air Customer Needs Database
ACIU	Alternating Current Interface Unit
ACM	Air Cycle Machine
ACP	Automatic Communications Processor
ADANS	AMC Deployment Analysis System
ADI	Attitude Directional Indicator
ADM	Acquisition Decision Memorandum
ADS	Airlift Defensive System
ADS	Automatic Dependent Surveillance
ADSC	Active Duty Service Committment
ADSF	Aerial Delivery Support Flight
AE	Aeromedical Evacuation
AECM	Aeromedical Evacuation Crew Member
AECOT	Aeromedical Evacuation Contingency Operations Training
AEEB	Aeromedical Evacuation Executive Board
AEEP	Aeromedical Evacuation Electrical Power
AEF	Air Expeditionary Force
AEMS	Aeromedical Evacuation Mission Support
AEP	Aeromedical Electrical Power
AERC	Aeromedical Evacuation Readiness Committee
AERP	Aircrew Eye/Respiratory Protection
AES	Aeromedical Evacuation System
AESS	Aeromedical Evacuation Shipsets
AETC	Air Education & Training Command
AF	Air Force
AFAM	Air Force Achievement Medal
AFB	Air Force Base
AFCA	Air Force Communications Agency
AFCC	Air Force Component Commander
AFCM	Air Force Commendation Medal
AFCPMC	Air Force Civilian Personnel Management Center
AFDIS	Air Force Dial-In System
AFEMS	Air Force Equipment Management System

AFFOR	Air Force Forces
AFI	Air Force Instruction
AFIS	Automated Fleet Information System
AFIT	Air Force Institute of Technology
AFIWC	Air Force Information Warfare Center
AFMC	Air Force Materiel Command
AFMILNET	Air Force Military Network
AFMIT	Air Force Meteorological Information Terminal
AFMSS	Air Force Mission Support System
AFMWRSB	Air Force Morale, Welfare, Recreation and Services Board
AFNET	Air Force Network
AFOSI	Air Force Office of Special Investigations
AFPC	Air Force Personnel Center
AFRES	Air Force Reserve
AFROTC	Air Force Reserve Officer Training Corps
AFSATCOM	Air Force Satellite Communications
AFSC	Air Force Specialty Codes
AFSOC	Air Force Special Operations Command
AGE	Aerospace Ground Equipment
AGILES	Automated G Files
AGR	Active Guard Reserve
AGS	Armored Gun System
AHOS	Advanced Hybrid Oxygen System
AIA	Air Intelligence Agency
AIRTERMS	Airborne Terminals
AIT	Aircrew Intelligence Training
AIT	Automatic Identification Technology
ALC	Air Logistics Center
ALCS	Airlift Control Squadrons
ALDCS	Active Lift Distribution Control System
ALE	Automatic Link Establishment
ALERT	Affordable Low-Noise Enabling Radar Technologies
ALS	Airman Leadership Schools
AMC	Air Mobility Command
AMC/CC	Commander of AMC
AMCC	Air Mobility Control Centers
AMCF	Air Mobility Control Flight
AMCS	Air Mobility Communications Squadrons
AME	Air Mobility Element
AMMP	Air Mobility Master Plan
AMOG	Air Mobility Operations Group
AMOS	Air Mobility Operations Squadron
AMSG	Air Mobility Support Group
AMSP	Air Mobility C4 Systems Plan
AMSS	Air Mobility Support Squadron

AMT	Air Mobility Tasking
AMU	Aircraft Maintenance Unit
AMW	Air Mobility Wing
AMWC	USAF Air Mobility Warfare Center
ANDVT	Advanced Digital Voice Terminal
ANG	Air National Guard
ANR	Active Noise Reduction
AOR	Area of Responsibility
AOS	Aeromedical Operations System
APDP	Acquisition Professional Development Program
APMF	Aerial Port Mobility Flight
APOD	Aerial Port of Debarkation
APOE	Aerial Port of Embarkation
APS	Aerial Port Squadron
AR	Air Refueling
ARA	Airborne Radar Approach
ARC	Air Reserve Component
ARPTT	Air Refueling Part Task Trainer
ART	Air Reserve Technician
ASAP	As soon as possible
ASC	Aeronautical Systems Center
ASTS	Aeromedical Staging Squadron
ATACC	Alternate Tanker Airlift Control Center
ATC	Air Traffic Control
ATC	Air Transportable Clinics
ATCALS	Air Traffic Control and Landing Systems
ATH	Air Transportable Hospitals
ATM	Asynchronous Transfer Mode
ATN	Aeronautical Telecommunications Network
ATO	Air Tasking Order
ATS	Aircrew Training System
AUTODIN	Automatic Digital Network
AWACS	Airborne Warning and Control System
AWADS	Adverse Weather Aerial Delivery System
AWDS	Automated Weather Distribution System
AWFCS	All Weather Flight Control System
AWLS	All Weather Landing System
AWN	Automated Weather Network
AWP	Awaiting Parts
BAI	Backup Aircraft Inventory
BAQ	Basic Allowance for Quarters
BCR	Baseline Change Request
BIP	Base Information Protect
BMCS	Base Meteorological Center System
BNCC	Base Network Control Center

BOPTT	Boom Operator Part Task Trainer
BOS	Base Operating Support
BPA	Blanket Purchase Agreement
BPWG	Business Process Working Group
BRAC	Base Realignment and Closure Committee
BVIS	Base Visual Information Services
BWOK	Belt Weather Observing Kit
C2	Command and Control
C2IPS	Command and Control Information Processing System
C2W	Command and Control Warfare
C4I	Command, Control, Communications, Computers and Intelligence
C4S	Command, Control, Communications, and Computer Systems
CAFSC	Control Air Force Specialty Code
CAMS	Consolidated Aircraft Maintenance Squadron
CAPS	Consolidated Aerial Port System
CAPS II	Phase II of CAPS
CAS	Close Air Support
CASE	Computer Aided Software Engineering
CAST	Command Aircraft System Training
CATS	Combat Aircrew Training School
CBT	Computer Based Training
CCATT	Critical Care Aeromedical Transport Team
CCB	Configuration Control Board
CCE	Contingency Communications Element
CCT	Combat Control Teams
CCTS	Combat Crew Training School
CCTV	Closed Circuit Television Camera System
CD ROM	Compact Disc Read Only Memory
CDC	Career Development Course
CDC	Community Development Centers
CDP	Child Development Program
CDPIR	Crash Data Position Indicator/Recorder
CDS	Container Delivery System
CDU	Control Display Unit
CE	Civil Engineering
CHAMPUS	Civilian Health & Medical Program of the Uniformed Services
CIE	Control Interval Extension
CINC	Commanders in Chief
CIS	Combat Intelligence System
CISU	Continuous/Intermittent Suction Unit
CJCS	Chairman, Joint Chiefs of Staff
CLAW	Carrier, Light Auxiliary Weapon
CLS	Contractor Logistics Support
CMAC	Common Mobility Aircraft Cockpit

CMARPS	Combined Mating and Ranging Planning System
CMOS	Complementary Metal Oxide Semiconductor
COE	Common Operating Environment
COMBS	Contractor Operated and Maintained Base Supply
COMCAM	Combat Camera
COMSEC	Communications Security
CONUS	Continental United States
COTS	Commercial Off-The-Shelf
CPCS	Combat Personnel Control System
CPT	Cockpit Procedure Trainer
CRAF	Civil Reserve Air Fleet
CRAF I	Stage I of Civil Reserve Air Fleet
CRAF II	Stage II of Civil Reserve Air Fleet
CRAF III	Stage III of Civil Reserve Air Fleet
CRT	Contingency Response Team
CSAF	Chief of Staff of the Air Force
CSOC	Contingency Support Operations Course
CSRD	Computer Systems Requirements Document
CTAPS	Contingency Theater Automated Planning System
CTD	Cockpit Technology Development
CTP	Companion Trainer Program
CUT	Cross Utilization Training
CVAM	USAF Vice Chief of Staff
CVTF	Cockpit Vision Task Force
CWS	Combat Weather System
DAB	Defense Acquisition Board
DAFSC	Duty Air Force Specialty Code
DAMA	Demand Assigned Multiple Access
DAWIA	Defense Acquisition Workforce Improvement Act
DBOF-T	Defense Base Operating Fund - Transportation
DCI	Defensive Counter Information
DCPO	Directorate of Civilian Personnel Operations
DCS	Defense Communications Systems
DCT	Digital Communications Terminal
DDN	Defense Data Network
DeCA	Defense Commissary Agency
DES	Data Encryption Standard
DII	Defense Information Infrastructure
DIRMOBFOR	Director of Mobility Forces
DISA	Defense Information Systems Agency
DISNET	Defense Information Systems Network
DLR	Depot Level Reparable
DMRD	Defense Management Review Decision
DMS	Defense Message System
DMSP	Defense Meteorological Satellite Program

DNC	Doppler Navigation Computer
DOC	Designed Operational Capability
DoD	Department of Defense
DPG	Defense Planning Guidance
DRB	Division Ready Brigade
DRSN	Defense Red Switch Network
DRU	Direct Reporting Unit
DS/DS	Operation DESERT SHIELD/STORM
DSN	Defense Switched Network
DTD	Data Transfer Device
DTS	Defense Transportation System
DV	Distinguished Visitor
E & TF	Education & Training Flight
EC	Electronic Commerce
ECAMP	Environmental Compliance Assessment and Management Program
ECI	Extension Course Institute
EDI	Electronic Data Interchange
EEI	Essential Elements of Intelligence
EEO	Equal Employment Opportunity
EIDS	Engine Instrument Display System
ELINT	Electronic Intelligence
ELTPS	Emergency Long Term Power Source
EMCON	Emission Control
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
EPAD	Electrically Powered Actuated Design
EPR	Engine Pressure Ratio
EQUAL	Enlisted Quarterly Assignments Listing
ERS	En Route System
ESC	Electronic Systems Center
EW	Electronic Warfare
EWI	Education With Industry
EWRP	Electrical Wiring Replacement Program
FAA	Federal Aviation Administration
FACTS	Fasteners, Actuators, Connectors, Tools & Subsystems
FAI	Federal Acquisition Institute
FANS	Future Air Navigation System
FAX	Facsimile Equipment
FIP	Fitness Improvement Programs
FIPS	Federal Information Processing Standard
FIR	Field Investigation Region
FLIR.	Forward Looking Infrared Radar
FMB	Functional Management Board
FMDS	Fault Maintenance Diagnostic System

FOA	Field Operating Agency
FOA	Forward Operating Area
FOB	Forward Operating Base
FOL	Forward Operating Location
FOUO	For Official Use Only
FQ	Fiscal Quarter
FQIS	Fuel Quantity Indicating System
FSA/CAS	Fuel Systems Advisory/Cockpit Avionics System
FSAS	Fuel Savings Advisory System
FSC	Family Support Center
FSIP	Functional System Integrity Program
FSL	Forward Supply Location
FSP	Forward Supply Points
FSS	Forward Supply System
FTD	Field Training Detachment
FTS	Federal Telecommunications Service
FWOS	Fixed Weather Observing System
FY	Fiscal Year
FYDP	Future-Years Defense Program
GATES	Global Air Transportation Execution System
GATM	Global Air Traffic Management
GBS	Global Broadcast Service
GBT	Ground Based Training
GCAS	Ground Collision Avoidance System
GCCS	Global Command and Control System
GDIP	General Defense Intelligence Program
GDSS	Global Decision Support System
GDSS-MLS	Global Decision Support System Multi Level Security
GFE	Government Furnished Equipment
GIMS	Global Information Management System
GMF	Ground Mobile Force
GOSIP	Government Open Systems Interconnection Profile
GP	General Purpose
GPMRC	Global Patient Movement Requirement Center
GPS	Global Positioning System
GRL	Global Reach Laydown
GRLP	Global Reach Laydown Package
GS	General Service
GSA	General Servics Administration
GTN	Global Transportation Network
HA	Health Affairs
HAWC	Health and Wellness Center
HAZMAT	Hazardous Material
HCP	Housing Community Plan
HDP	Human Dignity Program

HF	High Frequency
HMMWV	High Mobility Multi Wheeled Vehicles
HMO	Health Maintenance Organization
HQ	Headquarters
HQ AFMPC	Headquarters Air Force Military Personnel Center
HQ USAF	Headquarters United States Air Force
HRD	Human Resources Development
HSC	Human Systems Center
HSI	Human System Interface
HSVs	Hydrant Servicing Vehicles
HUMINT	Human Intelligence
ICAO	International Civil Aviation Organization
ICNIS	Integrated Communications, Navigation, Identification Subsystem
ICON	Imagery Communications Operations Node
ICW	Interactive Courseware
ICWG	Interface Control Working Group
ICWTS	Interactive Courseware Training Systems
IDA	Institute for Defense Analysis
IDD	Interface Design Document
IDHS	Intelligence Data Handling System
IFAA	Intelligence Functional Area Analysis
IFF	Identification Friend or Foe
IFPS	Intraformation Positions System
IFPS/TCAS	Intraformation Position/Traffic Collision Avoidance System
IG	Inspector General
IHPTET	Integrated High Performance Turbine Engine Technology
IMA	Individual Mobilization Augmentee
IMC	Instrument Meteorological Conditions
IMINT	Imagery Intelligence
IMSC	Information Management Steering Group
INMARSAT	International Maritime Satellite
INU	Inertial Navigation Unit
IOC	Initial Operating Capability
IPA	Imagery Product Archive
IPT	Integrated Product Team
IR	Infra-Red
IRCM	Infra-Red Counter Measures
IRM	Information Resources Management
IRP	Installation Restoration Program
IRU	Inertial Reference Unit
ISD	Instructional System Development
ISDN	Integrated Services Digital Network
ISO	Isochronal Inspections
ISS	Intermediate Service School

ITV	In Transit Visibility
IVD	Interactive Video Disk
IW	Information Warfare
IWWG	Information Warfare Working Group
JA/ATT	Joint Airborne Air Transportability Training
JAG	Judge Advocate General
JCMT	Joint Collection Management Tool
JCS	Joint Chiefs of Staff
JDISS	Joint Deployable Intelligence Support System
JICTRANS	Joint Intelligence Center for Transportation
JOPES	Joint Operation Planning and Execution System
JPALS	Joint Precision Approach and Landing System
JPATS	Joint Primary Aircraft Training System
JRTC	Joint Readiness Training Center
JULLS	Joint Universal Lessons Learned System
JWICS	Joint Worldwide Intelligence Communication System
KRA	Key Result Areas
LAN	Local Area Network
LAPES	Low Altitude Parachute Extraction System
LGRC	Logistics Readiness Center
LMR	Land Mobile Radio
LOC	Logistics Operations Center
LOCC	Logistics Operating Control Center
LRU	Line Replaceable Unit
LTF	Logistics Training Flight
MAA	Mission Area Assessment
MAC	Military Airlift Command
MADARS	Malfunction Detection Analysis and Recording System
MAF	Mobile Aerial Port Flights
MAFIS	MAJCOM Automated Fleet Information System
MAIS	Mobility Air Intelligence System
MAJCOM	Major Command
MAN	Metropolitan Area Network
MANPAD	Man-Portable Air Defense
MANPER-B	Manpower/Personnel Module - Base Level
MAP	Mission Area Plan
MAPT	Modular Avionics Packaging Technology
MARC	Mobility Air Reporting and Communications
MASINT	Measurement Analysis and Signature Intelligence
MATTS	Mobility Aircrew Tactical Training System
MC	Mission Capable
MCC	Mobility Command Center
MCI	Mission Capability Indictors
MCP	Military Construction Program
MDS	Model Design Series

MDS	Modular Dissemination System
MEA	More Electric Aircraft
MEFPAK	Manpower Equipment Force Packaging
MGRLT	Medical Global Reach Laydown Team
MHE	Materials Handling Equipment
MICAP	Mission Capable
MICK	Mobility Initial Communications Kit
MILCON	Military Construction
MILSTAR	Military Strategic and Tactical Relay Satellite
MINTERMS	Miniature Terminals
MISREPs	Mission Reports
MITO	Minimum Interval Takeoff
MLS	Microwave Landing System
MLS	Multi-level Security
MMRC	Motion Media Records Center
MNA	Mission Needs Analysis
MNS	Mission Needs Statement
MOC	Meteorological Operational Capability
MOG	Maximum Aircraft on Ground
MOS	Manual Observing System
MOS	Medical Oxygen System
MPA	Manpower Personnel Authorization
MPF/D	Million Pounds of Fuel per Day
MPM/D	Million Passenger Miles per Day
MQTP	Maintenance Qualification Training Program
MRC	Major Regional Contingency
MRS BURU	Mobility Requirements Study Bottom-Up Review Update
MRT	Maintenance Recovery Team
MSC	Military Sealift Command
MSF	Mission Support Forces
MSI	Multi-Spectral Imagery
MSIC	Multi-Ship Integrated Control
MSM	Meritorious Service Medal
MSPO	Mission Support Planning Office
MST	Mission Support Team
MSTS	Mutli-Source Tactical System
MTBF	Mean Time Between Failure
MTF	Medical Treatment Facilities
MTG	Maintenance Training Guides
MTM/D	Million Ton Miles per Day
MTMC	Military Traffic Management Command
MTP	Master Training Plan
MTT	Mobile Training Team
MWR	Morale, Welfare and Recreation
MWRS	Morale, Welfare, Recreation, and Services

NAF	Nonappropriated Fund
NAF	Numbered Air Force
NATO	North Atlantic Treaty Organization
NBC	Nuclear, Biological & Chemical
NCA	National Command Authorities
NCO	Noncommissioned Officer
NDAA	Non-Developmental Airlift Aircraft
NDI	Non-Developmental Item
NDFP	National Defense Features Program
NEXRAD	Next Generation Weather Radar
NFIP	National Foreign Intelligence Program
NGB	National Guard Bureau
NGSL	Next Generation Small Loader
NMCS	Not Mission Capable for Supply
NMS	National Military Strategy
NOAA	National Oceanic and Atmospheric Agency
NOV	Notices of Violation
NPOESS	National Polar Orbiting Environmental Satellite System
NPR	National Performance Review
NSS	National Security Strategy
NVG	Night Vision Goggles
O&M	Operations and Maintenance
O&S	Operations and Support
OAS	Officer Assignment System
OBL	Onboard Cargo Loader
OBOGS	Onboard Oxygen Generating System
OC-ALC	Oklahoma City - Air Logistics Center
OCI	Offensive Counter Information
OCONUS	Outside of Continental United States
OFT	Operational Flight Trainer
OII	Objective Information Infrastructure
OIS	Office Information System
OJT	On-the-Job Training
OLVIMS	On-Line Vehicle Interactive Management System
OOP	Object-Oriented Programming
OOTW	Operations Other Than War
OPLAN	Operations PLAN
OPR	Office of Primary Responsibility
OPSEC	Operations Security
ORD	Operational Requirement Document
OSA	Operational Support Airlift
OSD	Office of the Secretary of Defense
OSI	Office of Special Investigations
OSINT	Open Source Intel
PACAF	Pacific Air Forces

PAI	Primary Aircraft Inventory
PAT	Process Action Team
PAX	Passengers
PC	Personal Computer
PCMCIA	Personal Computer Memory Card International Association
PCS	Permanent Change of Station
PDM	Programmed Depot Maintenance
PEG	Program Evaluation Group
PERSCO	Personnel Support for Contingency Operations
PL	Public Law
PMCS	Partially Mission Capable for Supply
PME	Professional Military Education
PMPS	Portable Mission Planning System
PMSV	Pilot-to-Metro Service
PNAF	Primary Nuclear Airlift Force
POL	Petroleum, Oils, and Lubricants
POM	Program Objective Memorandum
POS	Peacetime Operating Stock
POSIX	Portable Operating System Interface for Computer Environments
PRAM	Productivity, Reliability, Availability and Maintainability
PRAMS	Passenger Reservation and Manifesting System
PRV	Plant Replacement Value
PSFPD	Passenger Smoke and Fume Protection Devices
PSP	Primary Supply Points
PSRC	Presidential Selective Reserve Call-Up
PSYOPS	Psychological Operations
PTM	Production Team Maintenance
PTS	Patient Transport System
PTT	Part Task Trainers
QDUC	Quick Dial-Up Capability
QRCT	Quick Reaction Communications Terminal
R&M	Reliability and Maintainability
RA	Reserve Associate
RAAP	Rapid Application of Air Power
RAMTIP	Reliability and Maintainability Technology Insertion Program
RCM	Reliability Centered Maintenance
RCR	Runway Condition Readings
RDT&E	Research, Development, Testing, and Evaluation
REACH	Recreation, Education, Awareness and Community Hub
RF	Radio Frequency
RFI	Requests for Information
RIBS	Readiness in Base Services
RIDEX	Recce/Intel Data Exchange System
RM&D	Reliability, Maintainability and Deployability
RMS	Requirements Management System

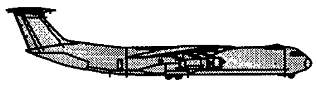
ROCSS	Robust Composite Sandwich Structures
ROM	Read Only Memory
RON	Remain Overnight
RPM	Real Property Maintenance
RSP	Readiness Spares Package
RTIC	Real Time Information in the Cockpit
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minima
SAAM	Special Assignment Airlift Mission
SAB	Scientific Advisory Board
SAC	Strategic Air Command
SACDIN	SAC Digital Information Network
SAFMA	Strategic Airlift Force Mix Analysis
SAM	Special Air Mission
SAMs	Surface-to-Air Missiles
SATCOM	Satellite Communications
SBLC	Standard Base Level Computer
SCACS	STRATCOM Command and Control
SCI	Sensitive Compartment Information
SCITS	Spinal Cord Injury Transport System
SEAD	Suppression of Enemy Air Defenses
SECDEF	Secretary of Defense
SEI	Special Experience Identifier
SELCAL	Selective Calling
SERP	Sustaining Engineering Requirement Plan
SES	Senior Executive Service
SFDR	Standard Flight Data Recorder
SHF	Super High Frequency
SIDS	Secondary Imagery Dissemination Systems
SIGINT	Signal Intelligence
SINCGARS	Single Channel Ground to Air Radios
SIOP	Single Integrated Operation Plan
SIPRNET	Secret Internet Protocol Network
SKE	Station Keeping Equipment
SLEP	Service Life Extension Program
SNCO	Senior Non-Commissioned Officer
SOAFTS	Special Operations and Future Transport Structures
SOCS	SAC Operational Communications System
SOFI	Special Operations Forces Improvements
SOLL II	Special Operations Low Level
SONET	Synchronous Optical Network
SORTS	Status of Resources and Training System
SP	Security Police
SPINS	Special Instructions
Sq Ops	Squadron Operations

SSB	Special Separation Benefit
STS	Specialty Training Standard
STT	Small Tactical Terminal
STU-III	Secure Telephone Unit
SUIT	Subsystem Integration Technology
SUNT	Specialized Undergraduate Navigator Training
SV	Services
TACAN	Tactical Air Navigation
TACC	Tanker Airlift Control Center
TACSAT	Tactical Satellite Communications
TACTERMS	Tactical Terminals
TAF	Terminal Aerodrome Forecast
TAFCS	Total Active Federal Commissioned Service
TAFIM	Technical Architecture for Information Management
TAFMS	Total Active Federal Military Service
TALCE	Tanker Airlift Control Element
TALO	Theater Airlift Liaison Officer
TAMIS	Tanker Airlift Mobility Integrated System
TAP	Transition Assistance Program
TASO	Theater Augmentation Support Office
TASS	Tactical Automated Security System
TAWDS	Transportable Automated Weather Distribution System
TBM	Theater Battle Management
TBMCS	Theater Battle Management Core System
TBM GOSG	Theater Battle Management General Officer Steering Group
TCAS	Traffic Collision Avoidance System
TCTO	Time Compliance Technical Order
TDC	Theater Deployable Communications
TDY	Temporary Duty
TERA	Temporary Early Retirement Authority
TFS	Tactical Forecast System
TG	Terrorist Groups
TGOS	Tactical Ground Observing System
TIRR	Technological Investments Recommendation Reports
TLF	Temporary Lodging Facilities
TMO	Traffic Management Office
TNMCM	Total Not Mission Capable Rates for Maintenance
TNMCS	Total Not Mission Capable Rates for Supply
TOFS	Tactical Observing and Forecast System
TOLD	Takeoff and Landing Data
TPFDD	Time-Phased Force Deployment Data
TPFDL	Time Phased Force Deployment List
TPIPT	Technical Planning Integrated Product Team
TR	Thrust Reverser

TRAC2ES	USTRANSCOM Regulating & Command and Control Evacuation System
TRI-TAC	Tri-Service Tactical Communications Equipment
TTF	Tanker Task Force
UAF	Unit Authorization File
UE	Unit Equipped
UE ARC	Unit Equipped Air Reserve Component
UHF	Ultra High Frequency
UN	United Nations
US	United States
USACOM	United States Atlantic Command
USAF	United States Air Force
USAFE	United States Air Forces in Europe
USC	United States Code
USCENTCOM	United States Central Command
USEUCOM	United States European Command
USMTF	United States Message Text Formats
USPACOM	United States Pacific Command
USSOCOM	United States Special Operations Command
USSOUTHCOM	United States Southern Command
USSPACECOM	United States Space Command
USSR	Union of Soviet Socialists Republic
USSTRATCOM	United States Strategic Command
USTRANSCOM	United States Transportation Command
UTC	Unit Type Code
UTE	Utilization Rate
V/IFR	Visual/Instrument Flight Rules
VHA	Variable Housing Allowance
VHF	Very High Frequency
VHS	Video Home System
VI	Visual Information
VISC	Visual Information Service Centers
VMC	Visual Meteorological Conditions
VOR	Very High Frequency - Omni Directional - Radio
VORTAC	Combined VOR and TACAN
VSIP	Voluntary Separation Incentive Pay
VTC	Video Teleconferencing
WAN	Wide Area Network
WBE	Wide-Body Equivalents
WBEL	Wide-Body Elevator Loader
WCDO	War Consumables Distribution Objective
WMD	Weapons of Mass Destruction
WOC	Wing Operations Center
WRM	War Readiness Materiel
WSMIS	Weapon Systems Management Information System

WST	Weapon System Trainer
YA	Youth Activity

ROADMAPS



C-141 Roadmap

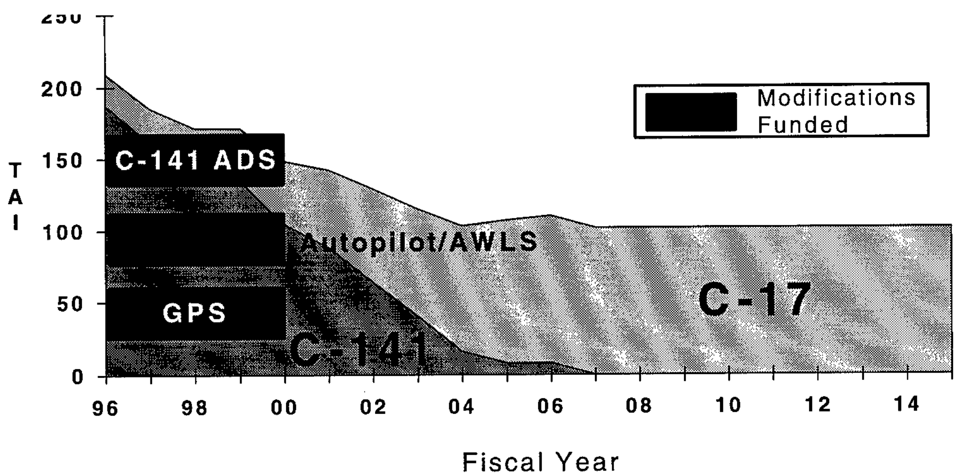
STRATEGY: Rapid deployment of forces during conflict, crisis response and Operations Other Than War (OOTW).

MISSION: Strategic delivery of cargo, passengers, and patients via airland and/or airdrop. Primary strategic special operations and airdrop platform.

DESCRIPTION:

- C-141 represents 29% of total military organic airlift capability (FY97: 8.74 MTM/D of 30.4 MTM/D).
- Core Airlifter. First flight, Dec 63. Original service life 30,000 hours.
- Stretched 23 feet and air refueling receptacle added between 1979-1982.
- Average age: 28.5 years, over 36,000 actual hours; 37,000 equivalent (damage) hours.
- Payload/Range: 68,000 lbs (max) @ 2,270 nm; 32,000 lbs @ 3,200 nm; max ferry range--4,600 nm.
- Crew Ratio: Active 1.8, Associate Reserve 1.8, UE ARC 2.0.

Core Airlifter Force Structure (FY98-03POM) with top C-141 modifications



	95	96	97	98	99	00	01	02	03	04	05	06
Active PAA	143	131	105	87	79	48	32	8	0	0	0	0
Reserve/Guard PAA	56	56	56	56	56	56	56	56	40	16	8	8
PAA Total	**199**	**187**	**161**	**143**	**135**	**104**	**88**	**64**	**40**	**16**	**8**	**8**

(The numbers above indicate 4th quarter numbers as established in 98-03 POM)

DEFICIENCIES:

- Aircraft structural integrity problems have severely limited C-141 capability.
- 121 aircraft require center wing box repair/replacement (Coral Center program) to achieve required service life.
  - Coral Center repair program reduces availability by 7 aircraft/day. 109 aircraft repaired to date, 12 remaining; estimate completion by FY97.
- Avionics and autopilot increasingly difficult to support as mean time between failure decreases.

PLAN: Recover as much operational capability as economically feasible to meet strategic airlift requirements.

- Near term objective (FY98-03): Manage fleet drawdown and modification program.
  - Inspect, repair, and selectively modify aircraft to achieve return on investment and comply with 5 year rule.
  - Restore and ensure continued capability through modification of 63 aircraft.
- Long term objective (FY01-06): Retire C-141 active force by FY03, unit-equipped Guard and Reserve by FY06.

OPR: HQ AMC/XPD
As of:Oct 96

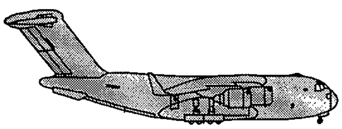
MODIFICATIONS (As of FY98-03 POM): "X" indicates full or partial funding

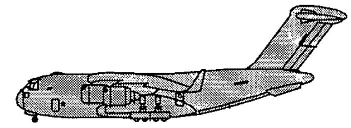
Name / Description	Source Document	MOD Class	FY95 $ M	FY96 $ M	FY97 $ M	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	Program Total $M
Airlift Defensive Systems	SON MAC 002-81	Capability	9.1	8.4	6.4	4.0	0	0	0	37.9
All Weather Landing System/Autopilot/Ground Collision Avoidance System/Reduced Vertical Separation Minima	1067 MAC 87-90 Draft ORD 004-94	R&M	5.0	55.6	28.6	14.4	2.7			168.9
Fuel Quantity Indicator System digital upgrade	1067 MAC 86-211	R&M								18.1
Global Positioning System	FM 48 AFLC AUG 90	Capability		23.6	17.2	7.5	4.0			52.3
HF Modemization (ARC 190/ACP/TRC-181/SELCAL)	MNS AMC 014-93	Capability	X	X	X					X
SATCOM (INMARSAT AERO-C) L-Band	1067 AMC 94-058	Capability		4.5	0.1					4.6
Weep Hole Rework *	1067 MAC 84-080	R&M		Fully Funded, Installations not Complete						3.8
Special Forces Improvement Modification/NVIS	SON MAC 07-81	Capability		Fully Funded, Installations not Complete						X
Low Cost Safety Mod/Strobe light/Elevator Artificial Feel	As Directed	Safety	0	0	0	0.3	0.1	0.7	0.5	1.4
Standard Flight Load Recorder	1067 MAC 84-092	R&M		Fully Funded, Installations not Complete						6.1
Data Link Capability	MNS AMC 001-92	Capability		Initiative						TBD
UHF SATCOM Antennas		Capability		Fully Funded, Installations not Complete						4.7
SINCGARS	MAC/AFCC 203-80	Capability	X	X						X
IFPS/TCAS	MNS AMC 004-93	Capability		Initiative						TBD

* These are weep hole programmed modifications. The current weep hole repair will be funded as a DBOF-T repair action.

BOTTOM LINE IMPACT:

- C-141 contribution to nation's global mobility force is decreasing as fleet retires.
- The most suitable 63 aircraft of remaining fleet are being updated to maintain capability and supportability until retirement. All these aircraft are ARC assets.
  - •• Reliability and maintainability/supportability modifications are necessary to keep the C-141 fleet mission capable.
  - •• Non-compliance with Stage III noise reduction standards may restrict C-141 operations into civil fields worldwide after the year 2000. No engine replacement or modification is planned.
- Any slip in modification program puts modification/upgrade program at risk for compliance with 5 year rule.
- "C-141 Mission Transition Plan" insures no gap in mission coverage as the C-141 retires. Missions include: SOF support, Prime Nuclear Airlift Force (PNAF), strategic aeromedical evacuation, Minuteman Missile transport, Joint Airborne Command Center/Command Post (JACC/CP), Strategic Brigade Airdrop, PHOENIX BANNER/SILVER/COPPER, DEEP FREEZE, NASA Pathfinder, and classified missions (OPR: HQ AMC/XPDLR).





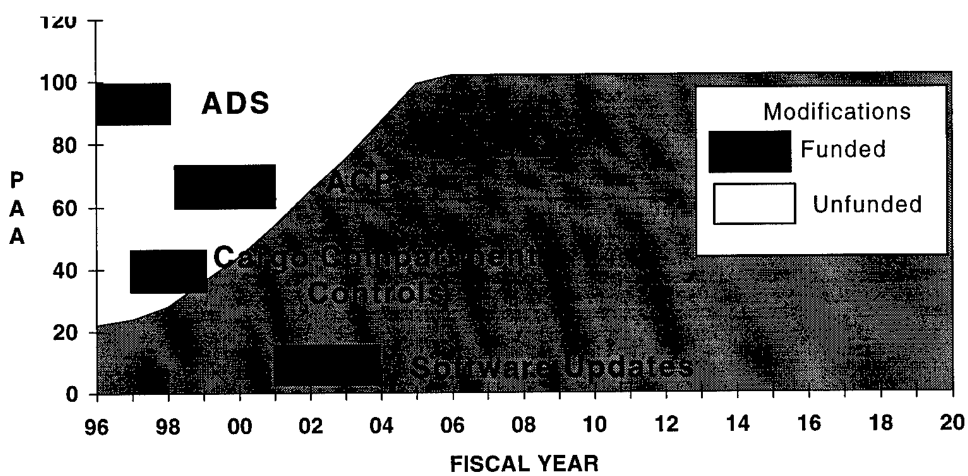
C-17 Roadmap

STRATEGY: Rapid response to conflict, crisis, and disasters.

MISSION: Strategic delivery of cargo, passengers, and patients via airland and airdrop. Will become our primary core airlifter and airdrop platform. Direct delivery of cargo and passengers from CONUS direct to the main operating bases or forward operating locations.

DESCRIPTION:
- Future core airlifter, replacing retiring C-141.
- First flight 15 Sep 91. First C-17 delivery to Charleston AFB 14 Jun 93.
- Initial Operational Capability (IOC) declaration--Jan 95.
- Direct delivery from CONUS to small, austere airfields, increases flexibility and throughput in constrained environments.
- Greatly improved operational capabilities, combining outsize C-5 capability with short field C-130 capability.
- 82.5% contracted mission capable rate exceeds current rates; C-5 - 75%, C-141 - 80%.
- Payload/Range: 160,000 @ 2,400 nm; 110,000 (threshold) @ 3,200; max ferry range--4,600 nm.
- Crew Ratio: Active 3.0, Associate Reserve 2.0.

C-17 Force Structure (FY98-03) with top modifications



DEFICIENCIES:
- Technological advances have increased demand on electrical power for aircraft operations. Current backup electrical system only provides 30 minutes emergency power--needs upgrade to 2 hours emergency power for adequate safety margin.
- C-17 fleet not fully equipped with airlift defensive systems to detect/avoid/defeat threats.
- Requires Data Link or will be excluded from operating in optimum airspace under future FAA/ICAO standards.
- Aft Cargo compartment becomes excessively cold at cruising altitude, unsuitable for long range passenger transport.
- Requires a new automated communications processor to support AMC's HF radio modernization program currently being installed in other AMC aircraft, command posts, and deployed communications equipment.
- Current GPS equipment has no integrity monitoring capability or fault detection and exclusion equipment. Aircrews are unable to determine the accuracy of the GPS signal being received.

PLAN:
- Focus on fielding of the C-17 as a viable employment system:
  - Continue to assess developmental effectiveness and suitability to perform the mission.
  - Further develop and refine maintenance and aircrew training programs.
  - Integrate aircraft and aircrews into Brigade Airdrop requirement.

OPR: HQ AMC/XPD
As of: Oct 96

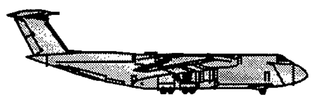
- Long-term objective (FY00-15); focus on establishment of C-17 as AMC's core airlifter:
  - •• Airdrop-primary portion of Brigade Airdrop mission-fulfill requirement by FY06.
  - •• Complete acquisition of 120 TAI (FY 05).

MODIFICATIONS (As of FY98-03 POM): "X" indicates full or partial funding

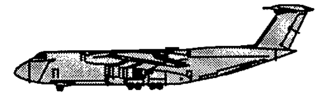
Name / Description	Source Document	FY96 $ M	FY97 $ M	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	FY02 $ M	FY03 $ M	Program Total
Airlift Defensive Systems	SON MAC 007-81	X	X							X
HF Auto Comm Processor		X	X	X	X	X				X
Cargo Compartment Controls			X	X						X
Software Updates							X	X	X	X
Oxygen System Deficiencies			X	X						X
Self Sufficiency							X	X	X	X
Advanced Infrared Countermeasures	MNS AMC 014-92					Initiative				TBD
Automated G-File Users Systems (AGILES)	PMD 0020 (27)					X	X	X		X
SKE 2000			X	X						X
Miscellaneous Low Cost Mods	As Directed	X		X	X	X	X			X
Internal Gust Locks						X	X	X	X	X
400 Pound Paratroop Seat			X	X	X	X	X	X	X	X
Container Delivery System	PMD 0020 (27)		X	X	X					X
Aeromedical Litter Stanchion Redesign			X	X	X					X
Permanently Installed Integral Jacking Hardware							X	X	X	X
Data Link Capability	MNS MAC 001-92					Initiative				TBD
Improved Under Floor Insulation								X	X	X
Improved Vmcg On Wet Runways						X	X	X		X
Inertial Ref Unit		X					X	X	X	X
Comfort Pallet (Electrical)	PMD 0020 (27)	X								X
Airborne Single Channel Ground and Air Radios (SINCGARS)	SON MAC/AFCC 203-80			X	X	X				X
Windshear Prediction System							X	X	X	X
Armor Plating System					X	X	X			X
Offset Center-line Seats	ACSN 89-0020						X	X	X	X
Mission Computer			X	X	X					X
GPS Integrity				X	X	X				X
Operational Flexibility						X	X	X		X
Avionics Block Upgrade							X	X	X	X
Cockpit Utilization								X	X	X
Cargo Compartment Upgrade								X	X	X
Cargo Compartment Improvements							X	X	X	X

BOTTOM LINE IMPACT:

- Nation needs new core airlifter; key component of future joint warfighting team.
- C-141 is retiring now--increasing need for the C-17.
- C-17's operational capabilities vital to supporting operations in constrained environments (peacekeeping/peacemaking, humanitarian, contingency), increasing throughput.
- C-17 critical to support Brigade Airdrop mission.



C-5 Roadmap



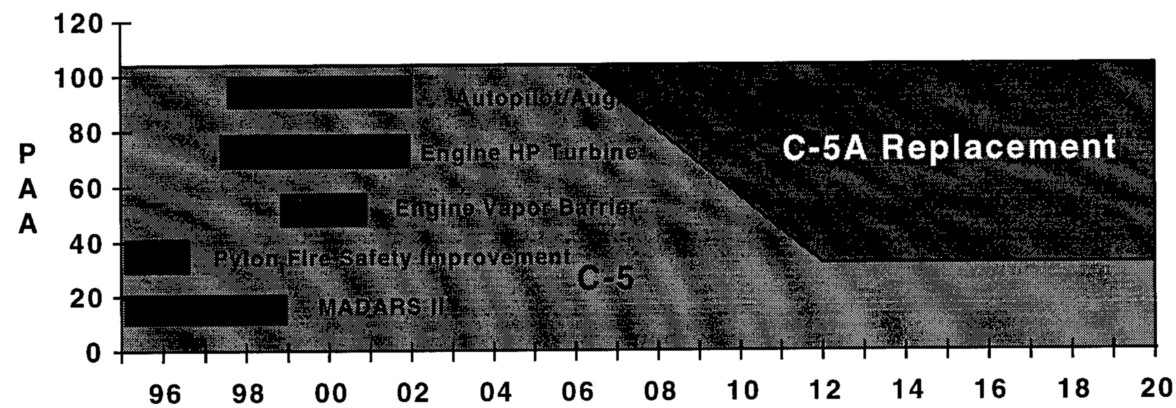
STRATEGY: Rapid deployment of forces during conflict, crisis response and disasters.

MISSION: Strategic delivery of cargo and passengers primarily via airland operations and will begin supporting the airdrop mission when the aircraft modifications are complete. Capable of outsize cargo delivery.

DESCRIPTION:
- Represents 48% of AMC FY97 organic capability (14.6 of 30.4 MTM/D).
- Air Force took delivery of the first C-5A in 1969; fleet retrofitted with new wing in mid 1980s.
- Fifty C-5Bs delivered 1986-88.
- Average age: A model-26 years/15,000 hours; B model-8 years/6,500 hours.
- Payload/Range: 291,000 lbs (max) @ 1530 nm; 180,000 lbs @ 3,200; max ferry range 6238 nm.
- Crew Ratio: Active 1.8, Associate Reserve 1.8, UE ARC 2.0.

DEFICIENCIES:
- Size and lack of ground agility restrict normal use to main operating bases.
- AMC mission capable rate is 58.8% for C-5A and 67.9% for C-5B (CY95 avg), below the 75% standard.
- Overall depot flow times are high, with the A model rate at 310 days and the B model at 175 days (CY95 avg), significantly higher than the contracted time of 230 and 146 days respectively.
- Fleet does not meet Stage III noise standards and CY97 oceanic navigation requirements for reduced separation.

FUNDED MODIFICATIONS/NOTIONAL FORCE STRUCTURE



	TAI																		
Program Name	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15
C-5	126	126	126	126	126	126	126	126	126	126	114	102	90	78	66	54	50	50	50
C-5A Replacement											12	24	36	48	60	72	72	76	76

PLAN:
- The C-5 Capital Investment Plan has four objectives
  1. Restore aircraft reliability and maitainability.
  2. Maintain structural and system integrity.
  3. Reduce costs of ownership.
  4. Increase operational capability.
- The Capital Investment Plan is includes three categories--upgrades (modifications), repairs, and preferred spares. Items in each category are prioritized based on meeting the four objectives listed above.
- Upgrade modification, repair, preferred spare priorities are grouped into blocks 10, 20, and 30.
  - •• Block 10 items are the highest priority and are programmed to begin installation/repair no later than FY00.
    - ••• Top items include cockpit modernization and an engine R&M Mod that has a payback of less than 5 years.
  - •• Block 20 items will follow on the heels of block 10 when solutions are identified and funds are secured.
    - ••• All repair items in this block are structural and require studies to define costs and solution timelines.

OPR: HQ AMC/XPD
As of: Oct 96

•• Block 30 items are long-term issues or opportunities that will be explored and addressed in the future.

- Block 10, 20, 30 mods, repairs, and preferred spares priority will be given to the C-5B.
- All current structural and system enhancements for A-models will be reevaluated against a service of FY07 to FY13.
- Complete economic service life studies to determine the best time to replace the C-5A.

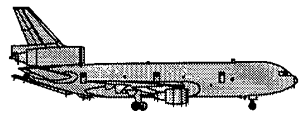
MODIFICATIONS (As of FY98-03 POM): "X" indicates full or partial funding

Name / Description	Source Document	MOD Class	FY95 $ M	FY96 $ M	FY97 $ M	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	Total
Fan Blade Repair		R&M	Funded Through Depot Repair							
Autopilot / Augmentation / ALDCS R&M Solutions *	1067 AMC94 052 MNS AMC011-93 ORD in draft	R&M			X	X	X	X	X	X
TF 39 Engine Reliability, Maintainability, and Availability, Capability *	1067 AMC 93-051 MNS AMC 003-94 TO AMC/CC	R&M			X	X	X	X	X	X
Engine Vapor Barrier *	1067 AMC 94-036	R&M					X	X		X
Install Pylon Fire Safety Improvement	1067	R&M	Fully Funded, Installations Complete Sept 96							X
MADARS II and concurrent installs on C-5As	1067 MAC 85-146	R&M	X	X	X	X				X
Replace IFF and N1 Indication Systems	1067 MAC 85-129	Capability	Fully Funded, Installations Not Complete							X
Multiplexer Processor Upgrade	1067 AMC 93-024	R&M	Fully Funded, Installations Not Complete							X
Install Airlift Defensive Systems	SON MAC 007-81	Capability	X	X	X	X	X	X	X	X
Install HF ACP/Exclusive Call	MNS AMC 014-93	Capability	Multiple System Mod							--
Replace Main Landing Gear Actuator - MTBF from 70 to 625 hours	1067 MAC 85-54	R&M	X	X	X					X
Hydraulic Surge Control Easy Open Valves	1067 AMC	R&M			X					X
Fuel Flow Transmitter		R&M				X				
Tire Deflation/Hub Redesign/Anti-skid Detector	1067 AMC					X				
Improved Pitch Trim Actuation - MTBF from 119 hrs to 2 year "no fail"	1067 Draft 93-039	R&M	Fully Funded, Installations Not Complete							X
Advanced Infrared Countermeasures	MNS AMC 014-92	Capability	Multiple System Mod							
Anti-Ice Valve Switch - MTBF from 450 to 4,000 hrs	1067 MAC 86-19	R&M	Fully Funded, Installations Not Complete							X
Main Fuel Control Recam	1067 MAC 84-089	R&M	X							X
Troop Floor Corrosion Prevention *	1067 AMC 94-034	R&M		X						X
Cockpit / Courier Floor Stress Panel *	DRFT MNS in cord	R&M								X
RTIC		Capability	Initiative							
Misc Safety Mods	As Required	Safety	X	X		X				X
Miscellaneous Low Cost Mods	As Required	R&M			X		X			X
Install Global Positioning System	DOD PMD 4075-28	Capability	X	X	X	X	X	X		X
Data Link Capability	MNS AMC Draft 001-92	Capability	Multiple System Mod							--
Improved Engine Bolting - MTBF from 30,000 to 47,000 hrs	1067 MAC 85-116	R&M		X						X
Thrust Recovery / Outflow Valve Drain *	1067 AMC 94-033	R&M		X						X
D sump Lube Tube MOD *	1067 AMC 94-037	R&M						X		X
Reduced Vertical Separation Minima	MNS AMC 007-93	Capability		X	X	X				X
UHF SATCOM/ANDVT/DAMA	SON ESC 03-83	Capability	Multiple System Mod							--
Install UHF SATCOM Antenna	SON MAC 03-01	Capability	Fully Funded, Installations Not Complete							X
SINCGARS	SON MAC/AFCC 03-80	Capability	Multiple System Mod							
Engine Stage 2 Fan Blade Anti-Clank Retainer	1067 AMC 85-209	R&M	Fully Funded, Installations Not Complete							X
Install IFPS / TCAS	MNS AMC 004-93	Capability	Initiative							TBD
Smart Engine Diagnostics *	1067 AMC 94-038	R&M						X	X	X

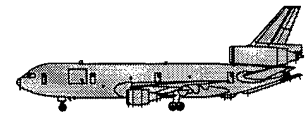
* Items are new Block 10 modifications. These items will rise to the top of the list as current programs are completed.

BOTTOM LINE IMPACT:

- Current problems limit the capability of the fleet to meet wartime requirements. Not completing reliability and maintainability modifications will degrade capability further as the fleet ages, and increase operating costs.
- Effects of R&M modifications will produce significant gains in reliability/availability, however, these benefits will not become apparent until after the FY01 time frame and while beneficial across the fleet, they may not raise A-model performance enough to meet R&M standards.
- Incorporating technological advances in navigation, communications and situational awareness enhance mission success, and reduce system supportability problems.
- Failure to upgrade cockpit avionics to meet new FAA/ICAO requirements may limit global operations.
- Modernization/replacement studies must be undertaken to assess the long-term viability of the C-5A fleet to fulfill its mission requirements.



KC-10 Roadmap

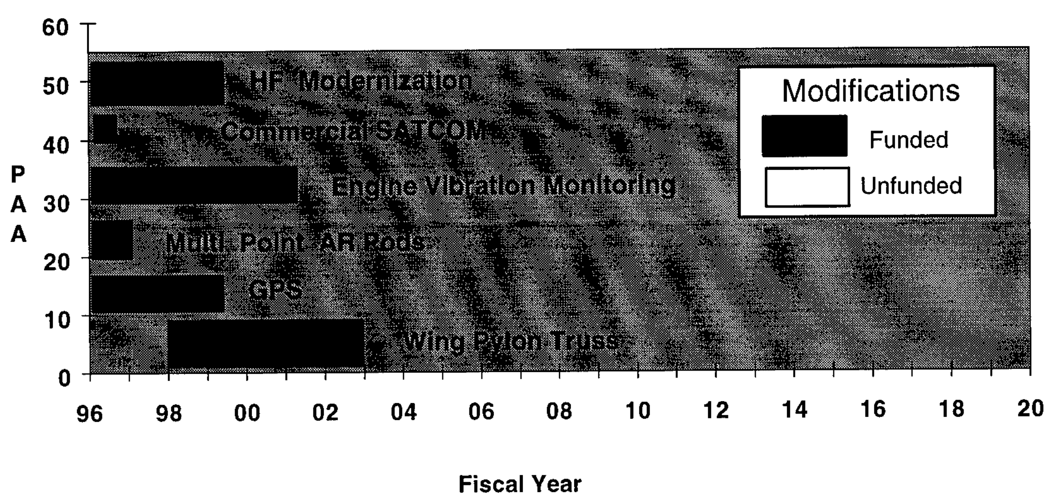


STRATEGY: Rapid deployment and employment of forces during conflict/crisis response.

MISSION: Air refueling and airlift support for deployment, employment, redeployment and joint/combined special operations.

DESCRIPTION:
- KC-10s represent approximately 10 percent of Air Force tanker fleet.
- Represents 13 percent of total military organic airlift capability (FY97; 3.87 MTM/D of 31 MTM/D).
- Crew ratio is 2.0 active and 1.5 Reserve Associate.
- Commercial derivative of the DC-10-30, acquired by AF between 1981 and 1987.
- Swing role tanker capable of performing both air refueling and airlift missions.
- Fleet parts and depot accomplished through contract logistics support (CLS). Aircraft 'on-equipment' maintenance is bluesuit.
- Modernization strategy aimed at maintaining state of the art capability and increasing interoperability with US and allied forces.

KC-10 Force Structure (FY 98-03 POM) with top modifications



DEFICIENCIES:
- KC-10 will be excluded from operating in optimum airspace under future FAA standards.
  - •Will require Data Link and Reduced Vertical Separation Minima to meet future standards.
- KC-10 is not compatible with future communications and communications security standards.
- KC-10 is not equipped to detect/avoid/defeat threats.

OPR: HQ AMC/XPD
As of: Oct 96

MODIFICATIONS (As of FY98-03POM): "X" indicates full or partial funding

Name / Description	Source Document	MOD Class	FY97 $ M	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	FY02 $ M	FY03 $ M
HF Modernization with ACP & Exclusive Call	MNS AMC 014-93	Capability							
Engine Vibration Monitoring		R&M	X	X	X	X	X		
Multi-Point Refueling Pods	PMD 2346(2)	Capability							
Service Bulletins	As Required	R&M		X	X	X	X	X	X
Replace Wing Engine Pylon Truss	AF 1067	R&M	X	X	X	X	X	X	
Miscellaneous Low Cost Modifications	As Required	R&M		X			X	X	X
Global Positioning System	DOD PMD4075 28	Capability	X	X	X				
Install Data Link Capability - Future FAA Requirement	MNS Draft 001-92	Capability				Initiative			
Intraformation Positioning/Traffic Collision Avoidance	MNS AMC 004-93	Capability				Initiative			

PLAN:

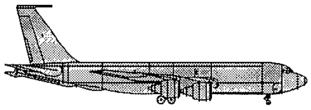
- Maintain commonality with commercial DC-10 fleet; maintain FAA certification.
- Continue R&M modifications to minimize ownership costs.
- Continue capability enhancements; ensure ability to operate in the optimum airspace.
- Upgrade communications gear and add wing pods to maximize interoperability with entire spectrum of receiver aircraft.
- Add capability to detect/avoid threats. Real Time Information in the Cockpit (RTIC) will enhance aircrew situational awareness in a threat environment.
- Begin studies in FY00 to determine future requirements of system.

BOTTOM LINE IMPACT:

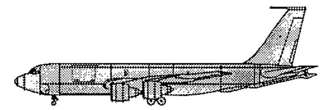
- Maintaining FAA certification ensures commonality with large commercial fleet and less expensive logistics network.
- Continued R&M modifications will ensure the lowest possible ownership costs.
- Not accomplishing modifications such as wing pods, and communications equipment jeopardizes ability to fully interface with full spectrum of receivers.
- KC-10 must be able to detect/avoid/defeat threats to maximize employment flexibility.

KC-10 FLYING HOURS

Current Funding	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03
AMC	31,212	31,314	31,315	31,314	30,314	30,372	30,372	30,372
Reserve Associate	13,958	13,958	15,300	15,300	15,300	15,300	15,300	15,300



KC-135 Roadmap



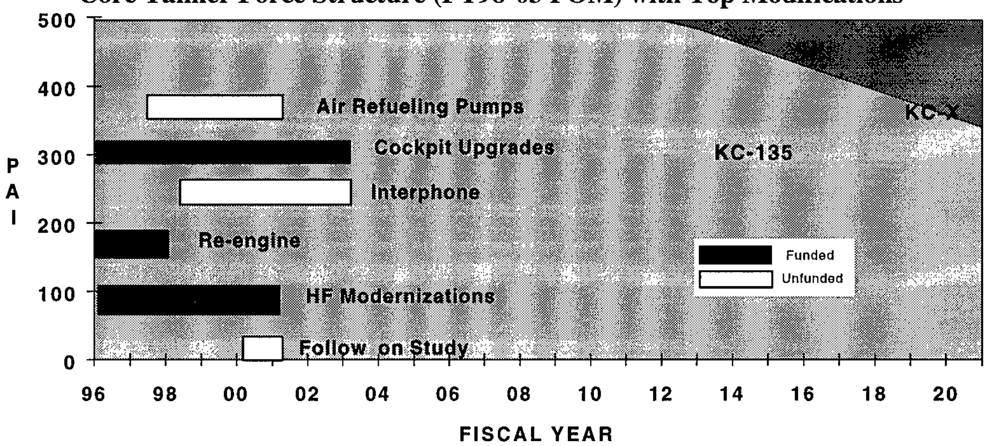
STRATEGY: Rapid deployment and employment of forces during conflict/crisis response; strategic nuclear deterrence.

MISSION: Air refueling for deployment, SIOP, employment, redeployment and joint/combined special operations, supports the airlift mission.

DESCRIPTION:

- Core tanker aircraft-approximately 90 percent of Air Force tanker fleet. (FY96/4: AMC-174; ACC-6; AETC 24, PACOM-15; EUCOM-9; ANG-204; AFRES-64)
- Crew ratio is 1.36 active and 1.27 ARC. DPG requirement established 1.57 active and ARC crew ratio.
- Fleet procured between 1957 and 1965.
- Wing lower surface reskin between 1976 and 1988 extended life to over 40,000 hours.
- R Model conversion began in early 1980's, added CFM-56 engines, strengthened landing gear, and engine nacelles.
- Structural service life predictions stretch well into the 21st century. Growing concern about effect of corrosion on economic service life. AMC continues to modernize KC-135 subsystems and avionics.

Core Tanker Force Structure (FY98-03 POM) with Top Modifications



NOTIONAL FORCE STRUCTURE

	TAI											
Program Name	FY97	To	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
KC-135	546		544	532	514	496	478	460	442	424	406	343
KC-X				12	30	48	66	84	102	120	138	156

DEFICIENCIES:

- Corrosion is difficult to detect and expensive to repair-service life impact cannot be accurately determined.
- E model engines are expensive to operate, difficult to maintain, and do not meet future FAA environmental standards.
- Inability to handle palletized cargo requires hand loading; slows deployments and limits flexibility.
- Obsolete and unreliable avionics incur unnecessary costs.
- Communications deficiencies limit interoperability with receivers in electronic emission controlled environment.
- KC-135 will be excluded from operating in optimum airspace under future FAA/ICAO navigation standards.
  - •Will require RVSM and Data Link to meet future standards.
- KC-135 lacks capability to refuel with both boom and drogue during a single flight because changing from one to another can only be done on the ground.
- KC-135 has no internal threat detection capability.
  - •No real time information in the cockpit to maintain situational awareness (SA) and avoid threats.
  - •Need for Infared Countermeasures to counter increasingly capable threats.

OPR: HQ AMC/XPD
As of: Oct 96

- Lack of VHF monitoring capability at the boom station in the cockpit as well as in boom pod.

MODIFICATIONS (As of FY98-03 POM):

Name / Description	Source Document	MOD Class	FY97 $ M	FY98 $ M	FY99 $ M	FY00 9 $ M	FY01 $ M	FY02 $ M	FY03 $M
Pacer CRAG - Radar- MTBF from 439 to 1,000 hours	MNS AMC/ACC 402-92	R&M	X	X	X	X	X	X	X
Pacer CRAG - Global Positioning System	DOD PMD 4075-28	Capability	X	X	X	X	X	X	X
Pacer CRAG - Compass Replacement	MNS AMC 012-93	R&M	X	X	X	X	X	X	X
Add Improved Interphone to facilitate future additions	1067 - AMC 94-032	Capability	Initiative						
New Air Refueling Pumps		R&M	Initiative						
Re-engine KC-135Q/E		Capability	Fully Funded - Completes in FY96						
Modernize C2 with ACP			X						
Modernize C2 with Exclusive Call (Multi Aircraft)	MNS AMC ON-93	Capability							
Fuel Savings Advisory System (FSAS)	SON SAC 013-86	R&M	X						
Scope Relocation		Capability	X	X					
Relocate SV Box		Capability	X	X					
Nuclear Hardening of INS/DNS		Capability	X	X	X				
Reduced Vertical Separation - Future FAA Standard	MNS AMC 007-93	Capability	Initiative						
Intraformation Positioning/Traffic Collision Avoidance	MNS AMC 004-93	Capability	Initiative						
Real Time Information in the Cockpit		Capability	Initiative						
Install Maintenance Free Battery - MTFB from 2 to 5 yrs	1067 AMC 040-93	R&M	X	X	X	X	X		
Install Data Link Capability - Future FAA Requirement	MNS AMC DRAFT	Capability	Initiative						
Low Cost Mods	As Required	R&M	X				X		
Corrosion prevention--Improved Latrine		R&M	Initiative						
ANDVT/TACTERMS//MINITERMS		Capability	Initiative						
KC-135E Stage III Compliance		Capability	Initiative						
Multi-Point Refueling	MNS AMC 003-92	Capability	X	X	X	X	X	X	
AR Boom Nozzle	SON SAC 001-87	R&M	Initiative						
Standard Flight Data Recorder	MNS-AFISX 01-79	Capability	X	X	X	X	X		
Audible Cockpit Warning to warn of engine stall	ECP	Capability	X	X					
Ground Collision Avoidance System	MNS SAC 01386	Capability		X	X	X	X	X	X
New Air Cycle Machine		R&M	Initiative						
Add Cargo Rollers compatible with 463L pallet	MNS AMC 006-93	Capability	Fully Funded						
Passenger Smoke And Fumes Protection		Capability	Initiative						
Aircrew Eye and Respiratory Protection		Capability	Initiative						

PLAN:

- Upgrade cockpit to allow operations without a navigator.
- Continue R&M modifications and replace unreliable avionics to minimize ownership costs.
- Upgrade communications with equipment such as ANDVT, Have Quick II, and ACP to ensure capability to interface with full range of C2 and receiver aircraft.
- Continue capability enhancements such as Data Link and Reduced Vertical Separation Minima (RVSM) to ensure ability to operate in the optimum airspace under FAA/ICAO future system.
- Add capability to detect/avoid threats. Real Time Information in the Cockpit (RTIC) will enhance aircrew situational awareness in a threat environment.
- Quantify effect of corrosion by FY00. Begin studies in FY00 (corrosion included) to determine future of system.
- Push corrosion technologies. Until corrosion question is resolved, initiative to replace fleet beginning in FY13.

BOTTOM LINE IMPACT:

- The R Model conversion increases fuel offload capability by 50%, reduces fuel consumption 25%, reduces takeoff distance 20%, and complies with FAA Stage III noise standards.
- Failure to complete modifications required for reliability and maintainability will result in increasing operating cost.
- Wing pods, boom improvements and communications equipment upgrades enhance interface with Navy and allied receivers.
- KC-135 must be able to detect threats to avoid unacceptable attrition rates.
- Not accomplishing long range avionics modernization jeopardizes the KC-135s capability to operate in its optimum flight regime under future FAA/ICAO rules.
- Corrosion must be understood and controlled to ensure continued structural integrity and limit ownership costs.

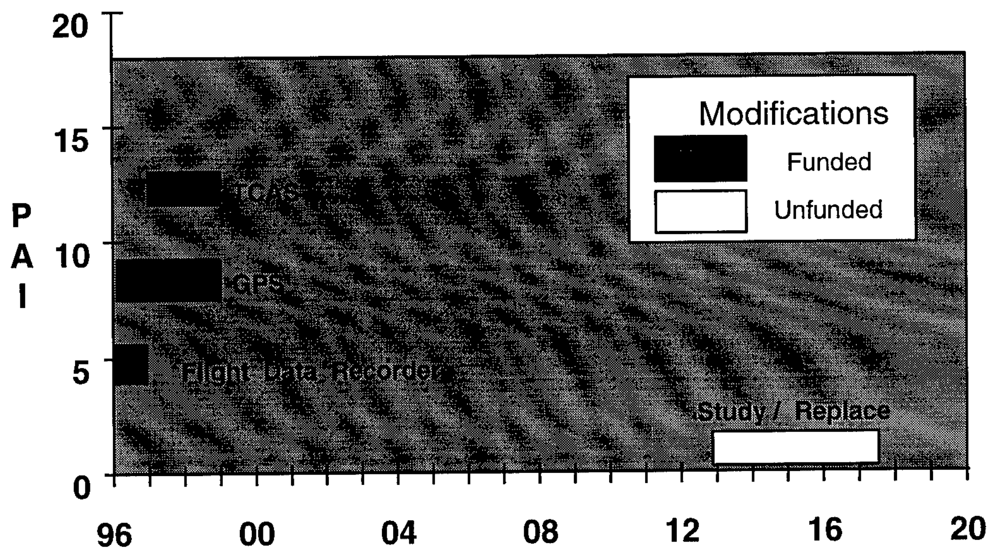
C-9A Roadmap

STRATEGY: Rapid deployment of forces during conflict and crisis response.

MISSION: CONUS redistribution of patients and theater aeromedical evacuation.

DESCRIPTION:
- C-9A entered AF inventory in 1968. Commercial derivative of DC-9.
- Supply support provided by contractor operated and maintained base supply.
- Depot support by contract logistics support (CLS).
- Unique contribution: Only dedicated aeromedical evacuation aircraft.

FORCE STRUCTURE:
- C-9A fleet consists of 18 PAA (11 AMC, 4 USAFE, 3 PACAF).



FISCAL YEAR

DEFICIENCIES:
- Avionics will not meet future FAA/ICAO navigation and separation standards.
- Logistics support tail will shrink when civil carriers retire DC-9s.

MODIFICATIONS (As of FY98-03 POM): "X" indicates full or partial funding

Name / Description	Source Document	MOD Class	FY96 $ M	FY97 $ M	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	FY02 $ M	Total
Traffic Collision Alert and Avoidance System (TCAS)		Capability		X	X					X
Service Bulletins/Low Cost Mods	As Required	R&M	X	X	X	X	X	X	X	X
Global Positioning System (GPS)	DOD PMD 4075-28	Capability	X	X	X					X
Replace Flight Data Recorder	1067 86-107	Capability	Fully Funded Completes FY96							
Aircrew Eye and Respiratory Protection		Capability	Initiative							

OPR: HQ AMC/XPD
As of: Oct 96

PLAN:

- Continue capability enhancements such as GPS and TCAS to ensure ability to operate in the optimum airspace under future FAA/ICAO system.
- Define requirement for Data Link and Reduced Vertical Separation minima (RSVM) and install as necessary.
- Initiate studies for a follow-on commercial derivative AE aircraft.
  - ••Prepare to field non-developmental aircraft if civil logistics support structure becomes unresponsive (as happened with the C-137).

BOTTOM LINE IMPACT:

- Aging avionics equipment jeopardizes C-9's ability to operate in optimum flight regime under future FAA/ICAO rules.

C-21 Roadmap

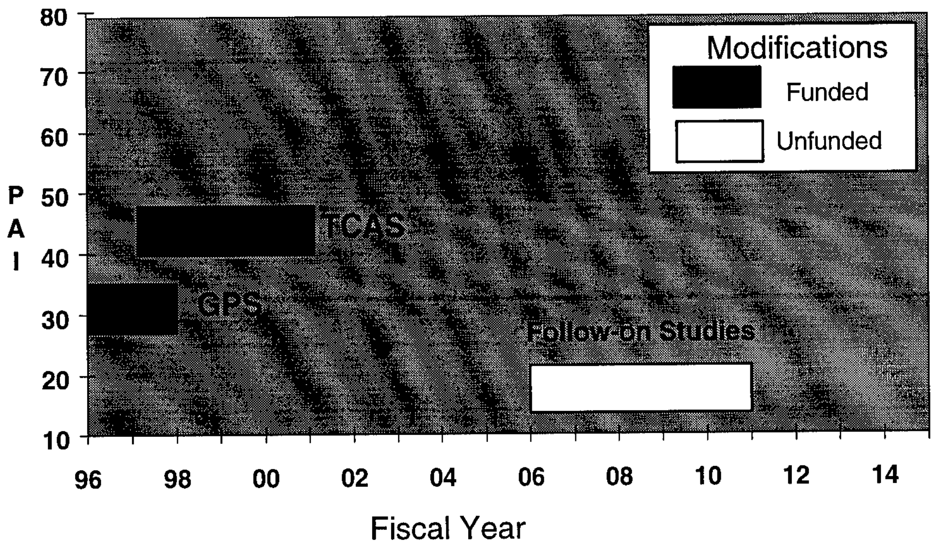
STRATEGY: Rapid deployment of forces during conflict and crisis response.

MISSION: Airlift of critical personnel and cargo with time, place, or mission sensitive requirements.

DESCRIPTION:

- C-21 entered AF inventory in 1984. Commercial derivative of Learjet 35.
- AMC is weapon system manager. TACC centrally schedules all CONUS AF C-21s. ••ACC, AETC, AFMC, ANG, PACAF, USAFE, and USSPACECOM own C-21s.

FORCE STRUCTURE:



DEFICIENCIES:

- OSA aircraft will be excluded from operating in the optimum airspace under future FAA/ICAO standards without avionics upgrades.
- Requires worldwide three-dimensional positioning/navigation accuracy.

MODIFICATIONS (As of FY98-03 POM): "X" indicates full or partial funding

Name / Description	Source Document	MOD Class	FY96 $ M	FY97 $ M	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	FY02 $ M	Total
Service Bulletins	As Required	R&M	X	X	X	X	X	X		X
Traffic Collision Alert and Avoidance System		Capability		X	X	X	X			X
Global Positioning System	DOD PMD 4075-28	Capability	X	X						X

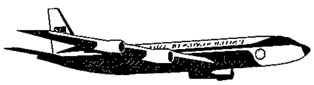
OPR: HQ AMC/XPD
As of: Oct 96

PLAN:

- Install GPS on all C-21s to ensure global employment capability.
- Install TCAS to ensure ability to operate in optimum airspace under future FAA/ICAO system.
- Define requirement for Data Link and Reduced Vertical Separation Minima (RSVM) and install as necessary.
- Begin studies in 2006 to determine feasibility of C-21's continued service.

BOTTOM LINE IMPACTS:

- Without GPS, C-21 will lack necessary global navigation capability.
- Not accomplishing avionics modernization jeopardizes the C-21's ability to operate in its optimum flight regime under future FAA/ICAO rules.



Special Air Mission (SAM) Roadmap

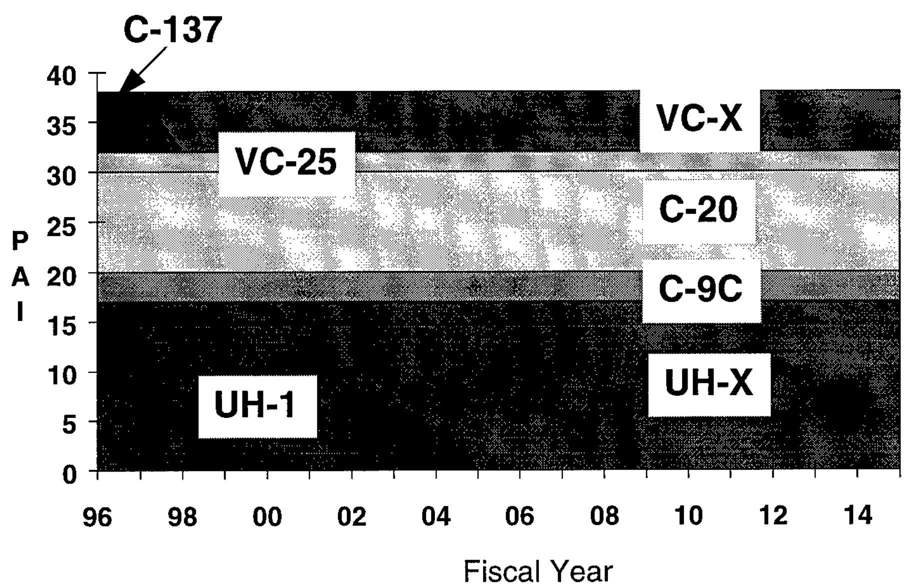
STRATEGY: Responsive and flexible airlift of US and foreign leaders, while performing their duties of protecting US global interests.

MISSION: Provide safe, secure, and reliable air transportation for high-ranking American and foreign dignitaries.

DESCRIPTION:

- SAM fleet is a diverse mix of aircraft: C-137, C-20, VC-25, C-9, and UH-1N helicopters.
- First SAM jet, C-137 acquired in 1959; a commercial derivative of the Boeing 707.
- Commercial production of C-20 (Gulfstream-III) is being updated to Gulfstream-IV.
- VC-25s (Boeing 747) are state of the art and still in commercial production.
- C-9C is commercial derivative of DC-9.
- UH-1N helicopters of the 1 HS are 1960's technology aircraft.
- Low use rates lead to extremely long, notional service lives based solely on flying hours.

SAM Force Structure



DEFICIENCIES:

- C-137, C-20B, and C-9C engines do not meet FAA Stage III noise standards.
- C-137 becoming prohibitively expensive to maintain and operate.
- UH-1 is expensive to maintain, and is range limited.
- Communications capability and security significantly behind today's standard.

OPR: HQ AMC/XPD
As of: Oct 96

MODIFICATIONS (As of FY98-03 POM): "X" indicates full or partial funding

Name / Description	Source Document	MOD Class	FY96 $ M	FY97 $ M	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	Total 96-01
Re-engine/Hush Kit C-9C		Capability			X	X	X	X	X
Traffic Collision Avoidance System (TCAS)		Capability		X	X	X			
Service Bulletins - (All)	As Required	R&M	X	X	X	X	X	X	X
Miscellaneous Low Cost Mods -(All)	As Required	R&M	X	X	X	X	X	X	X
Global Positioning System - VC-25	DOD PMD 4075-28	Capability	X	X	X				X
Global Positioning System - C-9A/C	DOD PMD 4075-28	Capability	X	X	X				X
Global Positioning System - C-20	DOD PMD 4075-28	Capability	X	X	X				X

PLAN:

- Statement of need (MAC 003-90) and Operational Requirements Document validated and funding programmed for replacement of C-137.
- Mission Need Statement (AMC 022-93) validated for replacement of UH-1.
  - Investigate feasibility of acquiring surplus Army H-60s, or adding AMC requirement to the rescue modernization effort.
- C-20B (Gulfstream III) and C-9C do not meet FAA Stage III noise standards. Re-engine, hush kit, or replace these aircraft. Two of the C-20Bs will be replaced with C-20Hs to meet Stage III restrictions.
- Mission Need Statement (AMC 003-93) validated to modernize communications systems and ensure security.

BOTTOM LINE IMPACT:

- Operating costs for the C-137 are skyrocketing. System and most parts are out of production and are obtained only at great expense. Replacement of C-137 is critical.
- Without replacement or significant update, mission capability of UH-1 is uncertain.
- Air Force II (C-137) was refused landing at a civilian field because of non-compliance with noise standards. Non-compliance will prevent SAM aircraft from operating at civil fields.
- Lack of capable and secure communications equipment jeopardizes national security and subjects our senior officials to communications monitoring by unauthorized parties.

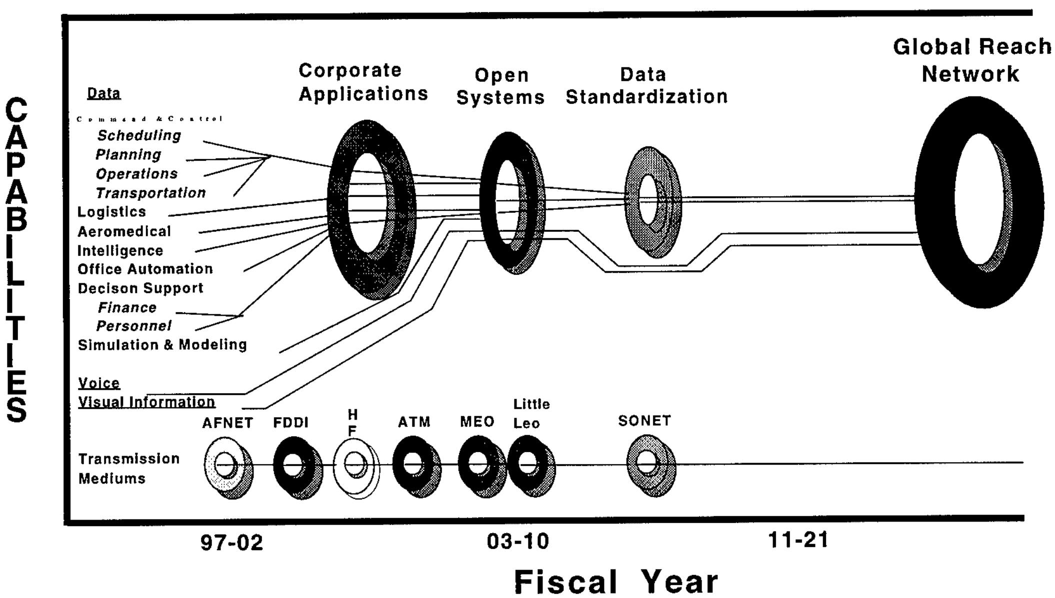
C4I Systems Architecture Roadmap

STRATEGY: Rapid deployment and sustainment of forces supporting US security interests.

MISSION: Provide integrated, responsive, reliable, C4I systems globally at all times.

DESCRIPTION:
- C4I Systems provide Data (D), Voice (V), and Visual Information (VI) capability.
- Over 52 AMC specific comm/computer systems involved in C4I system infrastructure.
- C4I system increasingly vital to the day-to-day Global Reach mission.
- The physical operating environment of C4I systems applies to all echelons of command (from cockpit to the HQs).
- C4I system covers the full spectrum of conflict between and within theaters.

C4IS Roadmap



DEFICIENCIES:
- No single terminal device that enables access to all echelons of information (classified/unclassified).
- Stovepipe systems not integrated to operate in an open systems environment.
  Many systems are expensive to maintain, lack upgrade capability, have a closed and proprietary hardware architecture, have proprietary software applications, and have no "go to war" surge capability.
- Lack robust network architecture.
- AMC doesn't have capability to provide a robust deployed communications infrastructure.
  - •• Limited connectivity for wing/bases and deployed systems data transfer.
  - •• Limited capability to support non-C2 functions in deployed environment.
- Stovepiped command and control (C2) voice communications becoming logistically unsupportable.
- Bases have little or no electronic VI processing capability.
- Deployed VI systems are slow, labor intensive, and incompatible with other DOD equipment.
- No deployed Video Teleconferencing (VTC) capability.

OPR: HQ AMC/SCT
As of: Oct 96

Program Description	Function	FY 97 $ (M)	FY 98 $ (M)	FY 99 $ (M)	FY 00 $ (M)	FY 01 $ (M)	FY 02 $ (M)	TOTAL (M)
Command and Control Information Processing System (C2IPS)-Wing Level C2	C2	X	X	X	X	X	X	X
Theater Deployable Communications (TDC)-Austere and Bare Base	Deployed Common User Net	X	X	X	X	X	X	X
Deployed SATCOM (DSAT) (Includes INMARSAT, DITV, DCOMMSAT, and SATCOM)	Cargo & Pax Handling	X	X	X	X	X	X	X
Global Decision Support System(GDSS)/Multiple Level Security (MLS)-Headquarters and NAF C2	C2	X	X	X	X	X	X	X
AMC Deployment Analysis System (ADANS)-Airlift Scheduling	Planning & Scheduling	X	X	X	X	X	X	X
Contingency Mating And Ranging Planning System (CMARPS)-Tanker scheduling	Planning & Scheduling	X	X	X	X	X	X	X
HF Radio Modernization	C2	X	X	X	X	X	X	X
System Integration (Data Migration, Data Standardization, Data Repository, C4 Program Integration)	Command Data Dictionary	X	X	X	X	X	X	X
G081	Maintenance	X	X	X	X	X	X	X
Global Air Transportation Execution System (GATES)	ITV	X	X	X	X	X	X	X
Wing LAN	C2	X	X	X	X	X	X	X
Advanced Computer Flight Plan (ACFP)	Planning	X	X	X	X	X	X	X
Objective Wing Command Post (OWCP)	C2	X	X	X	X	X	X	X
L-Band SATCOM	C2	X	X	X	X	X	X	X

PLAN:
- Maintain a comprehensive C4S Master Plan (Includes Transition & Implementation Plan).
- Analyze Current Capabilities (functions performed, Information produced and technology used).
- Future C4I system environment (Information Requirements, Applications required, and technology needed).
- Identify shortfalls between current capabilities and future environment.
- Develop an implementation strategy for the shortfalls.
- Develop a technology development plan with the acquisition community.
- Use AF "Blueprint" program to plan for C4I system engineering at wing/base.

DESIGN:
- Develop a corporate environment that includes corporate data, applications, and a common network.
- Future C4I system environment supporting command functions and information.
- Adopt and incorporate standards into systems design.
- Compliance with C4I system architectures, policies, standards & procedures via configuration control.
- Existing C2 systems (e.g., (C2IPS, GDSS) will migrate to a single logical data system.

IMPLEMENT:
- Evolutionary construction of corporate data , applications, and network environment.
- Transition Legacy applications into AMC corporate environment.
- An information repository for defining, and relating command information assets.
- Use latest standards (industry, international, and government) in system development.
- Insert new technology (i.e., ATM, circuit consolidation, COTS, 4GL, best commercial practices, etc.).
- Transmission media upgrade via CITS program.
- An ethernet networking capabilities and FDDI MAN at all AMC bases. Transition to ATM.
- Lighter, smaller footprint, deployable equipment to provide full C4I Global Reach Capability (TDC).
- Global HF connectivity with Automatic Link Establishment for air and ground assets.
- Maintainable, robust, interoperable, multi-level secure system in an open systems environment.

BOTTOM LINE IMPACT:
- Additional O&M costs to maintain duplicate systems, result in manpower misuse and poor customer service.
- Currency of data becomes difficult to maintain due to multiple platforms and access points.
- Workstations per desk continues to multiply, limiting wartime portability.
- Lack of flexibility in transmission connectivity, limited mediums to move information - fixed and deployed.
- Lack of robust and survivable data bases, not distributed with multiple paths creating single points of failure.
- Limited interoperability with the other services during joint and combined operations.

Dormitory Upgrade Roadmap

STRATEGY: Rapid deployment of forces during conflicts, crisis responses, and disasters.

MISSION: Provide quality housing for unaccompanied airmen to enhance morale, productivity, and promote airmen retention.

DESCRIPTION:
- AMC owns and maintains 9,218 dormitory rooms.
- With the new 1+1 dorm standard (private room - shared bathroom/kitchen) to house all unaccompanied E1-E4s on base, we have a requirement for 10,565 rooms.
- In previous years, investments were not made to renovate existing or construct new dormitories to meet quality or number shortfalls.

DEFICIENCIES:
- Over 4,300 dormitory rooms do not meet standards.
- At the close of FY96, 1% of AMC dormitories will still have central latrines, 20% of our bed spaces will be in dormitories over 40 years old, and 9% of our bed spaces will be in wooden structures.

PLAN: AMC/CC set the goal of providing AMC airmen (E1-E4) a room that meets Air Force and AMC standards by the year 2010. AF/CEH, on 7 Mar 96, announced the start of the Air Force Dorm Master Plan (AFDMP). The purpose of the AFDMP is to develop a program to quickly and efficiently meet our dormitory needs AF-wide. The program includes replacing permanent party central latrine dorms by the year 2000, reducing the dormitory room deficit, and upgrading current dorms to the new 1+1 standard. The AFDMP Survey Team will visit every base in the Air Force (during FY96 & 97) and evaluate each dormitory, determine condition and cost to renovate. All 875 dormitories in the Air Force will then be rank ordered, providing a strategy for funding all future requirements.

BOTTOM LINE IMPACT: Approximately half of AMC dormitory rooms do not meet AF standards.
- Hurts morale and productivity.
- Reduces retention rates--drives good people out of the Air Force
- Sends the wrong signal to our airmen.

OPR: HQ AMC/CEH
As of: Oct 96

Housing Upgrade Roadmap

STRATEGY: Rapid deployment of forces during conflicts, crisis responses, and disasters.

MISSION: Provide quality housing for accompanied enlisted and officers to enhance morale, productivity and readiness.

DESCRIPTION:

- AMC owns and maintains 15,474 family housing units at our 10 core bases.
- There is not enough on-base facilities to house all accompanied military, so many must satisfy their housing needs off base. Housing market analyses (HMA) performed at each base confirms that only three bases have sufficient housing off base to totally satisfy all the needs of the military who must seek off-base housing. Therefore it is important to continue to provide quality on-base housing.
- The AF goal is to improve/upgrade all on-base housing units to contemporary standards (whole house/whole neighborhood) within 20 years.

DEFICIENCIES:

- AMC has only upgraded or renovated 25% of our on-base housing units to AF whole house/whole neighborhood standards.
- Based on our current annual funding level of only $30M, it will take AMC over 35 years to upgrade all our assets.

PLAN: AMC has identified and published guidelines for housing standards and developed the AMC Consolidated Family Housing Construction and Renovation Plan, called FOCUS HOMES. This plan lists all the O&M and MILCON projects required to upgrade all the family housing units in AMC and housing areas. In addition to O&M and MILCON projects, the OSD has established several private sector financing initiatives to allow limited use of appropriated funds authority. The goal of these initiatives is to help alleviate the housing shortage by encouraging private companies to manage/construct family housing units near military installations.

BOTTOM LINE IMPACT: The majority of AMC housing does not meet AF standards.

- Lack of quality housing impacts morale and productivity.
- Readiness is also impacted if individuals are not readily available to respond to recalls or alerts in a timely manner.

OPR: HQ AMC/CEH
As of: Oct 96

Squadron Operations/Aircraft Maintenance Unit (Sq Ops/AMU) Facility Upgrade Roadmap

STRATEGY: AMC must replace undersized, inadequate, and separate flying squadron and aircraft maintenance unit facilities to support rapid deployment of forces during conflict, crisis response and disasters.

MISSION: Provide adequate squadron operations/aircraft maintenance unit (Sq Ops/AMU) facilities that will enable AMC squadrons to carry out their mission efficiently and effectively, as well as give them the capability to attract and retain highly qualified people.

DESCRIPTION:

- AMC is committed to improving the working conditions of our aircrew and maintenance personnel. AMC and AFRES aircraft maintenance personnel work together as a team in the aircraft maintenance units.
- This initiative applies to KC-10, KC-135, C-141, C-5, and C-17 mobility weapon systems.
  - It provides functional and quality space on a par with the rest of the Air Force.

DEFICIENCIES:

- Existing separate squadron operations and aircraft maintenance unit facilities have long-standing critical space shortages, were designed for other purposes, and do not meet AMC standards for quality of finishes and furnishings.
- In mid-1991, HQ USAF/CC provided objective wing guidance that places flight line maintenance in the operations squadrons.
  - Implementing this guidance highlighted our facility deficiencies.
- Existing undersized, antiquated facilities are a contributing factor to the poor retention rates for AMC personnel.
- Keeping AMC and AFRES flight line maintenance personnel in a separate facility from the aircrew detracts from unit integrity and minimizes the effectiveness of the objective organization.

PLAN:

- Seek MILCON funding to replace existing undersized and separate operations squadron and aircraft maintenance unit facilities with professional facilities, adequately sized to collocate aircrew and flight line maintenance (AMC and AFRES) personnel into a unified team.
- Execute interim facility projects to provide immediate space relief for only the most urgent requirements until MILCON projects are complete.
- Ensure an architecturally compatible design for all buildings.

BOTTOM LINE IMPACT:

- Failure to execute the program forces AMC to continue use of undersized facilities.
  - Inadequate facilities will continue to contribute to poor aircrew and maintenance personnel retention rates.
  - Keeping flight line maintenance personnel in a separate facility from the operations squadron will continue to detract from unit integrity and minimize the effectiveness of the objective organization.

OPR: HQ AMC/CEPR
As of: Oct 96

Environmental Roadmap

STRATEGY: Assess and clean-up past problems, i.e. hazardous waste disposal and spill sites and comply with applicable environmental laws, regulations, and standards through proactive programming, budgeting, and execution of environmental programs.

MISSION: Remediate all sites by FY14 and eliminate and avoid open regulatory enforcement actions by ensuring that necessary resources and adequate education and training are made available to all personnel at every AMC base.

DESCRIPTION:

- The Installation Restoration Program provides management and funding for the clean-up of Air Force hazardous waste sites.
- The Environmental Compliance Program:
  - •• Evaluates operations and recommends projects/programs to achieve compliance with federal, state, and local environmental regulations and laws.
  - •• Develops special investment strategies where compliance trends indicate programs or infrastructure systems are broken.
  - •• Provides resources to preclude noncompliance with laws or the receiving of notices of violation.
  - •• Uses the Environmental Compliance Assessment and Management Program (ECAMP) as a proactive tool to improve the environmental compliance program.
- The Pollution Prevention Program provides funding to meet the SECAF/CSAF objectives established for pollution prevention, hazardous and solid waste reduction, reduced use of ozone depleting chemicals, increased recycling, etc.
- The Natural and Cultural Resources Conservation Program provides funding for a proactive approach to protect and improve sensitive environmental resources.

DEFICIENCIES:

- AMC's Installation Restoration Program (IRP)
  - •• The program is now funded by a “fenced” Defense Environmental Restoration Account (DERA).
  - •• The Air Force is not able to fund all validated legal requirements and wants the MAJCOMs to renegotiate agreements at lower relative risk sites to meet fiscal constraints.
  - •• Air Force goals include reducing all high relative risk sites to lower relative risk by FY07, medium relative risk sites by FY10, and low relative risk sites by FY14.
- Environmental Compliance (EC)
  - •• We will continue to have level 1 and 2 requirements that exceed the funds we receive. These requirements will continue to roll over into the next fiscal year unless we receive additional O&M funds.

OPR: HQ AMC/CEV
As of Oct 96

PLAN:

- Early execution of funded requirements to help secure additional dollars for unfunded level 1 requirements.
- Near-term Objective: Seek additional DERP funding to finish high relative IRP sites by FY02.
- Mid and Long-term Objective: Maintain adequate level of funding for Pollution Prevention and EC.

BOTTOM LINE IMPACT:

- Without adequate DERA funding, AMC will fall behind AF goals.
  - •• Regulators who will not renegotiate agreements may levy fines and penalties and/or issue notices of violation.
  - •• Fines and penalties must be paid out of DERA, further delaying IRP projects.
  - •• MAJCOMs may NOT augment DERA funding.
- Lack of adequate environmental compliance and pollution prevention funding will:
  - •• Lead to noncompliance with environmental laws and result in receiving additional notices of violation and possible penalties or fines.
  - •• Delay AMC's ability to satisfy the objectives established for the continued reduction of toxic and ozone-depleting material use, volatile air emissions, and the disposal of hazardous/ and solid waste products by specified/required milestones.

OPR: HQ AMC/CEV
As of Oct 96

Global Reach Laydown (GRL)
Roadmap

STRATEGY: To provide rapid deployment of forces supporting US security interests, humanitarian operations and disaster relief missions.

MISSION: Provide means to rapidly deploy and establish air mobility enroute support structure for contingencies.

DESCRIPTION:

- The GRL concept consists of force modules/UTCs that provide AMC a rapidly deployable enroute support structure.
- Consists of force modules for five types of operating locations: Onload, Contingency Tanker Task Force (CTTF), Strategic Stage/En Route, Hub, and a Spoke. (Figure 1)
- Each force module consists of a capability list, based on standard UTCs, which contain all requirements for operating at a bare base.
- UTCs sourced under existing deliberate planning system; AMC provides throughput requirements, Theater's Air Component Command provides/sources base operating support.

FORCE MODULES

ONLOAD
INTEL
TRANS
WX
SAFETY
MX
MOBILE C2
APS
RSP

CTTF	
COMM	EOD
INTEL	SPs
TRANS	POSTAL
WX	FINANCE
SAFETY	CHAPLAIN
KC-135 MX	CALS
HQTRS	PERSCO
ATCALS	DP
FIRE	CONTRACT
PRIME BEEF	COMCAM
PRIME RIBS	HARVEST
PRIME FARE	FUELS
RSP	MEDICAL
12 KC-135s	MWR
COUNTER IN	HISTORIAN

STAGE/EN ROUTE	
COMM	EOD
INTEL	SPs
TRANS	POSTAL
WX	FINANCE
SAFETY	CHAPLAIN
MX	CALS
MOBILE C2	PERSCO
APS	DP
ATCALS	CONTRACT
FIRE	COMCAM
PRIME BEEF	HARVEST
PRIME RIBS	MEDICAL
RSP	STAGE MGR
COUNTER IN	HISTORIAN

HUB/TRANSLOAD	
COMM	EOD
INTEL	SPs
TRANS	POSTAL
WX	FINANCE
SAFETY	CHAPLAIN
MX	CALS
AME	PERSCO
MOBILE C2	DP
APS	CONTRACT
ATCALS	COMCAM
FIRE	HARVEST
PRIME BEEF	FUELS
PRIME RIBS	MEDICAL
PRIME FARE	MWR
COUNTER IN	HISTORIAN

SPOKE
COMM
INTEL
TRANS
WX
MOBILE C2
APS
ATCALS
FIRE
PRIME BEEF
MEDICAL
EOD
SPs
CCT
COUNTER IN

Figure 1

DEFICIENCES:

- For humanitarian-type contingencies identified shortfalls were: Personal equipment.

PLAN:

- Near term (FY96-99): Management, equipment, and organization of the GRL package will emphasize rapid deployment worldwide. It is envisioned that the GRL package will lay down an en route mobility system in 3-5 days, with follow-on sustainment after 30 days. Equipment modernization efforts in areas such as Base Operating Support, Material Handling Equipment,

OPR: HQ AMC/DOXOR
As of: Oct 96

C4I, and Air Traffic Control Airfield Landing Systems will be designed towards achieving a rapid mobility capability. Orientation will be towards developing equipment that is lightweight, modular, easily palletized, interoperable, reliable, and capable of being quickly set up in austere environments.

NOTIONAL CONTINGENCY
MOBILITY SYSTEM

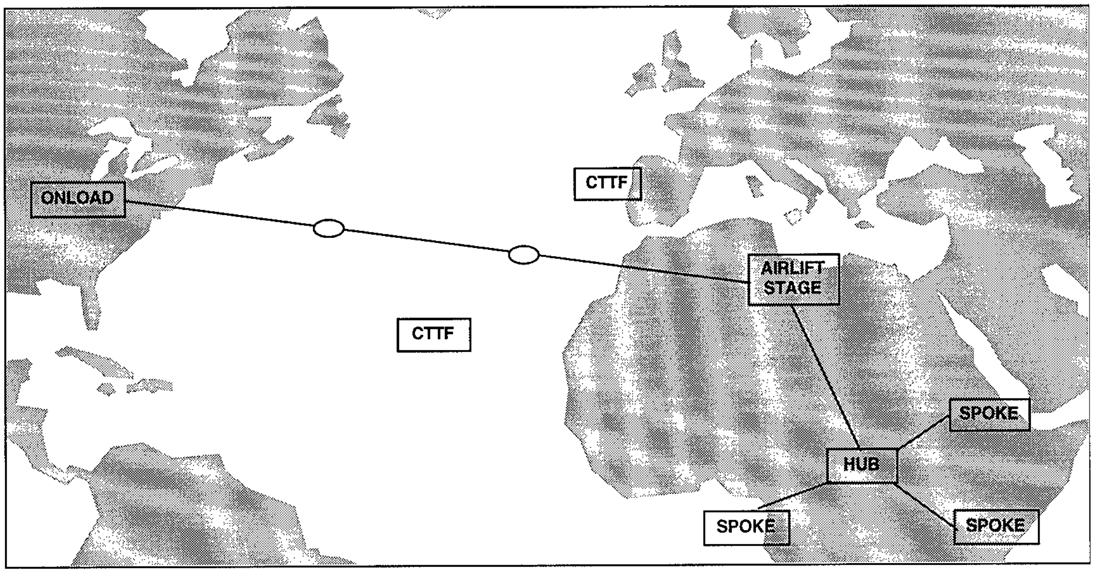
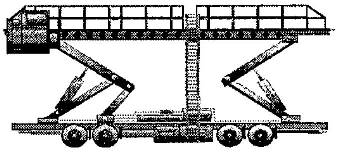
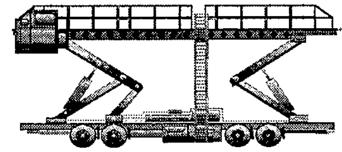


Figure 2

BOTTOM LINE:

- The cornerstone of mobility is the infrastructure and support equipment needed to operate. When AMC needs to operate where the infrastructure is either nonexistent or unavailable, a deployable enroute support system is needed to provide that capability. With reduced presence overseas, drawdown of forces, and a limited fixed en route structure, the Global Reach Laydown package will provide a deployable en route support system anywhere on the globe (Figure 2).





MHE Roadmap

STRATEGY: To provide rapid deployment and sustainment of forces supporting US security interests, humanitarian operations, and disaster relief missions.

MISSION: Prepare, load, and unload cargo on airlift aircraft delivered by airland or airdrop.

DESCRIPTION:

- MHE is the most critical component of cargo ground handling; shortages will significantly impact throughput capability.
- MHE is the primary platform for loading and unloading all DOD general and special cargo, including outsized and oversized carried on military and commercial aircraft.
- Current fleet includes standard and all-terrain forklifts; 25K and 40K loaders, wide-body elevator loaders (WBELs), and lower lobe loaders.

DEFICIENCIES:

- Assigned 40K loaders are 26 percent short of overall requirements; assigned 25K loaders are 4 percent short of requirements; WBELs are our most significant shortfall with only 61 percent of requirements filled.
  - •• Overall AF MHE requirements were reviewed and validated at the Worldwide 463L MHE Conference in March 96. Table below depicts MHE assigned vs. required.

Air Force MHE

	ASSIGNED	REQUIREMENTS	REQ'D VS ASGN PERCENT
40K Loader	278	376	74
25K Loader	656	686	96
WBEL	125	206	61
Lower Lobe Loader	12	24	50
10K STD Forklift	1,767	1,899	93
10K/13K AT Forklift	930	889	106

- Requirements for wide-body loading capability coupled with inventory shortages place a heavy workload on existing force structure.
  - •• Loading wide-body aircraft, including KC-10s, requires WBELs.
- Multiple MHE types from 19 different manufacturers and lack of flexible loading capability requires airlift aircraft to position equipment at each upload and download location.
- MHE fleet is old; average fleet age is 13 years vs. average 9-year life expectancy (with depot rebuild MHE average life expectancy is 14 years).
  - •• 1950s-60s era design technology limits capability; hinders maintainability.
  - •• Age and heavy use have led to structural metal fatigue and frame cracks in 57 percent of 40K loaders and 79 percent of 25K loaders.
- MHE fleet maintainability is a growing problem.
  - •• Fleet maintainability is also complicated by equipment from different companies and designs.
  - •• Normal in-commission rates being maintained only through intensive maintenance programs.
- Efficient use of MHE requires movement from place to place; most of current fleet's mobility is limited. Movement of some (e.g., commercial design WBEL) is impractical and in most cases virtually impossible.

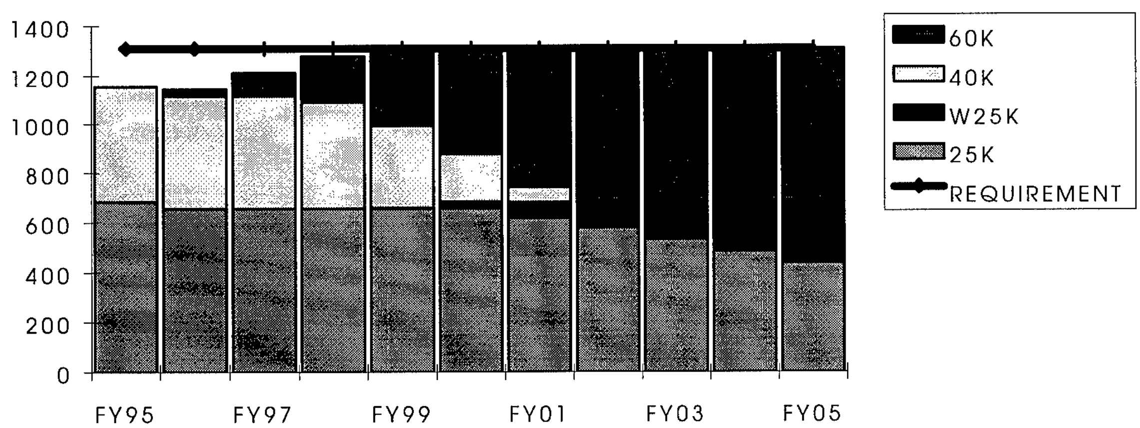
PLAN: Develop and procure a modern core MHE fleet composed of the right mix of military and commercial design equipment to support expected organic and commercial aircraft fleet, user loads, and operational parameters.

- Near-term objective (FY96-01): Maintain current K-loader fleet while procuring 60K loader; develop wide-body capable, small loader replacement for 25K loader.

OPR: HQ AMC/DOZ
As of: Oct 96

•• Continue depot overhaul of a limited number of 40K loaders and older 25K loaders.
•• Accelerate procurement to complete buy of 318 60K loaders by FY00 vs FY01, allowing final deliveries in FY01 vs FY02.
•• Establish requirement and procurement strategy for 60 high-lift modification kits which will enhance some of the newer Southwest Mobile Systems 25K loaders, enabling them to be wide-body loader capable.
•• Establish requirement and procurement strategy for small loader replacement for 25K loader. Begin delivery to meet validated requirement.
•• Chart below depicts contemplated composition of MHE fleet through FY05, assuming proposed procurement and retirement schedules.
••• Mission Need Statement for new small cargo loader approved by CSAF in Jul 94. Procurement expected to begin in FY98; will replace remainder of WBELs and aging 25K loaders on an attrition basis.

Accelerated 60K W/New Small Loader



- Long term objective (FY00-15): Retire 40K loaders by FY03 contingent on completion of full 60K loader buy. Continue procurement of new small loaders; retire 25K loaders as new small loaders enter the inventory.
  •• Continue purchasing 60K loaders at an accelerated rate through completion in FY01.
  •• Continue procurement of new small loader up through initial requirement of 264 25K loaders.
  •• Evaluate transfer of WBELs into Air Reserve Component.

BOTTOM LINE IMPACT:

- MHE fleet limitations of inadequate size, age, maintainability, and inefficient mix of makes and models degrades AMC's global reach.
  •• 40K loader assigned vs. required fill rate is 74 percent.
  •• Repositioning WBELs to service wide-body aircraft consumes airlift and raises airlift costs for AMC customers.
  •• Age, high use, multiple equipment manufacturers/vintages make maintainability a significant problem.
- Full buy of 60K loaders is necessary to achieve fleet commonalty, support wide-body aircraft, and replace outdated 40K loaders.
- Small loader development and procurement is required to replace aging 25K loaders.

Simulator Roadmap

STRATEGY: Rapid deployment and sustainment of forces supporting US security interests.

MISSION: Maximize use of simulation for initial, upgrade, and continuation training supporting the full range of the Air Mobility (air refueling and airlift) mission.

DESCRIPTION:

- Upgrade all AMC simulators to FAA Level C equivalent with 6-degrees of freedom (DOF) motion systems, wide angle, cross-cockpit medium resolution day/dusk/night visual systems (with caligraphic lights) compatible with geodetic world-wide data bases, and receiver air refueling capability.
- Provide initial, upgrade, and continuation training in support of aircrew training for mobility missions, using weapon system trainers (WSTs), operational flight trainers (OFTs), cockpit procedures trainers (CPTs), and part-task trainers.

DEFICIENCIES:

- All trainers were delivered to the AF since 1980. Most of the existing computer systems and visual systems have exceeded their projected life cycle of 7-10 years. C-5, KC-10, KC-135 computer capacity is saturated and cannot be economically expanded.
- Efficient use of trainers requires upgrades to existing computer, visual, and motion systems.
- Shortages of adequate training devices place a heavy workload on existing airlift and tanker force structure.
- Operational limitations of mobility aircraft further reduce availability of resources.
- Current fleet includes trainers with no motion or 3-DOF motion systems, trainers with limited field of view dusk/night visual systems and limited data bases, and trainers without receiver air refueling configuration.
  - •• Table below depicts trainers assigned.

AMC TRAINERS

TYPE	WEAPON SYSTEM	TYPE	QUANTITY
A/F 37A-T37	C-5B	WST	7
A/F 37A-T65	C-5B	CPT	4
A/F 37A-T24B	C-141B	WST	8
A/F 37A-T79	C-141B	CPT	7
A/F 37A/T81	C-5/C-141	ARPTT	7
A/F 37A-T87/88	KC-135A/R	OFT	20
	KC-135	BOPTT	2
	KC-10	WST	*3
	KC-10	CPT	3
	KC-10	BOPTT	3
A/F37A-T93	C-17	WST	4
A/F37A-T92	C-17	CSS	1
TOTAL TRAINING DEVICES			69

*4th WST
RFT (Travis) 1 Apr 96

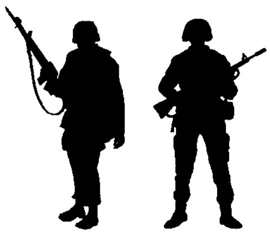
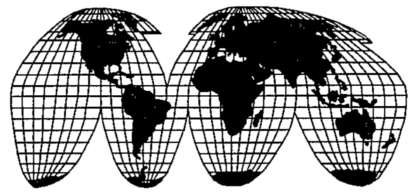
PLAN: Upgrade and modify the present simulator fleet to a modern core of training devices. Upgrade all AMC simulators to FAA Level C equivalent with 6-DOF motion systems, wide angle medium resolution day/dusk/night visual systems (with caligraphic lights) compatible with geodetic world-wide data bases, and receiver air refueling capability.

OPR: HQ AMC/DOT
As of: Oct 96

- Near term objective (FY95-97):
  - •• Upgrade C-5 and C-141 trainers with visual systems and improve their aerodynamic handling packages for air refueling.
  - •• Upgrade all KC-135 trainers with new computer systems and improved aerodynamics handling packages.
  - •• Upgrade most formal school trainers with 6-DOF motion systems and new visual systems.
  - •• Upgrade all KC-10 trainers with new computer systems, new instructor operator stations, and improved aerodynamic handling packages. Procure one additional KC-10 simulator in conjunction with proposed KC-10 beddown.
  - •• Upgrade all C-17 trainers with improved aerodynamic handling packages for air refueling training.
- Long term objective (FY98-00)
  - •• Upgrade remaining KC-135 trainers with 6-DOF motion systems and new visual systems and upgrade cockpits to allow receiver air refueling training capability.
  - •• Upgrade KC-10 WSTs with new visual systems.
  - •• Procure two additional C-5 simulators for the ARC.

BOTTOM LINE IMPACT:

- Existing AMC trainers limit the amount of training which may be credited in the simulator due to low fidelity visual systems, lack of 6-DOF motion systems, and inadequate computational systems.
  - •• Average trainer age ranges between five and thirteen years.
  - •• Load restrictions, age, high use, and retirement of mobility aircraft make supportability of AMC training aircraft a significant problem.
- Full upgrade of AMC trainers is necessary to minimize non-revenue-generating aircraft for flying training hours and to maximize operational availability of AMC mobility aircraft.

Security Police Roadmap

STRATEGY: Provide a strategy for modernizing Air Mobility Command (AMC) Security Police (SP) manpower, systems and equipment, as well as upgrade field training tailored to support the demands of the Global Reach mission.

MISSION: Provide safe and secure living and working conditions for AMC personnel and resources at home station and during deployed contingency opertaions.

DESCRIPTION:

- Security Police responsibilities fall into four major areas:
  - •• Contingency Support provides highly trained and rapidly deployable SP force modules. These modules vary in size and capability, and are designed to support the worst case scenario at On-load, En route and Tanker Task Force locations in support of Global Reach missions. The force module will be tailored depending on the support required and threat at the deployed location.
  - •• SP play a critical role in detecting and effectively neutralizing unauthorized access to USAF resources through their aggressive Weapons Systems Security duties.
  - •• During Air Base Defense missions, SPs provide trained and equipped security forces capable of operating from main operating bases and remote sites to secure airfield operations in theater from overt/covert attack.
  - •• Law Enforcement at AMC bases and deployed locations is designed to ensure the safety of people, resources and the maintenance of law and order.

DEFICIENCIES:

- Inadequate manpower is available for dedicated Aircraft Security Teams (AST) to deploy with strategic airlift aircraft to provide security at OCONUS locations, whether scheduled or diverted, where security measures are inadequate, unknown or non-existent.
  Law Enforcement personnel lack inconspicuous ballistic protection body armor to protect against the growing threat of violence at home station.
- Security forces are severely hampered by a lack of armored tactical vehicles during the initial stages of contingency operations.
- AMC installations and enroute locations lack a standardized closed circuit camera system for base entry and flightline surveillance.
- SP lack a relocatable base defense sensor system that can be used in peacetime, but can also be deployed in wartime.
- SP contingency forces need a man-portable, multiple role weapon with anti-personnel and limited anti-armor capability.

OPR: HQ AMC/SPX
As of : Oct 96

- SP contingency forces receive insufficient training in convoy security procedures, military operations on urban terrain, and anti-sniper tactics.

  SP forces need a new All Terrain Vehicle, Nickname: CLAW (Carrier Light Auxiliary Weapon) to support SP requirements when deployed.

PLAN:

- Continue initiative action in the 98-03 POMs to acquire the necessary manpower to provide adequate ASTs for our strategic airlift aircraft.

  Acquire commercial off-the-shelf body armor to increase SP survivability during increased threats, drive by shootings or other potential hostile situations at home station with FY97 PE 28047F funds.
- Support the current Air Staff procurement of tactical vehicles and prepare to develop Unit Type Codes to ensure deployment during the initial stages of contingency operations.

  Continue acquisition of standardized closed circuit camera system for all AMC installations and attempt to accelerate via DOD Antiterrorism initiatives.
- Currently the Tactical Automated Security System (TASS) is in the initial delivery stages. Continue to program for more TASS to support both home station and deployed security. Continue to advocate to Air Staff the need for the multi-role weapon system.
- Ensure continuous improvement in training and scenarios at the Air Mobility Warfare Center, Joint Readiness Training Center (JRTC), and home station training programs to enhance SP convoy, military operations on urban terrain, and anti-sniper capability. Continue to use JULLs to develop training objectives to counter regional threats. Maintain and replace as needed the All Terrain Vehicles, (Carrier Light Auxiliary Weapon) to serve as a short-range multi-purpose vehicle capable of operating in all terrain and weather conditions.

BOTTOM LINE IMPACT:

- Global Air Mobility requires secure operating locations in CONUS, within the enroute structure, and at contingency operating locations. Air operating locations must remain free of ground and surface-to-to air threats to ensure uninterrupted flow of wartime logistics or peacekeeping forces and equipment. Failure to upgrade SP manpower, systems, equipment and training capabilities will impair the command's ability to protect Air Force assets vital to the accomplishment of our national security objectives during contingency operations. Likewise, airfield operations would become increasingly vulnerable to Level I (Terrorists) and Level II (Special Forces) threats.

OPR: HQ AMC/SPX
As of : Oct 96

Air Mobility Warfare Center Roadmap

STRATEGY: Rapid deployment of forces during conflict, crisis response, and disasters.

MISSION: Prepare and train AMC, DoD, and allied personnel to effectively lead, integrate, and sustain all aspects of the peacetime and combat global air mobility system. Formulate joint doctrine, develop, test, and evaluate air mobility concepts, equipment and procedures required to execute the air mobility mission. Direct and conduct operational test and evaluation of air mobility weapon systems and materiel to ensure mission capability and compatibility with air mobility forces and command operating principles.

DESCRIPTION:

- Air mobility training, test, and evaluation is consolidated at one location to achieve:
  - •• Unity of purpose - through a single, centralized management structure.
  - •• Economies of scale - through shared facilities, faculty, administrative staffs.
  - •• Synergy of effort - through integrating all air mobility functional specialties.
- AMWC's focus is on air mobility specific, mission accomplishment oriented training.
- A direct reporting unit to HQ AMC, there are four operational areas under AMWC:
  - •• Support Division: Provides Instructional Systems Development guidance, Instructional and Quality standards, Audio Visualpresentation support.
  - •• Operations Division: Air mobility operations, doctrine, employment tactics, intelligence, air transportation, operations resource systems, logistics, deployed/fixed command and control and associated publications.
  - •• 33d Flight Test Squadron: Provides centralized expertise to enhance air mobility readiness, including tactics and airlift doctrine, through responsive operational test and evaluation.
  - •• 421 Training Squadron: Provides Training for DoD personnel to enhance Air Base Defense, Operability, and Contingency Support for America's Global Reach.
- Courses, products, and services are tailored to meet AMC's technical and management training requirements through application of ISD procedures.
- Student rank structure ranges from airman to general officer, representing virtually all DoD personnel with mobility responsibilities. Over 6,000 graduates annually.
- AMWC's personnel are air mobility subject matter experts, selectively chosen for breadth of experience, depth of knowledge, and quality of professional abilities.

DEFICIENCIES:

- Deficiencies exist in facilities, communications, equipment, and infrastructure:
  - •• Building refurbishment necessary for instructional suitability.
  - •• Follow-on project to construct VQs will replace existing unsatisfactory VQ's
  - •• Communications requirement shortfalls in phone, LAN, A/V production systems.
  - •• Limited basic "business processes" in place.

OPR: AMWC/CCE
As of: Oct 96

OPPORTUNITIES:

- Improve, expand, and standardize air mobility education, training, test, and evaluation activities:
  - •• Improve current capabilities through responsive operational test of new tactical concepts and aircraft subsystems.
  - •• Focus on the future missions and operating environments of Air Mobility.
  - •• Concentration on full spectrum processes and functional integration will improve total force capability and readiness.
  - •• Customer/command direct interface will allow system-wide examinations.
  - •• Continuous examinations can identify systemic issues.
  - •• A think tank for new ideas, from basic employment doctrine to technical equipping issues, can be deployed.
  - •• Proposed concepts/systems can be fully tested and evaluated before fielding.
  - •• Redefined ops procedures can be measured for system-wide performance.
  - •• FOT&E of existing procedures/systems will identify operational effectiveness.

PLAN:

- Near-term objectives will develop AMWC into the USAF's premier warfare center:
  - •• Rigorously training force support units to support deployed air mobility operations in austere environments.
  - •• Develop and improve joint doctrine, air mobility doctrine and tactics.
  - •• Implement new training as required to meet the command's identified needs (e.g., affiliation training).
  - •• Refurbish AMWC facilities, install communication devices meeting instructional needs.
- Long-term objectives will transform AMWC into a world class institution:
  - •• Expand technical, management, and research expertise to address full realm of air mobility process.
  - •• Champion air mobility system concepts, strategies, programs and joint doctrine through training.
  - •• Capture lessons learned to improve future air mobility force posture.
  - •• Test and evaluate strategic Global Reach capabilities.

BOTTOM LINE IMPACT:

- AMWC provides a single, comprehensive institution for Global Reach air mobility-specific training and joint doctrine development. AMWC's joint doctrine development, training, test, and education activities directly and positively impact AMC's capability and readiness.

OPR: AMWC/CCE
As of: Oct 96

Force Protection Roadmap

STRATEGY: Acquisition of Force Protection equipment needed to support AMC's Global Reach mission.

MISSION: Protecting Global Reach by providing tailored threat information to deployed and in-garrison AMC commanders. 3 FIR Force Protection Advisors (FPAs) provide commanders real-time threat information allowing countermeasures to be instituted and safe and secure operations to proceed accordingly.

DESCRIPTION:

- Deployed FPAs perform the following key functions: Collection and Dissemination of Threat Information: FPAs establish off-base area source networks (ASNs) focusing on the collection of threat information relating to insurgents, terrorists, foreign intelligence services, and criminal activity. This network is kept active throughout the duration of the deployment. Threat information developed from the ASN is given to deployed, en-route, and home station AMC commanders and planners, via verbal briefs and written products.
- Liaison: Establish effective liaison with key US Embassy personnel, host nation security services, allies, and counterpart counterintelligence agencies. FPAs use liaison as a force multiplier.
- Briefings: Ensures all deployed personnel are aware of the local threat situation, unsafe areas, and requirements of counterintelligence awareness.
- Other: Provide security training to personnel; support OPSEC, tactical deception, and HUMINT programs; interrogate EPWs (in the absence of the Air Intelligence Agency; conduct protective service operations; provide vulnerability assessments of the working and lodging locations, including travel routes, establishments and locations visited by deployed personnel; conduct criminal investigations (at the request of the deployed commander).

DEFICIENCIES:

- FPAs require fly-away kits containing basic deployment and force protection equipment needed to operate in austere and other environments.
- FPAs lack dedicated vehicles for off-base movement. FPAs operate almost exclusively off-base collecting threat information. Currently, FPAs are severely hampered by a lack of tactical vehicles during contingency operations.
- FPAs require land mobile radios (LMRs) capable of communicating with other deployed AMC units and counterpart agencies. This is a safety issue. FPAs must have this connectivity with friendly forces to coordinate/deconflict or request assistance while working in high threat areas.
- Lateral communication between deployed locations and from deployed locations back to HQ 3 FIR and HQ AMC continues to be a severe problem. This communication shortcoming dramatically increases the time needed to disseminate needed threat information to AMC decision makers.
- FPAs receive insufficient tactical operations skills needed to operate in high threat areas.

OPR: 3 FIR/FP
As of: Oct 96

PLAN:

- Continue working with AMC on funding for the QFBE1 logistics detail.
- Advocate and support procurement of vehicles for deployment during the initial stages of contingency operations.
- Support the acquisition of the PRC-139 LMR for FPA teams.
- Secure funding for the Theater Rapid Response Intelligence Package (TRRIP) INMARSAT system. This proven system meets 3 FIR's intra-threater and strategic command and control requirements.
- Educate Air Mobility Warfare Center trainees on the AFOSI force protection mission.

BOTTOM LINE IMPACT:

- Implementation of the above plan will significantly enhance the mission effectiveness of the FPAs. Presently, FPAs must rely on ad hoc processes to borrow equipment from other units to accomplish their mission. Properly equipped and trained FPAs ensure timely collection and dissemination of threat information and secure operations for AMC commanders worldwide.

Information Warfare (IW) Roadmap

STRATEGY: Acquire the IW awareness, training, and systems necessary to enhance and protect AMC's Global Reach mission.

MISSION: Direct, coordinate, and participate in IW related activities in support of the AMC mission.

DESCRIPTION:

- The USAF Cornerstones of Information Warfare document defines IW as "any action taken to deny, exploit, corrupt, or destroy the enemy's information and its functions; protecting ourselves against those actions; and exploiting our own military information functions."
- The AMC role in IW is primarily defensive in nature. We must ensure mission success by protecting AMC assets worldwide from IW attack. Awareness, training, and secure information systems/networks will be at the heart of our AMC IW initiatives.
- A new AMC IW branch will play the central role in determining and implementing the command's IW requirements.
  - Awareness: Ensure all AMC personnel receive the resources and training necessary to understand IW concepts and to implement basic defensive procedures in their workplaces.
  - Training: Develop effective command-wide IW training programs for all AMC personnel. The level and types of training received will depend on an individual's specific duties. Selected communications (SC), intelligence (IN), and operations (DO) personnel will likely receive more intensive training than other AMC personnel.
  - Systems: Acquire IW-robust information systems throughout the command. This will require careful planning and requirements actions to ensure future AMC systems are capable of operating effectively in an IW environment.

DEFICIENCIES:

- AMC has a number of IW-related deficiencies. All are command-wide shortfalls that could increase our vulnerability to IW attack.
  - AMC lacks a command-wide IW awareness and training program. We must implement a program quickly and ensure that it applies to command personnel. This is the first step in defending against the IW threat.
  - Our capability to assess and target IW threats to air base security is limited. AMC must have the means to better determine how hostile states or individuals will attempt to disrupt air base operations through information attack.
  - Current C4I systems are vulnerable to IW attack. Our C4I systems/networks are inadequate to support global in-transit visibility (tracking) and C2 requirements. In addition, they are not well integrated and do not meet "open system" standards for information exchange.
  - AMC C2 systems are inadequate and incompatible with other systems. Communications with deployed command assets are limited, and deployable C2 systems are vulnerable to attack. This will allow adversaries to disrupt our operations and endanger our personnel.
  - Vulnerability assessments for current and future AMC systems are incomplete. We must determine the threat to our systems and implement countermeasures.
  - AMC lacks an IW-based acquisition strategy for future systems. Planners and requirements personnel must consider IW issues as they relate to systems functions, operations, and vulnerabilities.

OPR: AMC/DOO
As of Oct 96

PLAN:

- The AMC IW branch will act as a focal point for the command's IW deficiencies. Once deficiencies are clearly understood, specific organizations and personnel will be tasked to correct them.
  - •• The IW branch will develop and implement command-wide IW awareness and training programs. These programs will give AMC personnel a clear understanding of the IW threat.
  - •• Individuals in organizations with significant vulnerabilities to IW attack (including SC, DO, IN and others) will receive specialized training beyond that given to all AMC personnel.
  - •• AMC organizations will work to acquire and field IW-robust C4I systems, and will ensure that IW issues are addressed in plans, requirements, and budgets.
- The IW branch will ensure AMC organizations consider future IW systems vulnerabilities and implement fixes.

BOTTOM LINE IMPACT:

- The AMC vulnerability to IW is significant and will increase without immediate action.
- Implementation of new IW branch is a critical first step for the command IW program.
- IW awareness and training program will prepare command personnel for IW threat.
- Systems initiatives will ensure command C4I capabilities are safe from IW attack.
- Without an IW program, AMC will remain vulnerable to IW attack.

OPR: AMC/DOO
As of Oct 96

Modeling and Simulation (M&S) Roadmap

STRATEGY: Apply innovative M&S technology to AMC needs.

MISSION: Modeling and simulation for decision making and training across a spectrum of core support activities to produce Global Reach.

DESCRIPTION:

The Need

- Force structure planning and programming relies on analysis supported by a core set of M&S engagement and mission level tools.
- AMC deliberate planning and operational command and control use several models to help determine OPlan transportation feasibility and schedule mobility missions.
- Representation of air mobility operations in Joint and AF sponsored command post exercises requires compatability with AMC C2 (e.g., C2IPS, GDSS, etc).
- Training needs for computer aided exercises are evolving.
- Test & Evaluation uses large aircraft wing tip vortex models, infrared signature prediction models, and threat missile engagement models for tactics development and evaluations.

The Models

- ADANS* AMC Deployment Analysis System: Airlift planning and scheduling model used as part of the information system to support AMC C2 activity.
- BRACE Base Resource and Capability Estimator: simulation of ground operations for a strategic airlift flow at a single specific airfield.
- CMARPS* Combined Mating and Ranging Planning System: integrated set of programs used in aerial refueling planning and analysis for deployment and employment missions.
- CREST Complete Reliability Evaluation Sensitivity Technique: Allows rapid analysis of an aircraft modification in terms of equivalent aircraft and increased flying hours or sorties.
- QCOA Quick Course of Action: An extension of ADANS for small airlift operations to provide estimated closure times based on limited inputs.
- LCOM Logistics Composite Model: - Air Force Data Processing System: Simulation to access the resource requirements (maintenance manpower) of an aircraft weapon system.
- MASS-AFM Mobility Analysis Support System - Airlift Flow Model: a discrete event, time-based simulation model of AMC airlift assets in intertheater and intratheater operations.
- DISAMS Digital Infrared Seeker and Missile Simulation: A unique DISAMS model is created for each missile variant based on exploitation of missiles and other intelligence data.
- GTSIMS Georgia Tech Synthetic Image Missile Simulation: Simulation environment in which various target images are played against DISAMS models and various countermeasures and backgrounds to produce decoy effectiveness and miss distance results.
- MOSAIC Modeling System for Advanced Investigation of Countermeasures: Simulates the end to-end engagement between infrared missiles and aircraft equipped with IRCM.
- SPIRITS Spectral Inband Radiance Imaging Target and Scenes: Used to predict infrared signatures of aircraft under various specified conditions.

* ADANS and CMARPS will migrate into Consolidated Air Mobility Planning System (CAMPS)

NAME - AMC Models	AMC Users				
	XP	DO	TE	LG	AMWC
ADANS		X			
BRACE	X				
CMARPS	X	X			
CREST	X			X	
QCOA		X			
MASS-AFM	X				X

OPR: HQ AMC/XPY
As of: Aug 96

NAME - Non-AMC Models	AMC Users				
	XP	DO	TE	LG	AMWC
USTC Models		X			
AFMC Models	X		X		
DISAMS			X		
GTSIMS			X		
LCOM	X				
MOSAIC			X		
SPIRITS		X			

DEFICIENCIES:

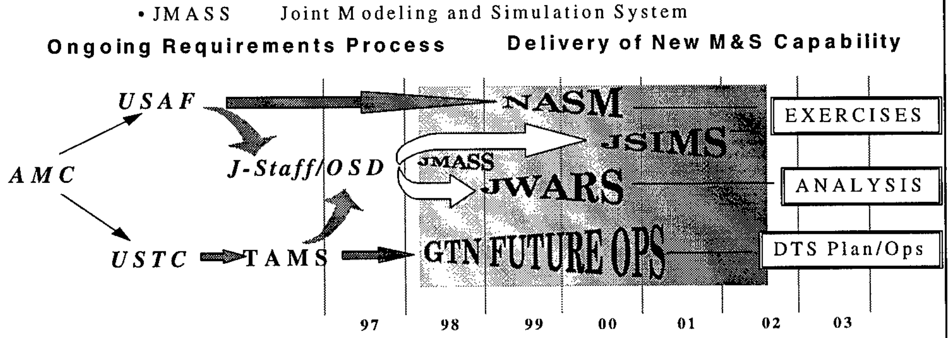
- Planning and Programming: Uncertainty in planning cost-effective fleet replacements and inability to realistically model airfield activities; no "what if" analysis tools for C4 system planning and limited analysis tools for evaluating logistic trend and weapon threat impacts to operations.
- Operations: Airlift and tanker mission models operate in separate environments -- not adequately integrated into command and control systems.
- Exercises: Lack of mobility operations representation in exercise combat models. Models should include an option to interact with AMC C2 systems.
- Training: Class-room and staff wargames need mobility representation.
- Test and Evaluation: Insufficient capability to test large aircraft infrared countermeasures. Wing tip vortex models require additional data for validation process.

PLAN:

- Selectively improve existing mission and system models in collaboration with USTC and Joint campaign model development.
- Represent AMC needs in USTC-sponsored Transportation, Analysis, M&S (TAMS) initiatives.
- Work with USAF/XOM to integrate air mobility needs with Joint campaign model development.
- Remain engaged with AFMC TPIPTs to ensure engineering-level models support functional needs.

Future Joint M&S development will integrate simulation of Air Mobility operations into campaign models for analysis, wargames & exercises.

- NASM National Air & Space Warfare Model
- JSIMS Joint Simulation System
- JWARS Joint Warfare Simulation
- JMASS Joint Modeling and Simulation System



BOTTOM LINE IMPACT:

- POM decisions in Joint and OSD arena increasingly made through studies & analyses using M&S.
- Wartime decision-making and doctrinal concepts tested through participation in computer driven exercises and wargames.
- It will be difficult for AMC to compete for resources without consistent representation in analysis and exercise M&S environments.

OPR: HQ AMC/XPY
As of: Aug 96

FY '97 AMC
Year of the En Route System
Key to Worldwide Air Mobility

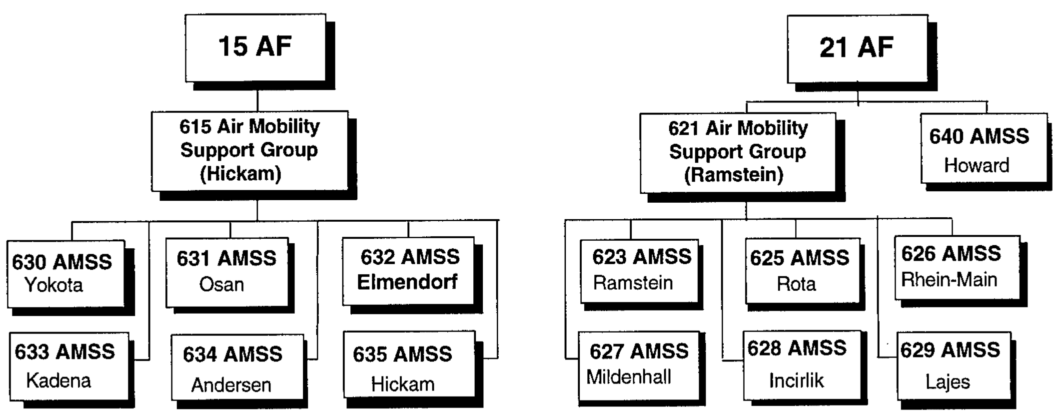
En Route Infrastructure Roadmap

STRATEGY: En Route System, in conjunction with the Global Reach Laydown Package, provides AMC the ability to prosecute air mobility operations throughout peacetime, contingency, and wartime scenarios. Today's system represents a compromise between giving theater commanders greater control and the need for a single airlift manager (AMC).

MISSION: Support USTRANSCOM by delivering DoD, US Government, and other non-US governmental agencies' manpower and material via airlift or air refueling operations in either a strategic or theater role.

DESCRIPTION:

- En Route System is fluid; operating locations can range from modern airports to dirt landing zones; system expands and contracts to meet the requirements stated by the national command authorities
- Peacetime, day-to-day operations, and wartime requirements for cargo dictate where we expend resources; currently operate at 13 overseas sites using Air Mobility Support Squadrons (AMSSs)
- We've determined these 13 sites (plus 18 contractor or limited Air Force presence) have the resources needed to meet the majority of DoD customers' peacetime requirements
- Our peacetime en route locations represent a tradeoff between wartime effectiveness and peacetime efficiency; to maintain wartime effectiveness, AMC created air mobility operations groups (AMOGs)
- AMOGs allow AMC to expand the en route system during wartime, contingency, or humanitarian operations
- Together, AMSSs and AMOGs allow us greater peacetime efficiency and wartime effectiveness; nearly 6,000 men and women, active duty, air reserve component, or civilian operate today's en route system



Fixed Overseas En Route Locations

DEFICIENCIES:

- Overwhelming majority of stateside and overseas bases serving as aerial ports of embarkation (APOEs) or aerial ports of disembarkation (APODs) are old; many of the systems (fuel, cargo storage facilities)

OPR: HQ AMC/XPD
As of: Oct 96

don't meet the requirements for air mobility to move vast amounts of manpower and mechanized equipment long distances

- Peacetime operations and wartime requirements are driven by Oplans and MRS BURU which dictate present and future AMC operating sites, and the type and amount of infrastructure required at each location
- Inadequate fuels infrastructure is the top deficiency cited and continually underfunded: New, modernized aircraft and materials handling equipment will allow AMC to move more cargo and personnel than the infrastructure can handle due to physical plant deficiencies
- A secondary shortcoming is the lack of host nation agreements clarifying roles, responsibilities, and identifying suitable civilian airfields for use by AMC mobility aircraft
- Over 1 billion dollars in infrastructure projects identified (of the total over 600 million are fuels projects)

PLAN:

- AMC/CC tasked staff to complete a worldwide analysis of en route infrastructure
- Command team led by HQ AMC/CE completed survey of both European and Pacific infrastructures; next we'll assess status of SOUTHCOM, CENTCOM and CONUS APODs/APOEs
- All assessments will be rolled into one worldwide infrastructure assessment study
- Conclusion of study will define priority of individual infrastructure projects to determine if funding / not funding those projects will directly affect throughput
- Ability to link dollars to throughput will make AMC lead command for improvements to infrastructure
- Advocate to Congress its imperative to give Defense Logistics Agency funding to improve our nation's en route system infrastructure

BOTTOM LINE IMPACT:

- Further delays to improve infrastructure deficiencies will only drive higher costs; as more locations fail to meet mission requirements, AMC will lose wartime effectiveness
- AMC will not meet the nations requirement to move equipment and manpower to the right place at the right time
- Increases reliance on fast sealift (already at a premium due to insufficient quantities of ships)

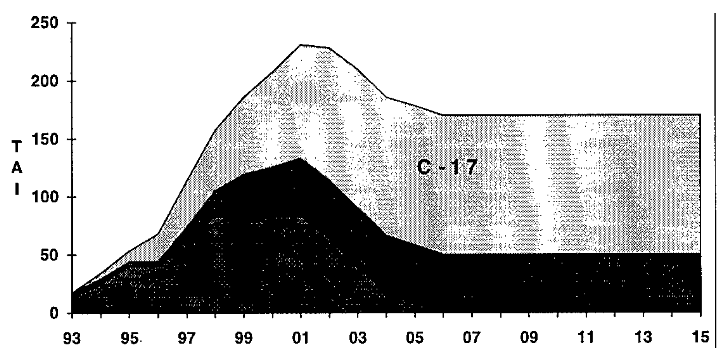
Defensive System (DS) Roadmap

STRATEGY: Lower airlift attrition from shoulder-launched infrared (IR) guided missiles.

MISSION: Automatically detect launch of IR-guided, shoulder-launched, surface-to-air missiles, alert crew, and employ IR expendables/countermeasures to decoy missile away from aircraft.

DESCRIPTION:

- Effective utilization of DS requires careful mission planning.
  - •• Every opportunity must be taken to reduce aircraft exposure to the IR shoulder launched threat envelope.
  - •• Reliance on on-board systems for aircraft self protection is a last resort. System must fully operate with as little as 2 seconds of warning prior to possible missile impact.
- Other threats, such as air-to-air and radar guided, must be avoided by route planning or suppressed/destroyed with combat forces prior to airlift employment.
- Current basic DS consists of AAR-47 missile warning system and either the ALE-40 or ALE-47 countermeasure dispensing system.
  - •• ALE-47 system will be installed on all aircraft. Present ALE-40 system being replaced on 4 C-5 and 13 C-141 aircraft.
- All 120 C-17 aircraft, 83 C-141, and 50 C-5B aircraft are scheduled to receive the basic DS installation.
- DS aircraft with basic system:



DEFICIENCIES:

- Present system effectiveness is significant against early generation missile threats when employed in the fully automatic mode.
- Inadvertent flare releases caused by missile warning false alarms limit utilization of automatic mode in all flight scenarios.
  - •• Manual operation does not provide sufficient protection in all missile engagements.
- Detection of missile launches in all engagements is currently limited by system technology.
- Advanced missile threats cannot be defeated with present systems.

NEW SYSTEM REQUIREMENTS:

- Self protection from extremely capable and highly proliferated MANPADs requires integrated multifaceted defensive systems with sophisticated capabilities.
- Present missile warning system false alarm rate must be lowered without decreasing probability of missile detection.
- Present flare technology must be expanded to include multispectral flare capability.
- Aircraft IR signature must be reduced to increase the effectiveness of present and new defensive systems.

OPR: HQ AMC/XPQ
As of: Sep 96

  - The task of defensive systems is to overcome the aircraft IR signature and give false guidance to the approaching missile.
  - A cost effective balance must be achieved between signature suppression and defensive system improvements.
- Present and future systems must operate within the constraints of the airlift mission.
  - System must be capable of automatic operation over a civilian population from takeoff to landing.
  - Inadvertent damage to ground facilities or personnel must be prevented.
  - Aircraft will launch with home base support and may transit bases with minimal or no munitions/maintenance support.
- Airlifters must be equipped with DS suites capable of detecting and countering any MANPAD missile within the missile capability envelope.
  - Present missile warning and flare dispensing systems should be retained and modified to increase return-on-investment.
  - New systems such as laser countermeasures should compliment present aircraft systems to increase overall defensive capability.

PLAN:

- Near-term objective (FY 94-01):
  - Retrofit 83 C-141, 50 C-5B, and 120 C-17 aircraft with basic DS suites Begin C-17 production cut-in with P33.
  - Continue present system improvements to increase defensive capabilities until long-term solutions can be fielded.
  - Initiate new funding initiatives to equip airlifters with advanced missile warning systems, laser countermeasure systems, and IR signature suppression to counter the third generation missile threat.
- Long-term objective (FY01-15): Equip all airlift aircraft IAW EC Roadmap guidance and fiscal constraints.

BOTTOM LINE IMPACT:

- CSAF stated on 16 Aug 96, "At some time in the future we will be unable to operate into areas we take for granted today (due to the IR threat)."
- The already significant IR MANPAD threat is growing in sophistication and is being widely proliferated throughout the world.
  - Present early generation MANPADs can be modified with advanced flare rejection capability. This will greatly increase the number of inexpensive and capable threats.
- Not funding present system improvements and advanced systems will result in severe limitations to AMC's ability to respond to National Command Authority tasking.
- Airlift employment without a capable DS will result in airlift attrition rates unacceptable to theater CINCs.

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AMC Units:					
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434 ARW/CC	Building 667, Hoosier Blvd	Grissom AFB	IN	56971-5000	8
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439 AW/CC	100 Lloyd St, E Wing Ste 100	Westover AFB	MA	01022-1825	8

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452 AMW/CC	1261 Graeber Street Ste 30	March AFB	CA	92518-1768	8
459 AW/CC	3755 Patrick Ave	Andrews AFB	MD	20331-4814	8
507 ARW/CC	7435 Reserve Rd Suite 101	Tinker AFB	OK	73145-8726	8
512 AW/CC	202 Liberty Way	Dover AFB	DE	19902-7202	8
514 AMW/CC	2217 West Arnold Avenue	McGuire AFB	NJ	08641-5218	8
615 AMOG/CC	575 Waldron Street Bldg 241 Bay F2	Travis AFB	CA	94535-2150	8
615 AMSG/CC	290 Vickers Ave	Hickam AFB	HI	96853-5272	8
621 AMOG/CC	1907 E. Arnold Ave	McGuire AFB	NJ	08641-5104	5
621 AMSG/CC	Unit 3305 Ramstein AB	APO	AE	09094-3305	5
624 AMSG/CC	3560 Surveyor St Suite A	Pope AFB	NC	28308-2088	5
625 AMSS/CC	Rota AB	FPO 09645	AE	09641-5000	5
626 AMSS/CC	Rhein Main AB	APO	AE	09097-5000	5
627 AMSS/CC	Mildenhall AB	APO	AE	09459-5000	5
628 AMSS/CC	Incirlik AB	APO	AE	09824-5000	5
630 AMSS/CC	Yokata AB	APO	AP	96328-5000	5
631 AMSS/CC	Osan AB	APO	AP	96278-5000	5
632 AMSS/CC	Bldg 42525 Burns Road	Elmendorf AFB	AK	99506-3935	5
633 AMSS/CC	Kadena AB	APO	AP	96368-5145	5
634 AMSS/CC	Anderson AB Unit 14008	APO	AP	96543-4008	5
635 AMSS/CC	290 Vickers Ave	Hickam AFB	HI	96853-5272	5
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NGB/FM	2500 Army Pentagon Rm 2E368	Washington	DC	20310-2500	
HQ ACC/XP	204 Dodd Blvd Suite 201	Langley AFB	VA	23665-5001	5
HQ AFRES/XP	155 Second Street	Robins AFB	GA	31098-1635	2
HQ AETC/XOP	1 F Street Suite 2	Randolph AFB	TX	78150-4325	2
HQ AFOTEC/CC	8500 Gibson Blvd, SE	Kirtland AFB	NM	87117-5558	2
HQ AFSPC/XP	150 Vandenberg Suite 1105	Peterson AFB	CO	80914-4570	2
HQ USAFE/XP	Unit 3220 Box 385	APO	AE	09094-0385	2
HQ PACAF/XP	25 E Street F-214	Hickam AFB	HI	96853-5417	2
HQ AFSOC/XP	100 Bartley Street Building 1	Hurlburt Field	FL	32544-5273	2
HQ USAF/XOX	1480 Air Force Pentagon	Washington	DC	20330-1670	
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HQ USAF/XOFM	1480 Air Force Pentagon Rm 4D1034	Washington	DC	20330-1480	20
HQ USAF/XOR	1480 Air Force Pentagon	Washington	DC	20330-1670	
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Wright Lab (WL)/CC	2130 Eighth Street, Suite 1	Wright Patterson AFB	OH	45433-7542	5
WR-ALC/CC	215 Page Road, Suite 269	Robins AFB	GA	31098-1662	5
OC-ALC/CC	3001 Staff Drive	Tinker AFB	OK	73145-3001	5
SM-ALC/CC	3237 Peacekeeper Way Suite 1	McClellan AFB	CA	95652-1056	5
OO-ALC/CC	7981 Georgia Street	Hill AFB	UT	84056-5824	5
SA-ALC/CC	100 Moorman Street, Suite 1	Kelly AFB	CA	78241-5808	

Schools:					
National Defense University Attn: Library; Periodicals,	Building 62 300 5th Ave	Fort McNair	DC	20319-5066	
AWC/DFW (Attn: Colonel Zeno)	325 Chennault Circle	Maxwell AFB	AL	36112-6427	40
ACSC/DE	225 Chennault Circle	Maxwell AFB	AL	36112-6426	50
CADRE/CC	401 Chennault Circle	Maxwell AFB	AL	36112-6428	2
Armed Force Staff College	Joint and Combined Staff Officer School; 7800 Hampton BLVD	Norfolk	VA	23511-1702	50
Air Force Element/USACGSC	1 Reynolds Avenue	Fort Leavenworth	KS	66027-1352	
US Army Transportation School	Assistant Commandant	Fort Eustis	VA	23604-5000	50
USACGSC Attn: ATZL-SWR (DLRO)	1 Reynolds Avenue	Fort Leavenworth	KS	66027-1352	
Code 1J2 Naval War College	686 Cushin Road	Newport	RI	02841-1207	
Marine Corps University; Logistics	2042 Broadway	Quantico	VA	22134-5068	
HQ USAFA/34 ES/CC	2354 Fairchild Dr, Suite 6A26	USAF Academy	CO	80840-6264	
Division of Professional Development	US Navel Academy 112 Cooper Road	Annapolis	MD	21402-5000	
Department of Military Instruction	Washington Hall ; Building 745	West Point	NY	10996-5000	
AFIT/LSY	2950 P Street, Bldg 641	Wright-Patterson AFB	OH	45433-7765	10
Government Agency:					
US Department of Transportation	Director, Office of Internation Aviation 400 Seventh Street SW, Room 6402	Washington	DC	20590-5000	

Joint Agency:					
Mobility Concepts Agency	ATTN: ATDO-MCA	Ft Monroe	VA	23651-5000	2

Nonprofit Associations:					
Air Force Association	1501 Lee Highway	Arlington	VA	22209-1198	
Airlift/Tanker Association	4404 Dawson Ave	North Little Rock	AR	72116-7037	
NDTA	50 South Pickett Street Suite 220	Alexandria	VA	22304-3008	
Research Center:					
RAND CORP	1700 Main Street, PO Box 2138	Santa Monica	CA	90407-2138	5

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AMMP 97 FEEDBACK

AMMP 97 continues to improve primarily due to feedback from our readers. Because of the vast depth and breadth of the material covered, it is imperative we continue to update this key document. Each comment you provide will be considered for the FY98 version.

Thank you.

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