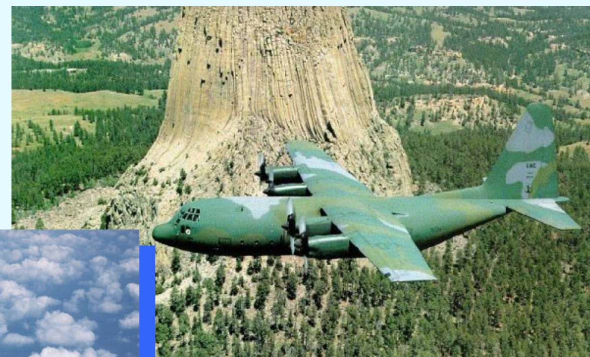
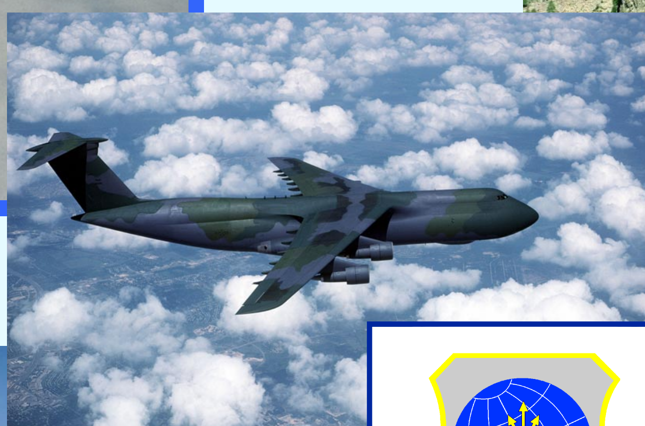
1998
Air Mobility Master Plan

RAPID GLOBAL MOBILITY





DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND

24 October 1997

MEMORANDUM FOR 1998 Air Mobility Master Plan (AMMP 98) Recipients

FROM: HQ AMC/XP
402 Scott Drive Unit 3L3
Scott AFB IL 62225-5307

SUBJECT: AMMP 98

1. Attached is the AMMP 98. We have incorporated many comments from throughout the air mobility community in our effort to continually improve this document. Revisions for AMMP 98:

- Added the Commander's Intent to reflect the commander's perspective and vision on modernization priorities and command issues.
- Section One is now AMC's Future International Security Assessment.
- Commander's Assessment "stoplight" charts reflect FY98-FY22 assessments.
- Modernization to meet the requirements of Global Air Traffic Management (GATM) and the results of FY97's "Year of the En Route System" are emphasized throughout.
- New text and a roadmap have been included addressing the return of C-130s to AMC's modernization planning process.

2. This year AMMP 98 will be available on CD-ROM and AMC's worldwide web homepage (http://www.safb.af.mil:80/hqamc/pa/). We encourage comments to improve next year's AMMP using a feedback sheet located in the back of the AMMP and an electronic version on the AMC homepage. I look forward to reviewing your inputs. Our points of contact are Lt Col Dave Walden and Maj Ron Celentano, DSN 576-4671, Commercial (618) 256-4671, FAX (618) 256-5372 (E-mail waldendc@hqamc.safb.af.mil or celentar@hqamc.safb.af.mil).

Walter S Hogle

WALTER S. HOGLE, JR.
Major General, USAF
Director of Plans and Programs

Attachment:
AMMP 98

COMMANDER'S INTENT

As USCINCTRANS and Commander of its air component, Air Mobility Command (AMC), I am tasked to provide the warfighting commanders the means to rapidly deploy forces through the Defense Transportation System (DTS) in peace and war. Without adequate resources to provide this service, our national goals and objectives are in jeopardy. The Air Mobility Master Plan (AMMP) is my modernization plan--it serves as our roadmap, in terms of people, infrastructure, and equipment needed to accomplish our assigned mission. Achieving the milestones set forth in this plan is dependent on the mobility force structure needed to accomplish our mission now and in the future, as well as additional capabilities that leverage technology and meet evolving requirements to ensure the air mobility system remains healthy and responsive.

My top priority continues to be the buy out and complete maturing of the **C-17**--the core airlifter of the future. As the C-141 retires, our support to special operations forces must shift to the C-17. The world is still a dangerous place, and the rapid movement of special operations forces is perhaps even more critical today than at any time in our history. This year, we have an additive requirement which was overlooked in previous years. Special operations represents an additional tasking above that factored into the 120 C-17 buy decision. To meet the continuous peacetime alert and wartime deployment requirements, we need an additional squadron of C-17s. I do not have the need for additional C-17 procurement beyond 135 at this time.

Our current fleet of **Material Handling Equipment (MHE)** is short in numbers, lacks high-reach capability, is beyond its service life, and is expensive to maintain. MHE represents the weakest link in the air mobility process. With continued funding, the full buy of 318 Tunner loaders possesses the capability to solve the large cargo handler shortfall. However, our aging fleet of 25K loaders, the backbone of our theater and smaller port capability, is becoming increasingly unreliable--it too requires replacement. Delivery of the Next Generation Small Loader (NGSL) must begin in FY00 if we are to preserve our capability to get the force to the fight.

"Restricted Global Reach" is our next most troubling challenge. As you read this, nearly 700 of our air mobility aircraft are being excluded from critical airspace over the North Atlantic. Areas of exclusion will grow unless we equip our fleet with communications, navigation, and surveillance equipment required to meet more stringent airspace performance standards. The importance of preparing now to operate in the twenty-first century is highlighted by our **Global Air Traffic Management (GATM)** modernization program. We must leverage technologies to enhance the air mobility system so we can improve our overall capabilities. Our fleet upgrades will be costly, but the alternative is delayed force closure and lost combat sorties, putting U.S. interests and lives at risk.

Military history is replete with instances of information being more valuable than forces, fuel, or bullets. All aspects of Global Air Mobility must replumb themselves culturally so that passing of timely, accurate information becomes the fundamental prerequisite to successful operations. We must make this the routine standard in peace, contingency and war. We must track every passenger, patient and piece of cargo within the DTS. **In-Transit Visibility (ITV)** of personnel, patients, and cargo is essential for the warfighter--forces and equipment in the mobility system do the warfighters no good if they don't know where it is or when it's coming. Systems that provide this capability must be automated to avoid "fat-fingering" or manual data entry. Because the need for accurate data is so important, we've established as our goal that "aircraft will not taxi until the data is entered."

We must **modernize** the 35-year-old **KC-135** to operate in today's environment. **PACER CRAG** is our first critical step for KC-135 cockpit modernization, leading the way towards GATM compliance. However, our biggest fleetwide challenge is gaining reduced vertical separation minimum (RVSM) certification and a GATM-compatible interphone system. Additionally, we need to modernize the KC-135E to meet tighter noise compliance standards to be implemented in the United States on 1 Jan 2000. Many KC-135Es are based at civil airfields. They must be made compliant or we risk our ability to continue operation at those fields. Further, our newest tanker, the **KC-10,** is showing signs of age and also requires modernization to maintain performance levels and FAA certification--primarily, these include GATM upgrades and a wing pylon replacement.

We have tanker and airlift aircrew shortages. Our new refreshed analysis confirms a documented shortfall in the number of aircrews and tankers we have for certain wartime taskings. More immediately, we are significantly short of aircrews to fully employ the aircraft we currently have. Stepping up to this requirement to properly capitalize the tanker force will go a long way towards cutting our wartime shortfall while improving peacetime capability and reducing perstempo. We need more aircrews, and we must start with the KC-135--Active, Guard, and Reserve.

We heartily welcome the C-130 fleet and personnel back into AMC. The C-130 represents the cutting edge of our combat delivery mission and provides focus for our **Defensive Systems** programs. To provide the warfighter a "first in" pathfinder force capable of rapid deployment worldwide, we are acquiring an **AMC-Precision Approach Capability (AMCPAC)** system to operate under adverse weather conditions into austere airfields. It includes a state-of-the-art airport surveillance radar and precision approach radar and microwave landing capability. The next step toward our goal of being able to operate in near zero-zero conditions is to harness synthetic vision technologies that are maturing now. These capabilities on our C-130s will provide warfighting CINCs the first response capability we need but do not have today. Additionally, I have convened a Tiger Team that is doing a first-of-its-kind, top-to-bottom scrub of C-130 requirements, operations, training, configuration, and equipping of the fleet. This Tiger Team includes participation from all mobility air forces and will enable us to not only assess the status of the fleet but also provide a coherent modernization strategy.

We need to modernize the C-5 with new engines and avionics. In the long term, we must have access to approximately 250 reliable wide-body military aircraft--120 C-5s and 135 C-17s--dedicated to the delivery of outsize and oversize cargo in peace and war. With C-17s replacing 266 C-141s, we lose a great deal of flexibility and pallet-carrying capability (over 1,000 pallets per day) to respond to multiple mission taskings. Every "tail" is critical. To help overcome this loss and to improve our peacetime and wartime posture, **C-5 modernization** is a must to correct its unacceptably low mission reliability rate and improve its performance to that of the KC-10. With nearly 80 percent of its service life remaining and to capitalize on previous investments, the decision to modernize the C-5 to levels comparable with other AMC aircraft is more fiscally compelling than replacing the aircraft. This program must begin in earnest in FY00 with earlier Research & Development funds if possible.

In the short term, we're programmed to experience a "bathtub" of capability as C-141s retire more quickly than C-17s replace them. This bathtub has serious consequences to our ability to meet wartime and contingency outsize and oversize requirements. In addition, the loss of total "tails" in the mobility system impedes peacetime flexibility, reduces support to theater CINCs, and puts further pressure on the Transportation Working Capital Fund (TWCF)--impacting our business-based bottom line. As a result, I have directed the staff to look at ways to delay the loss of our C-141 capability--including reverse associate options.

Aeromedical evacuation, one of our three primary missions, has continued to provide unparalleled service. We must work towards replacing or modernizing the C-9A aircraft, the only dedicated aeromedical evacuation aircraft in the inventory. The fleet is aging; supportability and maintainability is a growing concern.

I have declared FY98 to be the "Year of the Enlisted Force." The year is dedicated to the hard-working force of professionals who daily give 110 percent to the air mobility mission all over the globe. Programs will focus on cultivating enlisted leaders, enhancing and promoting enlisted pride, prioritizing funding to support specific enlisted corps initiatives, and encouraging greater enlisted participation in command-wide activities.

We must retain the right people with the right training to accomplish the mission. People in critical skills, especially pilots, are leaving the command and the Air Force in unanticipated numbers for many reasons. For FY97, the AMC "rate" for pilots remaining beyond their initial commitment was 25 percent. Through FY01, the forecast retention rate is estimated at 35-40 percent, well below the goal of 50 percent. Our retention problems may become so severe that they impact readiness. While AMC is at the forefront of the retention effort addressing pay and allowances, incentive pay, operations tempo, quality of life, adequate housing, and health care benefits, we must do more DoD-wide to stop the hemorrhage of talent. To this end, we favor an increase in the pilot bonus (retroactive to FY97 signers) and an immediate doubling of the hazardous duty incentive pay for our enlisted aircrew members.

Quality of Life facilities upgrades, such as the highly successful FOCUS DORMS, FOCUS HOMES, Squadron Operations/Aircraft Maintenance Unit Facilities, and FOCUS LOGISTICS programs must be sustained. Without these upgrades, we will severely limit the air mobility system. Additionally, we need to continue to upgrade our en route facilities and refueling capacity. Support for Global Presence and Power Projection strategies depends on our ability to generate missions at CONUS mobility bases and sustain that capability throughout the en route system overseas.

The Mobility Team--Active, Air Force Reserve, Air National Guard, and Civilian--provides the Nation the means to attain Global Reach so Global Engagement can be a reality. Like any business, proper capitalization is required to obtain and leverage the assets which make up the core capabilities. This AMMP provides my roadmap and priorities for capitalization. These investments and the resulting improvements are critical to AMC to provide our Nation with the Rapid Global Mobility capabilities necessary to protect our interests both at home and abroad.

Walt Kross

WALTER KROSS
General, USAF
Commander

EXECUTIVE SUMMARY

Air Mobility Command (AMC) is instrumental in providing this nation with Rapid Global Mobility. The command continues to address many difficult challenges developing in the international environment. The demands are many. The high operations tempo of AMC since 1989 and military downsizing have exacted a toll; fewer personnel, deteriorating infrastructure, and aging aircraft have strained air mobility and emphasized the need for continued modernization. These operational demands, coupled with tightening fiscal constraints, require thorough planning to maintain an effective force.

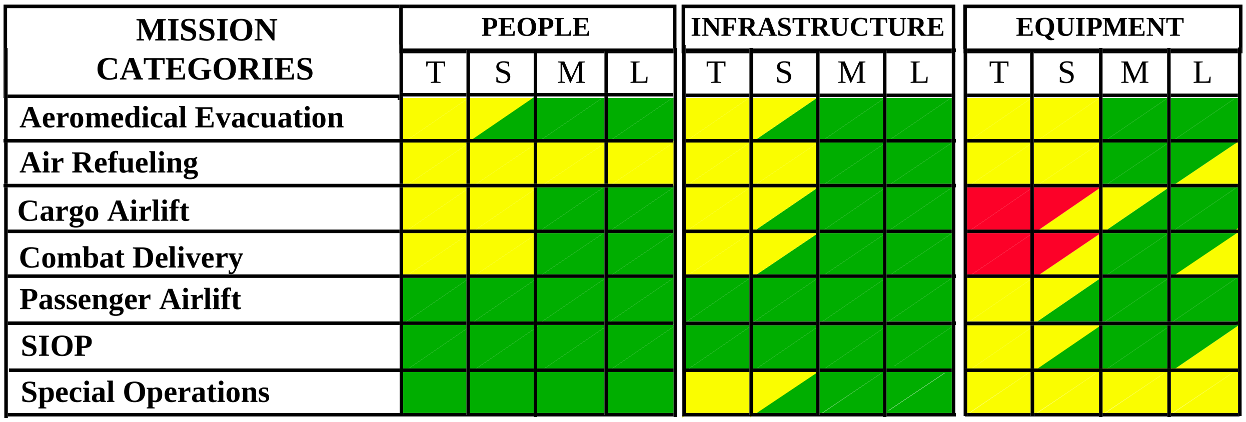
As the lead command for air mobility, AMC is responsible to guide all mobility air forces during their modernization efforts. The Air Mobility Master Plan (AMMP 98), in its 5th edition, is the culmination of a year long process that ensures AMC's people, infrastructure, and equipment remain capable of meeting our nation's requirements. This executive summary will cover not only the process that developed in the AMMP but will also highlight the major results of each section.

Building on AMMP 97, which was released in October 1997, a cross-functional team of experts began the fully coordinated process with the Mission Area Assessment (MAA). Numerous higher-level documents such as the *National Security Strategy (NSS), National Military Strategy (NMS), Defense Planning Guidance (DPG), Joint Vision 2010 (JV2010), Global Engagement*, and USTRANSCOM's and AMC's Strategic Plans all provided guidance to define the command's mission areas. This produced our vision of what tasks and missions air mobility forces will have to accomplish, both now and in the future. The next phase, Mission Needs Analysis (MNA), identified the command's deficiencies for today and those anticipated throughout the plan's 25-year planning horizon. The final phase of the process, Mission Solution Analysis (MSA), identified corrective actions to solve the deficiencies. These solutions, orchestrated by the functional OPRs on the HQ AMC staff, are reflected in action plans that look to combine procedural and technical solutions to those deficiencies. To assist those functional OPRs in identifying solutions, both industry and AFMC's Technical Planning Integrated Product Teams (TPIPTs) were sought out to explore all potential technological solutions.

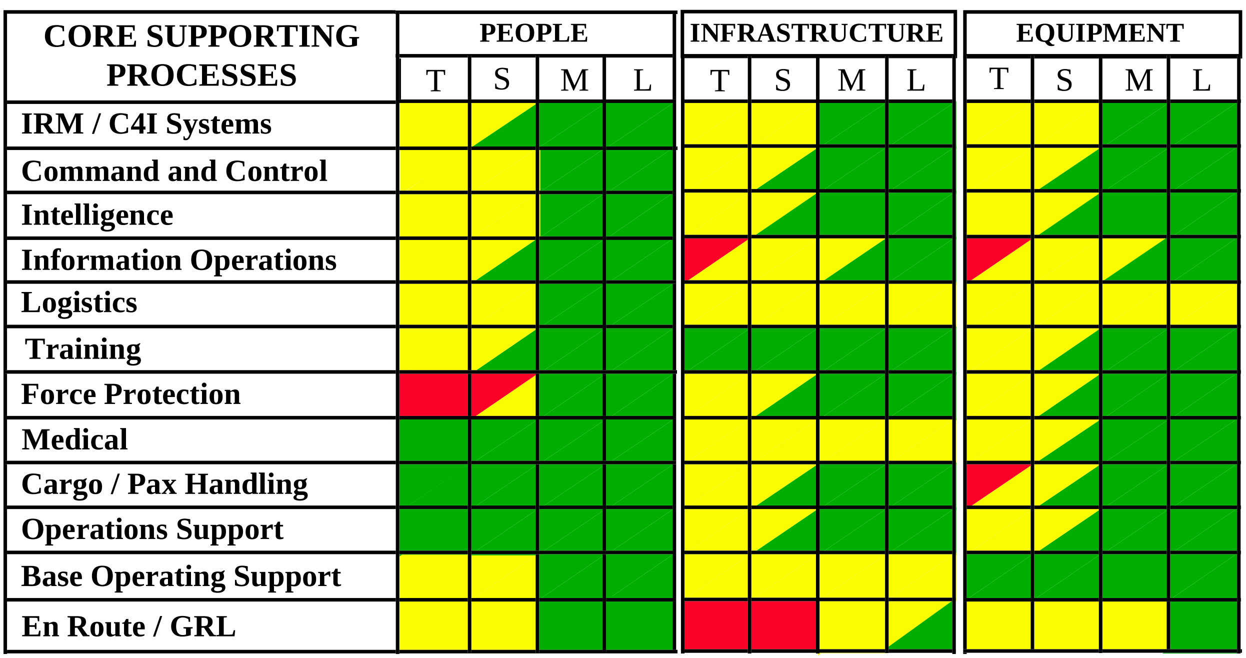
The following is the Commander's Assessment that examines the people, infrastructure, and equipment capabilities. Each air mobility mission category and core support process is assessed to identify deficiencies and required corrective actions for Today--FY98, Short-term--FY99-04, Mid-term--FY05-13, and Long-term--FY14-22. 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 available or planned. Yellow represents partial capability to meet mission needs. There are significant problems and proposed solutions identified but with only partial funding identified. Finally, Red indicates poor capability to meet mission needs. Serious problems are identified with only limited or no solutions or funding established.

1998 Air Mobility Master Plan
Commander's Assessment

MISSION CATEGORY ASSESSMENT



CORE SUPPORTING PROCESSES ASSESSMENT



T: TODAY (FY 98)
S: SHORT - RANGE (FY 99 - 04)
M: MID - RANGE (FY 05 - 13)
L: LONG - RANGE (FY 14 - 22)

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

AMMP-98 is consistent with General Kross' three key themes: maintaining our readiness to perform our global missions in support of warfighting CINCs, continually improving key processes in the Defense Transportation System (DTS) to maintain the best possible service to our customers, and preparing for the twenty-first century by modernizing our aircraft and support systems with cutting edge technology, reliable support equipment, and state-of-the-art communications. AMMP 98 is that modernization plan for air mobility forces.

Our top five modernization priorities are:

1. The procurement of 120 C-17s to support the requirement for two overlapping Major Theater Wars (MTWs). Also, in order to maintain the capability to support and augment the special operations mission, we need an additional squadron of C-17s.
2. Modernization of aging Material Handling Equipment (MHE).
3. Meeting the extensive requirements of Global Air Traffic Management (GATM), crucial for AMC operations.
4. Modernization of air mobility command and control (C2)/In-Transit Visibility (ITV) information systems for global management of air mobility forces. These critical systems serve as force multipliers. The command and control information processing system has illustrated its ability to integrate information for decentralized mission execution and centralized ITV.
5. The PACER CRAG (Compass, Radar, and Global Positioning System (GPS)) program and a GATM compatible interphone, providing a much overdue modification to the entire KC-135 fleet and satisfying human factor and mission requirements.

The remaining portion of this summary gives highlights from the major divisions of AMMP 98: Section One, FUTURE; Section Two, OPERATIONS; Section Three, PEOPLE; Section Four, INFRASTRUCTURE; Section Five, EQUIPMENT; and finally the ROADMAP section.

Section One of AMMP 98, FUTURE, is AMC's Future International Security Assessment, which describes what air mobility is and why we need it. As a foundation, we have used Global Engagement, and the AF Long Range Plan as significant drivers during our assessment. Additionally, the AMMP builds upon guidance from our senior leadership based on AMC's mission statement, core values, strategies, goals, objectives, and the modernization planning process. These benchmarks guide AMC's long-term planning by stating our purpose and direction for the future. Section One analyzes future operating environments, focuses on future operations, examines air mobility's role in national security, and looks at possible future force systems and their characteristics. Seven mission categories have been identified that require specific challenges in order to organize, train, and equip. They are: aeromedical evacuation (AE), cargo and passenger airlift, combat delivery, air refueling of fighters and bombers and force extension of tankers and airlifters, supporting the Single Integrated Operational Plan (SIOP), and support for special operations. Providing the support for all these mission areas are our core support processes, integral to the air mobility system. They consist of:

information resource management (IRM)/command, control, communication, computers and intelligence (C4I) systems, En Route/Global Reach Laydown, command & control processes, intelligence, information operations, logistics, training, force protection, medical, cargo & passenger handling, operations support, and base operating support.

Section Two, OPERATIONS, highlights AMC's global operations, which exceed 2,000 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. Emphasis of this section is on "what" air mobility is and "how" air mobility happens.

The Unified Commands are air mobility’s primary customers. Additional customers are the other Services for training, other nations and multinational organizations such as the United Nations, the states and U.S. territories when disaster strikes, aeromedical evacuation patients, and authorized opportune travelers around the world. AMC is the AF component of USTRANSCOM. The Tanker Airlift Control Center (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. Our nation depends on the Air Mobility system to provide the Rapid Global Mobility required to protect U.S. interests in peace and war.

Section Three, PEOPLE, describes AMC's greatest asset and its highest priority. AMC people are a winning Total Force team comprised of the active duty force, Air National Guard, Air Force Reserve, DoD civilian employees, and commercial industry. Each plays a unique role in the command’s success. To ensure we can accomplish AMC's challenging mission, we need to continue bringing high quality people to AMC and providing them with skills and training necessary to be productive team members. We must apply an effective utilization strategy to meet mission requirements, develop the work force, provide career opportunities, and meet individual needs. These challenging times of high opstempo and resulting high perstempo have the potential to heavily impact morale and lifestyles. We are just beginning to see the “tip of the iceberg” in terms of a developing personnel retention problem in all career fields but most noticeably with aircrews. More than ever, our people need quality support from a wide range of quality of life programs such as medical care, chapel programs, family support centers and adequate housing. AMC is committed to supporting its people through these programs and is dedicated to maintaining a strong, motivated force.

Force protection of AMC personnel and equipment is key to safely operating in our global Area of Responsibility (AOR). The security forces’ 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 forces require ballistic protection body armor to guard against the growing threat, closed-circuit camera systems, and deployable sensor equipment to protect air mobility flightlines. AMC operates hundreds of missions daily worldwide--often to remote locations. AMC assesses each mission before execution, coordinating with embassies, CINCs, and AF components to ensure the safety of our aircraft, and when necessary adds PHOENIX RAVEN security onboard where it cannot be provided. AMC ground-based elements are handled in a similar way. Also, AMC has organized and trained a traveling Terrorism Assessment and Awareness Team (TAAT) to review and implement security and force protection measures and conducts awareness training.

During Spring Rally 97, AMC units commanders collectively chose “Year of the Enlisted Force” as AMC’s 1998 theme. Emerging themes include programs focused on honing enlisted leadership, enhancing and promoting enlisted pride, and prioritizing funding for enlisted initiatives. Many of these issues will be worked at HQ AMC; others may require Air Staff involvement which will be pursued when warranted. The goal is simple--each enlisted person in this command should be able to say the Year of the Enlisted Force made a positive impact on his or her life.

Section Four, INFRASTRUCTURE, describes the need for a seamless infrastructure system to support DoD mobility operations worldwide. The system consists of many components, each of which interconnects, and plays a vital role towards accomplishment of rapid global mobility. AMC’s infrastructure must be flexible, responsive, and able to expand or contract in response to contingency or peacetime requirements. The three integral parts covered in this section include fixed facilities, organizational, and information infrastructures.

Fixed facilities are critical to the capability to provide rapid global mobility in support of the national security strategy. This portion of Section Four details the command’s Facility Investment Strategy that includes mission and medical Military Construction (MILCON), real property maintenance, upgrades to accompanied and unaccompanied housing, and initiatives to lead the AF in environmental quality excellence.

In an effort to attract and retain high quality people, we are advocating 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. FOCUS DORMS outlines the renovation and new construction required at each base to provide rooms of sufficient quality and quantity to meet the “1+1 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.

The organizational infrastructure portion of Section Four describes those components of the system that contribute to AMC’s command and control system of centralized control and decentralized execution which allows for flexibility and responsiveness. Major aspects of the organizational infrastructure discussion include the TACC’s responsibilities, the Air Mobility En Route System (ERS), and the ever increasing role of mobile infrastructure to include a description of the Global Reach Laydown (GRL) concept. Additionally, a major contribution to this section is the results of FY97’s “Year of the En Route System.” A crowning achievement of the Year of the ERS has been a determination of where best to focus scarce infrastructure dollars.

Based on lessons learned during Operation JOINT ENDEAVOR, an AMC-led assessment of bases throughout the Pacific and European AORs, and feedback from AMC commanders throughout the mobility system, AMC/CC declared, “Fiscal Year 1997: The Year of the En Route System.” The En Route System (ERS) is an interdependent global network of manpower, materiel, and facilities that provides command and control, maintenance, and aerial port services to air mobility forces performing USTRANSCOM worldwide missions. A weakness in any one area diminishes the entire system’s effectiveness.

As part of this effort, AMC and USAFE identified infrastructure problems and agreed on an ambitious plan to fix air base infrastructure in Western Europe by 2006. In the Pacific, AMC and PACAF are concluding a yearlong study assessing the depth of disrepair and are formulating a programming plan to improve the infrastructure. A critical companion to solving our overseas infrastructure deficiencies is the identification, advocacy, and application of all available sources of funds.

Through detailed analysis and strong and convincing advocacy, AMC has been successful in identifying those agencies primarily responsible to correct the deficiencies--primarily the Defense Logistics Agency and the Office of the Secretary of Defense. As the “Year of the En Route System” closes, the need to champion the en route system continues. AMC’s future efforts must continue to evaluate and enhance the network of overseas air bases in order to optimally support the DTS in times of peace and war.

Information infrastructure is the third and final division of Section Four. AMMP 98 continues to emphasize the ever-increasing importance and need to develop superior information systems. New programs are providing improved data and voice connectivity between fixed, deployed, and airborne assets. Forty-four legacy systems are being eliminated and migrating to 13 selected AMC systems, e.g. GDSS, C2IPS, CAMPS, and GATES. GATES will be the primary means of capturing, processing, and executing cargo and passenger movement--providing intransit visibility to the customer and eliminating the errors associated with manual human entry procedures. By using automatic identifying technology (AIT) such as integrated circuit memory cards and two dimensional bar codes, efficiency is improved. Major areas of the information infrastructure segment include information resources management (IRM), information operations (IO), ground information requirements, airborne information requirements, and C4I systems corporate architecture.

Section Five, EQUIPMENT, addresses the aircraft, support equipment, and other hardware issues needed to solve deficiencies or meet AMC objectives. AMMP 98 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, initial studies are projected. This date is 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 or a more detailed study examining the replacement or modification options.

AMC's highest modernization priority is acquiring the C-17 "Globemaster III," our future core airlifter. The C-17 will replace the aging C-141 and is capable of direct delivery of oversized and outsized cargo to small, austere airfields. This impressively capable aircraft combines advantages of a strategic airlifter--range, speed, air refueling, and heavy, outsized payload with those of a tactical airlifter--survivability and operability on small austere airfields. Ongoing modification programs address current and future requirements for threat avoidance, navigation and communication, and enhanced capabilities. The Mobility Requirements Study Bottom-Up Review Update (MRS BURU) set the airlift requirement for 120 C-17 aircraft. The acquisition program remains on track, but the 120^{th} C-17 will not be delivered until FY05. MRS BURU did not factor in the requirement for airlift to support the special operations mission as is now directed in the current Defense Planning Guidance (DPG). As the C-141 is retired, the need still remains to possess sufficient aircraft to simultaneously support the special operations low-level (SOLL II) mission and the two major theater war (MTW) requirement. An additional C-17 squadron, over and above the initial 120 aircraft buy will be required to fill this validated requirement. Beyond this, we envision no further procurement at this time.

AMC is also committed to modernizing its MHE. The Tunner (60K) loader will replace the aging 40K loader, providing the capability of reaching the cargo decks of commercial wide-body aircraft while being transportable on C-141 aircraft. The Next Generation Small Loader (NGSL) program will replace the 25K loader with the capability of servicing both military and commercial wide-body aircraft while being transportable on C-130 aircraft. Aerial ports and Tanker Airlift Control Elements (TALCEs) must have adequate numbers of Tunner (60K) loaders and NGSLs to meet the cargo throughput our customers demand. The needed 318 Tunner (60K) loaders have the unique capability to provide a main base, high-volume traffic workhouse, while the 264 NGSLs will provide a C-130-deployable, forward base capability. Modernization of the MHE will ensure ground equipment does not remain a limiting factor in our capability to rapidly project forces to support the national command authorities and warfighting CINCs.

AMC's ability to provide credible power projection is in jeopardy because our airlift and air refueling aircraft avionics are being quickly outdated by rapid technological advances in communications, navigation, and surveillance equipment. This evolutionary process is known as Global Air Traffic Management (GATM). With ever-increasing air traffic, ICAO and FAA are upgrading air traffic management system with a global navigation satellite system, digital data communications, and advanced automation over oceanic airspace. The basis of most air traffic upgrades is digital satellite data link between aircraft and air traffic controllers. Satellite and high frequency (HF) data link with GPS provides effective air traffic coverage worldwide without reliance on ground-based radar. AMC's comprehensive plan will ensure our fleet is able to freely operate in the future airspace environment. Upgrades to our fleet will be costly, but the alternative is extensive rerouting, increased fuel consumption and costs, reduced cargo loads, and lack of force closure for combat operations--unacceptable impacts.

Under contingency operations, capability is needed to provide a rapidly deployable projection force to protect U.S. interests from sudden challenges and achieve decisive results. To achieve this goal, AMC is acquiring a rapidly deployable precision approach architecture capable of operating under adverse weather conditions into austere airfields providing the theater commander with a distinct tactical advantage. Programs to acquire this capability include a rapidly deployable, state-of-the-art airport surveillance radar/precision approach radar as well as equipping our tactical and strategic airlift fleet with microwave landing system capability. In addition, the command is pursuing enhanced, synthetic vision technology which will further augment a core airlift fleet to realize the ultimate goal of operating in near zero-zero ceiling and visibility weather conditions.

AMC also recognizes the need to protect aircraft in the air as global mobility places our assets in harm's way. Defensive Systems (DS) 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, alert the crew, and employ infrared (IR) expendables/countermeasures to decoy the missile away from the aircraft.

With 266 C-141s retiring to be replaced by only C-17s, every individual airframe becomes more critical to our airlift needs. The loss of 146 total tails represents a significant loss in global flexibility to respond to multiple mission taskings. To increase flexibility, AMC/CC has directed his staff to look at ways to delay the loss of the C-141 capability. Furthermore, AMC's greatest need is for 250 wide-body aircraft that can deliver outsize and oversize cargo with high reliability, maintainability, and availability. To accomplish this, the C-5 "Galaxy" must undergo an extensive modernization program to improve its low mission capable rates while exploiting the 25 to 30 years of structural service life remaining on the C-5 force. GATM upgrades must start now with a comprehensive facelift starting in earnest in the year 2000. Restoring C-5 reliability is essential to maintaining Rapid Global Mobility.

The C-130 fleet is the linchpin of our combat delivery capability. The challenges ahead to maintain that capability are many. The C-130 fleet is diverse, with an average age of 25 years, and requires modernization to remain capable into the twenty-first century. As the nation's core combat delivery platform, it is undergoing numerous modernization initiatives.

The major modernization program for the KC-135 is PACER CRAG, which replaces old and non-supportable cockpit equipment with state of the art digital displays. The program is based on: 1) KC-135 Compass Replacement, 2) Radar Replacement, and 3) GPS. The Compass Replacement program provides an additional inertial navigation unit. Radar Replacement provides color weather radar and electronic horizontal situation indicators. The GPS program provides the receiver, antenna, flight management computer, control and display units, and data loader for global navigation. In addition, Traffic Alert and Collision Avoidance System (TCAS), a standby Attitude Directional Indicator (ADI), and a reduced vertical separation minimum (RVSM) compliant central air data computer (CADC) will be installed. Although we are installing a RVSM compliant CADC, AMC must ensure complete RVSM certification for our entire KC-135 fleet. Without a RVSM compliant fleet, the KC-135 will be forced to use less than optimum routes and altitudes which will result in increased fuel consumption and a subsequent decrease in fuel offload capability. To round out cockpit modernization, AMC is pursuing a replacement for the interphone system. The current system lacks individual radio volume controls which hampers effective cockpit communications. Also, the interphone doesn't have the capability to support future radios needed for GATM.

Although equipment modernization programs for the KC-135 are programmed, a major limitation is a shortage of aircrews. As we transitioned from the Cold War mission based on SIOP requirements to one primarily of conventional support, the DPG requirement for aircrews increased. However, Air Force programming to date has not increased aircrew authorizations. With the C-141's retirement and subsequent elevated use of the KC-135 in the airlift role, combined with increased support to numerous small scale contingencies (SSCs), opstempo for KC-135 aircrews has risen dramatically. Although an additional 14 aircrews is funded in the FY99 Amended Program Objective Memorandum (APOM) allocation, AMC will remain 75 aircrews short in some wartime scenarios.

The KC-10 is beginning to show signs of age and requires modernization to continue its outstanding performance. Cockpit modernization includes installation of GPS with FMS 800, and an electronic Horizontal Situation Indicator (HSI) will replace the current HSI. Replacing the engine pylons will be necessary to maintain the aircraft's FAA certification.

The primary AF 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. The Special Air Mission (SAM) uses a variety of aging aircraft to meet its high-visibility requirements. The VC-32, the C-137 replacement, is a Boeing 757-200 which will arrive on the ramp beginning FY98. The C-37, a Gulfstream V, is the small SAM aircraft program, also scheduled for delivery in FY98. 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.

We are trying to acquire Real Time Information in the Cockpit (RTIC) to provide situational awareness capability in real or near real-time information overlaid on photos and charts. Night vision goggle (NVG) use is essential to complement the full spectrum of air mobility nighttime operations.

AMC is taking the first step across the threshold of a true revolution in military aircrew training. Advances in simulation technology now permit use of simulators to accomplish many aircrew training events in a simulator or other nonflying 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 98 provides Roadmaps for AMC's major systems and key programs. There are 9 aircraft, 9 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 1998 AMMP is AMC's 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 document describing AMC operations and capabilities. The annual AMMP has become a key reference document throughout DoD, industry, and academia for those interested in air mobility and its crucial role in America's National Security Strategy. Since the AMMP is the USAF air mobility capability modernization plan, this document does not address all objectives specified in the AMC Strategic Plan. Those other objectives involve shorter-termed process improvement, or may involve solutions other than modernization. As such, the AMC Strategic Plan will address those objectives separately.

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Section One
FUTURE

INTRODUCTION

Section One is AMC's Future International Security Assessment that serves as the foundation for the subsequent Operations, People, Infrastructure, and Equipment sections of the 1998 Air Mobility Master Plan (AMMP). It builds upon the guidance from our senior leadership including Air Mobility Command (AMC’s) Mission Statement, Core Values, Strategies, Goals, and Objectives. These benchmarks guide AMC and particularly, the USAF air mobility long-term modernization planning by stating our purpose, who we are, and our direction for the future.

New this year is an expanded assessment of the future environment and threats we will face. Likewise, the scope of the AMMP has been expanded. CORONA FALL designated AMC as the USAF lead command for air mobility. As the lead command for air mobility in the USAF, AMC coordinates with the other mobility air forces partners to provide the leadership in air mobility force capability and modernization. As such, an expanded discussion of AMC’s focus on the future and Combat Delivery mission category is also included. Air mobility’s role in national security is outlined utilizing a top-down Strategies-to-Tasks framework to support our national goals and objectives.

The annual planning model used to create this master plan is adapted from the DoD modernization planning process. Key steps in this model are establishing *what* air mobility is, *who* our customers are, and the services, e.g., mission categories, 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 characteristics required of future forces and a look at some possible future systems.

VISION

AMC is guided by complementary Air Force and USTRANSCOM visions.

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

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. 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

The Secretary of the Air Force (AF) and the Chief of Staff 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.

STRATEGIES, GOALS, AND OBJECTIVES

In contrast to past years' AMMP, the strategies, goals, and objectives for which action plans are maintained, have been derived from a new process. To better align with the evolving AMC Strategic Plan, this year's AMMP centers around six broad strategies.

1. **Meet Customer Driven Expectations and Requirements Across the Full Spectrum of Conflict**

2. **Enhance Mission Capabilities Through Modernization**

3. **Expand Collaboration with Private and Public Sectors**

4. **Increase Efficiency and Effectiveness**

5. **Achieve Environmental Excellence**

6. **Develop a High Performance Work Force and Environment**

A working group, consisting of the headquarters deputy directors provided oversight and guidance during the development phase of the AMC strategies. The foundation of this plan is established from analyzing our capability to meet customers' needs and requirements in current and future environments. The strategies, goals, and objectives resulting from this analysis serve to close the gap between our current capabilities and the desired end state.

The AMMP now utilizes objectives that are derived from the AMC Strategic Plan. This process of synchronization between the two plans will continue through the next planning cycle and will ensure effective communication of both modernization and strategic planning goals. In that the AMMP is the USAF air mobility capability modernization plan, this document does not address all objectives specified in the AMC Strategic Plan. Those other objectives involve shorter-termed process improvement, or may involve solutions other than modernization. As such, the AMC Strategic Plan will address those objectives separately.

STRATEGY 1: Meet Customer Driven Expectations and Requirements Across the Full Spectrum of Conflict

1a Provide rapid seamless air mobility.
- 1a1 Integrate information operations into all aspects of command operations ....DOK, FY05
- 1a4 Provide total ITV from receipt to delivery. ....DOU, FY00
- 1a6 Develop CONOPS, acquire equipment/storage facilities, develop an automated tracking system, and outline program management for Patient Movement Items .... SGA, FY04
- 1a7 Provide global voice/data connectivity to aircraft and worldwide locations. ....DOU, FY02
- 1a8 Migrate to AMC's target corporate architecture ....SCT, FY03
- 1a9 Establish an information superhighway at base level ....SCP, FY03

1b Improve Air Mobility customer satisfaction.
- 1b3 Establish a customer/financially focused metrics system ....DOV, FY01
- 1b4 Base all command inspection processes on AF and MAJCOM METLs .... IGC, FY99

1c Maximize the future potential of air mobility for America
- 1c1 Foster innovative new mobility concepts and aggressively promote and exploit new technological opportunities. .... XPX, Continuous
- 1c2 Develop and codify Air Mobility doctrine .... XPD, Continuous
- 1c3 Maximize successful mission performance in degraded operating environments....................DOK, FY06

STRATEGY 2: Enhance Mission Capabilities Through Modernization

2a Capitalize on technology.
- 2a1 Acquire/modernize the MHE fleet to meet user requirements across the spectrum of conflict. .... XPR, FY01
- 2a2 Reduce the air mobility footprint necessary for deployed operations.............DOO, FY03
- 2a3 Modify the aging air mobility fleet to maintain the capability to meet future requirements. .... XPR, Continuous
- 2a4 Achieve the strategic air mobility requirement established by MRS BURU and the Defense Planning Guidance (DPG). .... XPX, FY05
- 2a5 Replace C-141 aircraft capabilities to meet the broad spectrum of customer airlift requirements. .... XPX, FY05

2b Upgrade working environments to improve capability.
- 2b1 Complete the Squadron Operations/Aircraft Maintenance Unit Facility program .... CEP, FY04
- 2b2 Upgrade en route facilities to meet command standards .... CEP, FY20
- 2b3 Complete the FOCUS LOGISTICS program .... CEP, FY07

STRATEGY 3: Expand Collaboration with Private and Public Sectors

[Refer to the AMC Strategic Plan]

STRATEGY 4: Increase Efficiency and Effectiveness

4a Streamline activities and eliminate waste to improve delivery processes.
4b Improve operational capability while protecting resources.
- 4b2 Increase aircraft availability and reliability to meet command goals and requirements .... LGF, FY07
- 4b3 Modify/sustain support equipment to improve reliability and availability....... LGB, FY06

STRATEGY 5: Achieve Environmental Excellence

5a Identify, investigate, and clean up contamination associated with past activities.
- 5a1 Clean up to lower level of risk or have remedial systems in place for half of our high relative risk sites by FY02, all of our high relative risk sites by FY07, all of our medium relative risk sites by FY10, and all of our low relative risk sites by FY14 .... CEV, FY14

5b Enhance and maintain a sense of environmental responsibility.
- 5b1 Upgrade all underground storage tanks to Environmental Protection Agency (EPA) standards .... CEV, CY98

5c Minimize adverse environmental impacts from all air mobility processes.
- 5c1 Reduce solid waste 50 percent from CY92 baseline .... CEV, CY97
- 5c2 Reduce hazardous waste 50 percent from CY92 baseline .... CEV, CY99
- 5c3 Reduce pesticide use by 50 percent from FY93 baseline........ CEV, FY00

STRATEGY 6: Develop a High Performance Work Force and Environment

6b Establish a fully integrated leadership system.
- 6b1 Strengthen air mobility leadership development and increase air mobility personnel awareness of Air Mobility doctrine........ AMWC, Continuous

6e Ensure a skilled workforce is available to meet future requirements.

- 6e2 Build a system to maintain sufficient manning levels in each Air Force specialty to meet mission requirements .... DPA, Continuous
- 6e3 Meet the civilian drawdown challenge... DPC, FY03
- 6e4 Accurately size AMC medical units to sustain the readiness mission, cost-effective health care, and blue-suit capability... SGA, FY08
- 6e5 Assess Force Protection/Antiterrorism (FP/AT) and properly train all AMC personnel on FP/AT issues and ensure they are properly equipped .... SFP, FY02
- 6e6 Advocate HQ USAF implementation of comprehensive compensation programs to promote aircrew retention and prevent future shortages that would impact capability and readiness .... DPX, Continuous

6f Provide care and support for our people.

- 6f1 Facilitate implementation and maintenance of a managed health care system that optimizes quality, access, and cost for all beneficiaries.................SGS, FY99
- 6f2 Build healthier AMC communities ....SGP, FY05
- 6f3 Achieve Five Star Fitness Program certification at all AMC bases ....SVP, FY99
- 6f4 Increase effectiveness and availability of support programs for all AMC members, as well as families, to ensure mission accomplishment. ....DPP, FY01
- 6f5 Complete the quality of life facility upgrades...CEP, FY04
- 6f6 Complete the FOCUS DORMS program .... CEH, FY10
- 6f7 Complete the FOCUS HOMES program .... CEH, FY35

Special Emphasis Items (SEI)

- SEI Integrate the Theater Aeromedical Evacuation System (TAES) and the Strategic Aeromedical Evacuation System (SAES) concepts of operations (CONOPS) under one Global AES CONOPS............................. SGX, FY98
- SEI Support programs that develop and broaden air mobility experts to increase mobility presence in Air Force and joint leadership positions. .... DPA, Continuous
- SEI Advocate compensation and benefit programs to retain a quality, trained force.
- SEI Support AF and DoD efforts to close military-private sector pay gap, maintain retirement benefits, close basic allowance for quarters (BAQ) gap, and support commissary benefits.. DPX, FY03
- SEI Achieve an atmosphere that embraces human dignity and encourages full development of each individual's potential.
- SEI Eliminate improper or unlawful discrimination and sexual harassment. .DPP, Continuous
- SEI Increase awareness of recognition programs for air mobility personnel ....DPP, Continuous
- SEI Prevent future enforcement actions.. .... CEV, Continuous

PLANNING PROCESS

AMC's model for modernization planning is an adaptation of the USAF modernization planning as depicted in Figure 1-1. The planning model is an annual process, now in its fifth 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, and numbered air forces' involvement at key steps along the way. The result is the Air Mobility Master Plan (AMMP), 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* capability modernization.

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 (AF) values assessment, mission analysis, and envisioning the future. The result is a definition and understanding of AMC's missions and tasks.

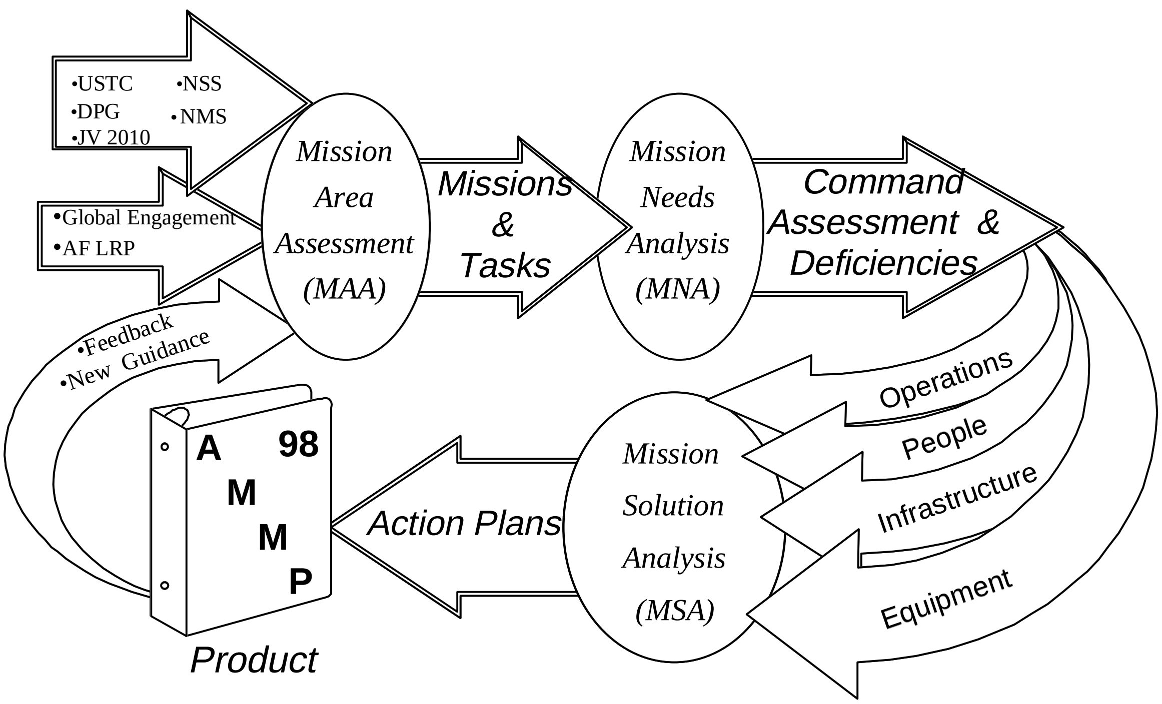

Figure 1-1. AMMP Planning Process

Mission needs analysis (MNA) then evaluates the command's ability to accomplish these missions, tasks, and associated core support processes based on our current capabilities, and our future capabilities when compared with our future requirements. MNA identifies and quantifies deficiencies needing action. This is related to the Quality AF 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	--	FY98
Short Term	--	FY99-04
Mid Term	--	FY05-13
Long Term	--	FY14-22

Key assumptions are:

- The requirement to support two Major Theater Wars (MTWs) in overlapping time frames will remain.
- The requirement to conduct multiple concurrent Smaller-Scale Contingencies (SSCs) operations will remain.
- The strategic airlift buy of at least 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 four 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 modernization planning, Mission Solution Analysis (MSA), sets objectives which support the six strategies. 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 individual goals. To assist AMC in identifying solutions, the deficiencies from the MNA will be prioritized and sent to the TPIPTs. The TPIPTs will be tasked to provide concepts and cost estimates so that all potential technological solutions may be explored. The TPIPTs will conduct a Concept Call to analyze existing and future technologies. Through this process, TPIPTs will work with AF Labs and industry to provide solutions to the deficiency list. TPIPTs will evaluate proposed solutions and prioritize the list of solutions to all deficiencies and brief the AMMP Executive Council. In conjunction, the AMC Staff will review the DoD’s Advanced Concept Technology Demonstrations (ACTDs) and Air

Force Research Lab's (AFRL's) Advanced Technology Demonstrations (ATDs) and support those technologies and concepts with application to the command.

The final step in AMC's 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. Historically, each AMMP has shown significant improvement and growth in understanding air mobility and modernization planning. This is a result of a strong planning team and senior leadership involvement.

FUTURE INTERNATIONAL SECURITY ASSESSMENT

The changing face of world politics, technology, and economics have brought about drastic change to the global security environment of the twentieth century. With the accelerated rate of change in these areas, it is difficult to specify the exact nature of conflicts in the twenty-first century. For this reason, air mobility will need to remain flexible to respond to the full range of requirements in twenty-first century conflict. Future operating environments, threats, and strategies will evolve to encompass the full spectrum of weapons and areas of operations. Combined with a decline in the number of forward-deployed forces, these environments will task U.S. forces' combat capability and will increase the need for flexible Rapid Global Mobility. Not even the United States can afford to have a military capability present in all theaters at all times. Therefore a Rapid Global Mobility capability is the only viable alternative.

The U.S. is the only nation on earth with a rapid deployment capability that gives its leadership global impact. Rapid Global Mobility must be maintained through the next century if the U.S. is to give its leaders diplomatic and military flexibility. Long lead times required for planning, programming, and acquisition, coupled with escalating weapon system costs and declining budgets, mandate air mobility proponents focus on the long term (25 years) when planning air mobility force structure. Programmed force structure must be planned with a joint vision in mind. The lessons of DESERT STORM and the concepts of Joint Vision 2010 validate the need to conduct operations as a Joint Team. In this same philosophy, air mobility has outgrown the concept of a logistics support system and into that of an operational instrument of national power and an indispensable element of our National Military Strategy. The AF has validated this importance by making Rapid Global Mobility one of its six core competencies for defense of our nation in *Global Engagement: A Vision for the 21st Century Air Force*.

FUTURE OPERATING ENVIRONMENTS

The future operating environments are being shaped today. Geostrategic trends of globalization, disintegration, and proliferation are creating significant challenges in our world environment.

Globalization is the economic and political integration and interdependence of the world's nations. This integration, brought on by the revolution in computers, communications, and transportation has forever linked the economic growth of nations to trade and expanding economic markets. For first world countries trade is the key to economic growth; for lesser developed countries trade is the key to economic development. This linkage to the world economy forces developed nations to pursue regional and global trading pacts that prevent isolationist policies. It results in the rapid diffusion of new technologies, the growth of trans-national organizations at the expense of the nation states, and the transformation of high-volume economies to high-value economies.

Disintegration is the geostrategic trend that tends to drive world groups apart; demographics and religious tensions are two examples. Changes in the demographics of the world population result in increased challenges. As the population of major industrialized nations ages, they face tremendous strains on their economies through increased health care costs and climbing social tensions. The disparity of standards between north/south nations causes increasing immigration, placing pressure on major industrialized economies trying to sustain sufficient economic growth. Waves of refugees, immigrating from former Communist countries and war-torn areas, increase the burden on their recipient countries and increase pressure to close those countries' borders. Increasing availability of affordable transportation will lead to renewed migration and immigration of the world's people resulting in environmental and sociological strain on developed nations. Meanwhile, underdeveloped countries populations are getting younger, which historically has been a key factor in instability, increasing the possibility of unrest and revolution. With factionalism, often based on race or religion, internal unrest and war will continue to displace millions of people annually.

Proliferation is the increased availability of weapons to state and non-state actors throughout the world. It principally concerns the proliferation of weapons of mass destruction (WMD), delivery vehicles for WMD, advanced conventional weaponry, and information technology. The use of WMD (nuclear, chemical and biological) is the greatest single threat to American military forces deployed in response to a regional crisis, adding a new dimension to future conflicts. Its spread to terrorist groups, particularly those with the means to transport WMD to the U.S., must be controlled. Many states view the acquisition of these capabilities as vital to countering U.S. conventional warfighting superiority. Players of past small-scale disputes now or soon will have the capability to unleash horrific destruction on centuries-old adversaries and to coerce U.S. decision makers by threat of using such weapons. The ability to regulate the spread of the required technology for these weapons is significantly decreased as some two dozen states remain actively engaged in the pursuit of WMD. Availability of WMD delivery vehicles like theater ballistic missiles, cruise missiles, aircraft, and submarines is increasing. The types of missiles most likely to be proliferated in significant numbers are Scud upgrades and unmanned aerial vehicle (UAV)-like cruise missile variants. This could seriously jeopardize our ability to project forces to a crisis or to swing forces from one deployed location to another. Advanced conventional weaponry is for sale worldwide to anyone with the cash to purchase it, making nations that were traditionally nonthreatening present themselves as threats. The spread of information technology to the far reaches of the earth presents significant security challenges. Integration of commercially available Global Positioning System (GPS) receivers into conventional weapons now transforms dumb bombs into precision guided munitions (PGM). The availability of cellular technology, and secure and portable faxes allows a third-rate power the capability of a first-rate command and control system. Open source information networks like the

Internet offer wide access to multiple special interest groups. The effectiveness of these technology systems is nowhere more evident than in the areas of organized crime and illegal drug operations.

Future competition will center on the control of scarce resources of water, land, food, and energy, which will likely continue as the source of international conflict. Advances in computer technology will integrate worldwide information and financial systems while easily obtained communications (voice, video, data) systems provide global connectivity. This will act to erode state authority and sovereignty in an increasingly urban and developing world.

As the world's only remaining superpower, the U.S. must look to plan against non-state adversarial capabilities, not just against an individual nation's forces. A disgruntled faction today could easily possess significant destructive capability tomorrow. As Joint Vision 2010 states, "our most vexing future adversary may be one who can use technology to make rapid improvements in its military capabilities that provide asymmetrical counters to U.S. military strengths, including information technologies." We must be ready to deter a wide range of capabilities at any point in the world. In an attempt to define future threats and capabilities the U.S. will need to possess in order to counter them, the Air Force Long Range Plan identifies a set of nine possible future environments. The threats and type of U.S. counters are:

High End Global Competitor

- An adversary seeks superpower status
  - U.S. seeks to prevent emergence of global competitor
- Major power seeking military capability broadly equal to U.S.
- U.S. must:
  - Conduct conventional and unconventional large-scale operations
  - Deter and defend from nuclear, biological and chemical (NBC) and information operations (IO) attack
  - Conduct strategic surveillance and space warfare operations

Low End Global Competitor

- An adversary seeks to dominate a region by deterring U.S. intervention
  - Regional power seeking capability to defeat U.S. downsized power projection forces
  - Equal to U.S. in some military areas
- U.S. must:
  - Conduct a strategic air campaign
  - Defeat covert NBC attacks
  - Defeat anti-satellite (ASAT) threats
  - Provide a missile defense

High End Regional Competitor

- An adversary seeks to deter U.S. intervention
  - Regional state seeks to acquire military capabilities imposing unacceptable risks to U.S. forces
- U.S. must:
  - Conduct large-scale conventional and unconventional operations quickly and with minimum casualties

Low End Regional Competitor

- An adversary seeks to deter regional states from granting U.S. access
  - Regional state seeks large, sophisticated capability to threaten regional targets with NBC
- U.S. must:
  - Defend regional friends against attack and mitigate consequences of NBC use

Defend Ally from Insurgency

- An adversary seeks to overthrow a U.S. ally
  - Friendly government is endangered by a large insurgency that possess some advanced weapons and IO capability
- U.S. must:
  - Deliver humanitarian assistance
  - Support the ally's counter-insurgency operations
  - Provide nation-building assistance
  - Defend the ally's information systems

Peace Enforcement

- Two combatant nations seek war termination, each on their own terms
  - Each state threatens to escalate to NBC use
- U.S. must:
  - Deter overt and covert NBC use
  - Compel a prompt cease-fire
  - Enforce the cease-fire

Nuclear/Industrial Activities

- A state seeks economic development by operating dangerous NBC industrial facilities
- U.S. must:
  - Monitor, neutralize, and contain dangerous activities while defending against hostile response

Large Scale NBC Proliferation

- The government of a large, nuclear state collapses, producing smaller states
  - New states seek to raise economic resources by selling nuclear weapons
- U.S. must:
  - Conduct counter-proliferation operations and noncombatant evacuation operations (NEO)

Non State Terrorism

- A large international crime organization seeks to deter U.S. repression
  - Threatens disruption of computer networks controlling industry and transportation in the U.S.
- U.S. must:
  - Detect and neutralize computer intrusions
  - Neutralize participant's IO campaign
  - Devise defenses of threatened networks
  - Neutralize members of organization involved

> *". . .the U.S. must prepare to face a wider range of threats, emerging unpredictably, employing varying combinations of technology, and challenging us at varying levels of intensity."*
>
> **Joint Vision 2010**

Utilizing new capabilities, we can expect future adversaries to exercise an asymmetric strategy against the U.S. This means they will take advantage of their strengths while exploiting U.S. vulnerabilities. More than likely, they will attempt to avoid direct military confrontation with the U.S. while seeking to challenge us in other areas. Adversaries will attempt to keep us out of the fight by coercion or holding U.S. "centers of gravity" hostage. The Quadrennial Defense Review (QDR) states that "U.S. dominance in the conventional military arena may encourage adversaries to use such asymmetric means to attack our forces and interests overseas and Americans at home." The possibility of adversaries utilizing information warfare to accomplish their goal is highly likely. Today, virtually anyone with a computer and a modem has the tools necessary to become a high tech information vandal. Defense Department computers have already come under cyber attack, affecting over 600 systems. The U.S. must develop a method of modeling this capability now in order to develop systems to protect against it. U.S. forces will need to defeat these asymmetric strategies by bypassing the adversaries strengths, while maintaining public support and the support of our allies. The Air Force Long Range Plan specifies the following characteristics that will be needed for future U.S. forces to be effective.

Effective Future Force Characteristics

Full-spectrum Force	Cope with Asymmetric Strategies
Rapid Response	Lean, Expeditionary-Like Forces
Emphasize Extended Reach	Sustained Operations
Anticipate Early Use of NBC	Protect and Defend the U.S. Theater
Maintain High Technology Edge	Casualty Avoidance

Rapid Global Mobility, while possessing these characteristics, also enables other Joint Forces to be effectively employed. Without the inherent capability of Rapid Global Mobility to provide rapid response, extended reach, and lean forces that can bypass adversaries strengths in a sustained operation, other U.S and coalition forces could not be employed effectively and the U.S. would revert to only a regional power.

FUTURE FOCUS

> *"The world stands on the threshold of the 'aeronautical era.' During this epoch the destinies of all people will be controlled through the air. . ."*
>
> **General Billy Mitchell**

Few people who witnessed the Wright Brothers' early flights could have imagined that it was the birth of a means to go faster than the speed of sound or land a man on the moon. So too, the capabilities of today's aircraft will wane in comparison to the air mobility vehicles of the mid to late twenty-first century. According to the Director of Net Assessment, Office of the Secretary of Defense, a revolution in military affairs (RMA) is "a major change in the nature of warfare brought about by the innovative application of new technologies which, combined with dramatic changes in military doctrine and operational and organizational concepts fundamentally alters the character and conduct of military operations." An RMA will require new force structure capabilities and warfighting concepts to take full advantage of new, improved technologies.

Operational concepts like direct delivery, In-Transit Visibility (ITV), Global Reach Laydown, and free flight will mature as critical enablers to an RMA in global mobility. Future military operations will not just be supported *from* space, but will also operate *in* and *through* space. This new space environment will present new challenges as doctrine and operational concepts change to take advantage of leaps in technology. Air and space superiority, an Air Force core competency assures us freedom of action while preventing adversaries from interfering with our operations. Global Engagement states that "with Air and Space Superiority, the Joint Force can dominate enemy operations in all dimensions - land, sea, air, and space." The AF, through its long-range planning process is moving to transition from an air and space force to a space and air force. AMC is currently drafting an implementation plan to integrate space operations into the command.

Organizational change must take place to enable an RMA. Today United States Transportation Command (USTRANSCOM) serves as the sole manager of the Defense Transportation System (DTS) for air, land, and sea transportation in both peacetime and war. With USTRANSCOM's Component Commands of Air Mobility Command (AMC), the Military Traffic Management Command (MTMC), and the Military Sealift Command (MSC), they can provide "one stop shopping" for all DTS customers. With streamlined tasking and execution authority, a seamless transportation system can be achieved while maintaining optimum utilization of scarce resources.

RMA will bring with it new and profound capabilities only dreamed of in the late twentieth century. Future force structure must be ready to take full advantage of the advanced systems technology offers. The AF is embarking on an ambitious program known as Global Air Traffic Management (GATM) to upgrade the avionics of its air mobility fleet for future worldwide air traffic management. This system will marry the concepts of precision navigation and global data transfer to decrease air traffic separation on critical air routes. GATM upgrades will allow air mobility aircraft worldwide air route access, avoiding delays and uneconomical routing that would result in less than optimum cargo loading and increased fuel usage. Without these upgrades, the effectiveness of the air mobility fleet could be reduced to adversely effect the closure of forces by as much as 25 percent. Advances in cargo tracking technology will increase the ITV of mission-essential cargo being shipped to combat zones. Real-time tracking and diverting of critical cargo will soon be possible. Equipment modernization emphasizes the need for rapid deployment worldwide. Future equipment supporting GRL force modules will be easily palletized, interoperable and capable of being quickly set up in austere environments not previously planned for.

AMC, in concert with Air Force Material Command, has developed a plan aimed at meeting the continuing need to improve mobility mission effectiveness within the RMA. Current initiatives under study include, Real Time Information in the Cockpit (RTIC), a conduit between aircraft systems and off-board information sources to improve aircrew situational awareness; Flight Management System (FMS), a system that reduces flight crew workload in the areas of flight planning, navigation, performance management, guidance and flight progress monitoring; Defensive Systems (DS), to provide adequate ability to detect, avoid or defeat existing and projected threat systems; and Night Vision Devices (NVD), a system designed to increase aircrew efficiency during night and low-light operations. The development of these programs will lead AMC to improved capabilities and readiness in the future.

AIR MOBILITY'S ROLE IN 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 Theater Wars (MTW). 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 U.S. or multinational presence. Air mobility delivers the bulk of the initial time-critical forces, supplies, and is the cornerstone for America's security strategy in the foreseeable future. Air mobility is an integral part of power projection, force sustainment, and operations other than war. Figure 1-2 illustrates air mobility's seven mission categories it performs for America.

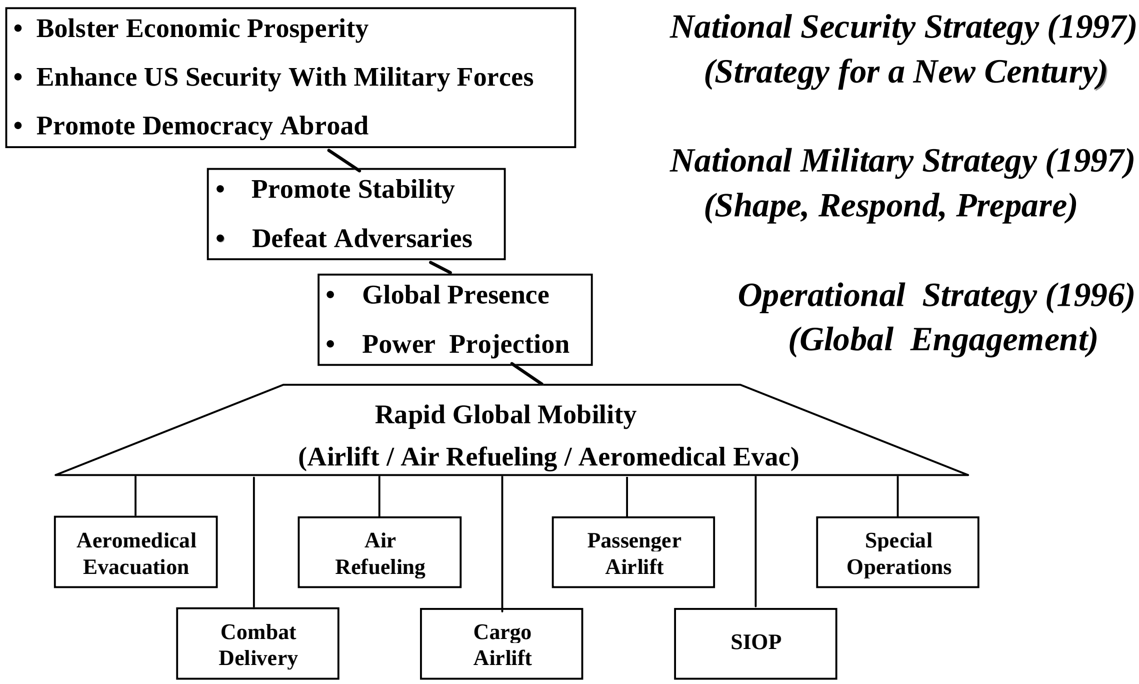

Figure 1-2. AMC's Mission Categories

<u>National Security Strategy</u>

The President's *National Security Strategy for a New Century* stresses the importance of America's role as a world leader. It centers around three core objectives of enhancing our security with military forces that are ready to fight and win, bolstering America's economic prosperity, and promoting democracy abroad. To enhance our security we must maintain superior forces. Our military forces require the ability to respond to challenges short of war, and, in concert with regional friends and allies, to win two overlapping Major Theater Wars. From this Executive guidance, the Chairman of the Joint Chiefs of Staff develops the National Military Strategy.

<u>National Military Strategy</u>

The National Military Strategy provides strategic direction to the Armed Forces. It derives overall security policy guidance from the *National Security Strategy for a New Century* and the 1997 QDR to develop national military objectives, the strategy to accomplish those objectives, and the military capabilities required to execute the strategy.

Essential to our strategy is the ability of U.S. forces to respond to the full spectrum of crises with overwhelming force capable of devastating enemy forces. The ability to rapidly project combat power at will anywhere in the world with robust strategic airlift is critical to maintaining strategic agility. Rapid power projection complements our overseas presence by acting as a deterrent to potential adversaries. This deployment capability is the foundation needed to deter or defeat large-scale, cross border aggression in two distant theaters in overlapping time frames.

Joint Operations

Modern warfare requires that U.S. forces fight as a Joint Team. Each service brings uniquely trained and ready forces to support the combatant commander's operations. Success in joint and combined operations requires bringing to bear, at the right times and places, the complementary capabilities of each of the Services.

> *"The nature of modern warfare demands that we fight as a joint team. This was important yesterday, it is essential today, and it will be even more imperative tomorrow."*
>
> **General John M. Shalikashvili**
> **Chairman of the Joint Chiefs of Staff**

The imperative of fighting as a Joint Team will continue in the future. Joint Vision 2010 attests to a "conceptual template for how we will channel the vitality of our people and leverage technological opportunities to achieve new levels of effectiveness in joint warfighting." It looks at the quality of our force, advanced technology trends and how those technology advances will effect our armed forces. It develops new operational concepts of Dominant Maneuver, Precision Engagement, Focused Logistics, and Full-Dimensional Protection, which used in concert, will achieve Decisive Operations. The concept of Dominant Maneuver will "allow us to apply decisive force to attack enemy centers of gravity at all levels of war and compels an adversary to either react from a position of disadvantage or quit." The Joint Staff's "Concept for Future Joint Operations" further expands on Dominant Maneuver. It states it will "allow deployable, agile, and versatile forces trained for combat to prepare quickly for non-combat missions and apply their inherent overwhelming capabilities to the full range of military operations." This concept will depend on air and space power at all levels of engagement.

Global Engagement

With Joint Vision 2010's concepts as a foundation, the Air Force published *Global Engagement: A Vision for the 21st Century Air Force* to "chart a path into the next century as an Air Force team within a Joint Team." In doing so, six core competencies were developed: Air and Space Superiority, Global Attack, Rapid Global Mobility, Precision Engagement, Information Superiority, and Agile Combat Support. *Global Engagement* states, "Rapid Global Mobility provides the nation its global reach and underpins its role as a global power. The ability to move rapidly to any spot on the globe ensures that tomorrow, just as today, the nation can respond quickly and decisively to unexpected challenges to its interests." The threats of tomorrow are increasingly unpredictable and will require immediate response to any location on the planet. With the decreased number of forward deployed troops, the future Joint Team's most reliable combat multiplier will be reliable rapid deployment. Airlift and air refueling are the key players to enable combat effectiveness worldwide as well as providing delivery of humanitarian relief.

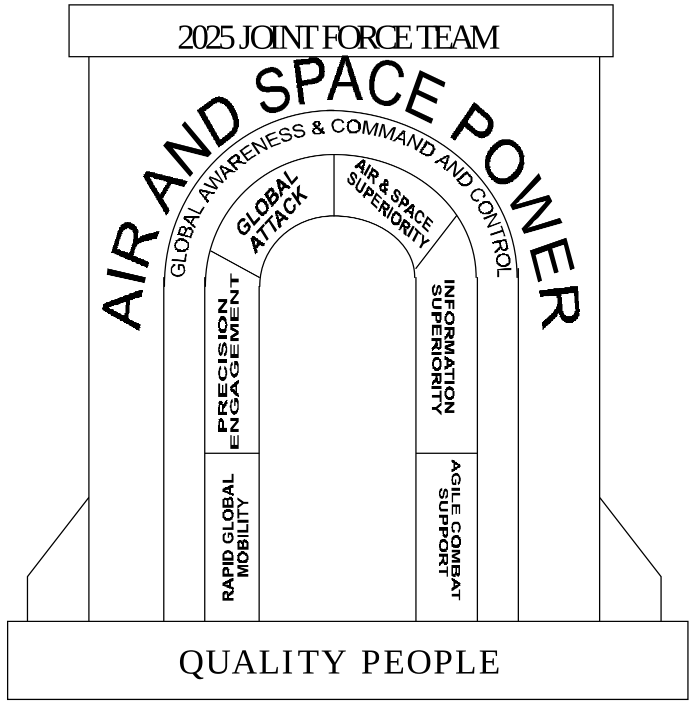

Figure 1-3. Air Force Core Competencies

AMC MISSION CATEGORIES

Utilizing the Strategies-to-Task framework, AMC can take a systematic approach to determining what mission categories it must perform to support our national goals and objectives. Strategies-to-Task presents a hierarchical method for linking national goals and interests such as those presented in the National Security Strategy and National Military Strategy to operational activities. The national military objectives outlined in the National Military Strategy describe how the military will be applied to attain national security objectives. AMC refines the Strategy-to-Task framework by identifying those mission categories that it can uniquely provide by virtue of its personnel, training and equipment. As the lead command for air mobility in the USAF, AMC coordinates with the other mobility air forces to provide the leadership in air mobility force capability and modernization. AMC provides seven mission categories and twelve fundamental core support processes to the nation. The seven mission categories include: aeromedical evacuation, combat delivery, air refueling, cargo airlift, passenger airlift, special operations support, and Single Integrated Operational Plan (SIOP) support. Core support processes, essential for all mission categories to succeed, are command & control, logistics, base operating support, intelligence, information operations, cargo & passenger handling, operations support, medical, training, the en route system, and command, control, communications & intelligence systems. AMC is effectively accomplishing its mission categories, providing the nation with Rapid Global Mobility today, while preparing for tomorrow's Rapid Global Mobility needs.

Aeromedical Evacuation (AE)

AE is the rapid worldwide transportation of ill or injured personnel under medical supervision to appropriate medical care. The AE system provides control of the 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 crew members 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.

Combat Delivery

Combat Delivery is the insertion or recovery of personnel, equipment, and supplies by means of airdrop or airland delivery in direct support of combat operations. Airdrop is accomplished by high-altitude low-opening (HALO) and high-altitude high-opening (HAHO) parachuting, low-velocity personnel parachuting, high-velocity container delivery system (CDS) parachuting, and heavy equipment parachuting. Airland delivery is landing on improved or austere airfields and can include forced-entry options and combat resupply of engaged troops. Many of the Army forced-entry concepts rely heavily on AMC's combat delivery capability.

Strategic Brigade Airdrop is a specialized form of combat delivery that includes airdrop and airland insertion of a brigade-size compliment of equipment and combat personnel over great distances. This capability supports the JCS requirement for an immediate response to deploy en-mass airborne forces to combat zones throughout the world. Strategic Brigade Airdrop utilizes the concept of air direct delivery. Joint Pub 4-01.1 defines air direct delivery as "The strategic air movement of cargo or personnel from an airlift point of embarkation to a point as close as practicable to the user's specified final destination, thereby minimizing transshipment requirements." It allows the insertion of combat forces directly into battle or provides immediate resupply in areas where forcible entry is required. Direct delivery is the preferred method of delivery for forward operating forces in need of quick supply and for combat forces seeking the element of surprise and/or superior maneuver.

Air Refueling

AMC's tanker force allows for rapid deployment of fighters, bombers, transports, 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.

Combat air forces rely heavily on air refueling during deployment, employment, and redeployment operations. Air refueling is a force enabler, 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 emission controlled (EMCON) or NBC environment. It is the 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. United States Special Operations Command (USSOCOM) requires that aircrews be special operations air refueling qualified, able to work within a nonstandard command and control (C2) network, use special operations forces peculiar mission planning systems, operate under emission control (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 Operational 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 the SIOP with air refueling for bomber force execution, employment, and subsequent bomber survival, recovery, and reconstitution. SIOP-committed tankers also refuel United States Strategic Command (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 utilizing minimum interval takeoff (MITO) procedures. 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 national command authorities (NCA). AMC is tasked to support the special operations mission in the Defense Planning Guidance. 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 command assigned 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 airlift and air refueling 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. As the C-141 currently fulfilling this requirement is retired, additional C-17 aircraft procurement will be required to fulfill this mission.

CORE SUPPORT PROCESSES

Core Support Processes, as depicted in Figure 1-4, are those activities which endure, cut across every mission category, and are essential for air mobility operations. They require talented and dedicated professionals at all levels of the command.

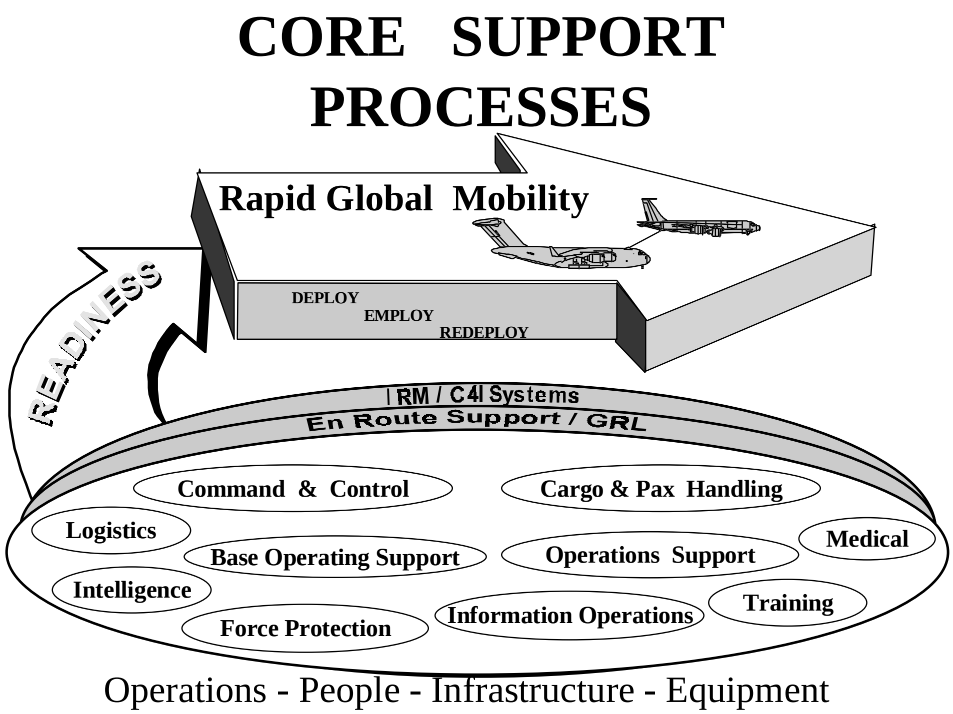

Figure 1-4. Core Support Processes

Information Resources Management (IRM) and Command, Control, Communications, Computer & Intelligence (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. Today's systems provide the information required by C2, logistics, transportation, intelligence, aeromedical evacuation, and all other mission categories vital to AMC’s success. Tomorrow's systems will do all this and more--cheaper, faster, smarter, and better.

Information Operations (IO)

IO 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 AF 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 IO actions. OCI and DCI will employ the following IO 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 IO operational concepts are meant to safeguard our C4I capabilities while degrading, destroying, or corrupting the enemy’s capabilities. 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 IO is primarily defensive but will include an offensive capability.

Command and 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 ports 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.

Force Protection

Force Protection includes security forces providing safe and secure operating locations for AMC personnel and resources and the Air Force Office of Special Investigations (AFOSI) performing criminal investigative services.

Security forces responsibilities fall into four major areas:

- Weapon Systems Security
- Air Base Defense
- Contingency Support
- Law Enforcement

To protect weapon systems and airfields, security forces 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 forces to more accurately assess potential threats to mobility operations and employ effective defenses against them. As part of GRL, security forces maintain rapidly deployable force modules to protect contingency operations at onload, en route, tanker task force, and austere locations. Law enforcement at AMC bases continue to ensure the safety of people and resources while maintaining law and order.

AFOSI identifies, investigates, and neutralizes 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, AFOSI support is crucial. To ensure optimum threat assessment capability, it is essential for AFOSI advisors to arrive with the initial deployment of AMC personnel.

Operations Support

Operations support encompasses activities that directly impact air mobility operational missions: Airfield Operations, Weather, Life Support, Operations Resource Management, Inspections, and Safety.

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 U.S. 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

Operations Resource Management is responsible for tracking the continuation and additional training of aircrew members for air mobility. 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

The Inspector General (IG) continually assesses AMC mission capability and readiness. 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 (EPA) compliance. System safety engineering plays a key role as well in the development of weapon systems and procedures.

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. In analyzing the challenges the Air Force Medical Service faces in executing its mission, the Air Force Surgeon General has developed four interlocking strategic initiatives (reenginering medical readiness, deploying TRICARE, building healthy communities, and rightsizing). These initiatives represent how the Air Force will structure and manage its healthcare system into the twenty-first century. AMC/SG's support of these initiatives is detailed in their Mission Support Plan and this document.

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 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 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 Air Mobility 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, Contracting, Comptroller, Chaplain, Judge Advocate, Services, Public Affairs, and Personnel.

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 air mobility. 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 Transportation Working Capital Fund (TWCF); 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 AF 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 AF 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.

FUTURE FORCE

> Objective 1c1
> *Foster innovative new mobility concepts and aggressively promote and exploit new technological opportunities.*
> XPX, Continuous

Planning for future force structure is a highly demanding process. The probability of unanticipated threats and multiple, simultaneous crisis adds a new dimension to the decision process. Tomorrow's challenges will likely come from a wide range of potential adversaries possessing advanced and sophisticated technologies. The AF Long Range Plan lists the following characteristics required of future U.S. forces.

- Respond effectively to the *full spectrum of contingencies*. . .multiple contingencies arising simultaneously, domestic needs, humanitarian, insurgency/terrorist, regional conflicts, and global competition.

- Possess a *broad base of capabilities*. . .multiple options for NCA, various means for joint operational commanders to achieve objectives and balanced range of responses.

- Counter the *full range of adversaries*. . . nation states, non-state actors, rogue states, ethnic/religious extremists, natural disasters, etc.

- Cope effectively with *asymmetric strategies* and unconventional situations. . .high tech adversaries, information operations, conflict with transnational non-state actors with different "rules," and NBC.

- Provide means for *rapid response*. . .no warning flash points, periods of short tension, observed build-up, recurring challenges or simultaneous contingencies.

- Enhance *lean, expeditionary-like qualities* of forces and support. . .reduced sustainability and resource implications, and agile/flexible application in periods of uncertainty.

- *Emphasize extended reach*. . .responsive within U.S., on U.S. borders, throughout the world, and space.

- Function in *sustained operations*. . .from immediate containment, to long-term commitment, to intermittent requirements, etc.

- Anticipate early use of *chemical weapons (CW)/biological weapons (BW) and use of nuclear weapons (NW)* . . .the calculus of the risk of surprise, unconventional objectives, specialization of delivery means, and diffusion of adversaries throughout the world.

- Apply to use in *U.S. theater*. . .domestic turmoil, natural disaster relief, border control, critical infrastructure protection, etc.

- Maintain *high technology* edge. . .innovative adaptation of science and research breakthroughs.

- Operate in *joint/coalition/multi-national* arrangements. . .varying levels of sophistication, in and out of U.S. homeland, with other government and non-governmental agencies.

- Operate in *non-traditional mediums*. . .urban, space, and information realm.

- Create *hedges* against future uncertainty. . .maintain options as long as possible, preemptive arms strategies, and warning about miniaturization of commercial technology.

- Operate in concert with *other elements of national security*. . .military means of diplomacy and engagement which enable influence, deterrence, and coercion.

- Incorporate *commercial capabilities*/know-how. . .keeps pace with, and incorporates change.

- Account for domestic concerns relating to *casualty avoidance.*

AMC is prepared to move forward on tomorrow's missions. Today's mission areas will evolve to include increased space operations and generic mission aircraft. AMC is ready to take advantage of technical opportunities and innovative "out of the box" thinking to achieve tomorrow's vision. Samples are listed below.

Airdrop in the future will aid war planners to work around the depleted en route infrastructure so critical to today's operations. Through the use of GPS electronics and stearable parachutes, air mobility crews will be able to deliver cargo from above 20,000 feet to hit their target within 10 meters.

Advances in the area of optoelectronics, the use of light instead of electricity, will reduce signal and image processors by as much as 1,000 times. This will allow processing functions currently performed on large aircraft to be miniaturized for processing on unmanned aerial vehicles (UAV). AMC aircraft could be used as launch platforms for UAVs as a means to extend their range, loiter time, and electronic combat capability.

Research in Human Sensory Feedback (HSF) could lead to telerobotic systems that are capable of reliable handling of cargo for AMC operations. This technology could lead to a kind of "exoskeletal material handling equipment (MHE)" possessing greater handling capabilities, simplicity of operation than current generation MHE, and allowing for operations in contaminated environments. An additional benefit over current systems is ease of deployability, allowing mobility aircraft to carry its own MHE and freeing AMC support missions to carry essential cargo.

Research into blended-wing-body (BWB) design configuration is being undertaken by a combined industry, university, and National Aeronautics and Space Administration (NASA) research team. The design combines a rigid, wide airfoil-shaped fuselage with high-aspect-ratio wings. Engines would be buried into the airfoil with a common integrated nacelle. Capabilities of such an aircraft would include a design payload of 500 tons, a range of 7000 nautical miles, and a cruise Mach of 0.85. This very large subsonic transport plane design holds great promise as a possible AMC airlifter of the future. The same airframe, due to its inherent low observable characteristics, could be used to air refuel the next generation of low observable force application aircraft. This would provide truly stealthy combat operations worldwide, holding at risk any adversaries "centers of gravity" at our choosing.

Future air mobility could utilize a common airframe with detachable cargo modules. These modules could be configured to support cargo delivery, air refueling, medical evacuation, or personnel delivery. Modules could also be designed for specific ground use such as fuel facilities, hospitals, water supplies, aircrew support, or chemical protection. Other potential future designs include combining traditional aircraft capability with airship lifting characteristics might enable an aircraft to transport 1.0 million pounds at speeds of 150-200 knots. Such a vehicle could augment current sea lift capability transporting cargo up to 12,000 miles, and delivering Army brigades directly to forward operating airfields.

The airlifter of the mid twenty-first century will likely take the form of a generic military space plane. Such a vehicle will need to operate from our existing infrastructure, possess global range, be capable of performing a wide variety of missions, be reliable and economical, and be able to operate in a wide range of environments. It will possess the capability of operating through and in space to support our increased space-based assets. The Mission Need Statement for such a space plane is being drafted today as planners begin to recognize the importance and potential of operating in space. AMC remains flexible as the logical choice to operate such a space plane.

While these future opportunities in improving air mobility may be within our grasp, understanding the current demands on air mobility and our current operations is integral in modernization planning efforts. Understanding the "who" and "what" of air mobility will provide the foundation for future planning efforts. The next chapter, "Operations," provides such a foundation.

Section Two
OPERATIONS

"A Defense Transportation System that is fully integrated, efficient, effective and customer-focused."

USTRANSCOM Strategic Guidance FY1998-FY2017

INTRODUCTION

RAPID GLOBAL MOBILITY: A CORE COMPETENCY

As stated in "Global Engagement: A Vision for the 21st Century Air Force," the Air Force (AF) core competency of 'rapid global mobility provides the nation its global reach and underpins its role as a global power.' The changing face of world politics brings with it major changes for the US military. Forward-based forces are drawing down, while the need to respond immediately and decisively to world events continues to rise. Future joint force commanders will increasingly rely on airlift and air refueling to provide that response anywhere it is needed. The ability to deploy rapidly anywhere in the world will remain our most reliable combat force multiplier and enabler. All facets of rapid global mobility will continue to be improved. We will continue to increase the speed with which we move forces, and hone our capability to move and sustain the tailored forces that will become an important national power projection asset in the next century.

Air Mobility Command (AMC) operates throughout the world to provide the nation the global reach necessary to execute national policy. In recent years, AMC airlifters and tankers have been called upon to perform their combat mission to project power and display national resolve. In Operation SOUTHERN WATCH, airlift and air refueling continue helping impose a no-fly zone over southern Iraq. Operation NORTHERN WATCH, formerly called PROVIDE COMFORT, furnishes relief to Kurds living in northern Iraq and enforces the no-fly zone the United Nations has prescribed there.

Recent operations that show the scope of AMC's rapid global reach mission include:

- PROVIDE COMFORT/NORTHERN WATCH Relief to Kurds and imposition of no-fly zone in northern Iraq
- SOUTHERN WATCH Imposition of no-fly zone in southern Iraq
- ABLE SENTRY Peacekeeping operation in Macedonia
- SAFE BORDER Peacekeeping operation following a border dispute between Ecuador and Peru
- JOINT ENDEAVOR/JOINT GUARD Implementation of the Dayton Peace Accords in Bosnia
- LASER STRIKE Drug interdiction in Latin America
- ASSURED RESPONSE Noncombatant evacuation from Liberia

- KHOBAR TOWERS BOMBING RESPONSE   Airlift of medical teams and bomb investigators and evacuation of wounded service members and military dependents following the terrorist attack on military quarters in Dhahran, Saudi Arabia
- DESERT FOCUS   Relocation of American forces in Saudi Arabia and neighboring states after the terrorist bombing of Khobar Towers
- DESERT STRIKE   Air strike on Iraq after Iraqi troop movements violated United Nations resolutions
- PACIFIC HAVEN   Support of Kurdish refugees on Guam
- MARATHON   Support of Chinese migrants on Wake Island awaiting repatriation
- GUARDIAN ASSISTANCE   Deployment to assist Hutu refugees in Zaire
- GUARDIAN RETRIEVAL   Deployment for a noncombatant evacuation of foreign nationals in Zaire
- GRAND FORKS FLOOD RELIEF   Support of Federal Emergency Management Agency following flooding by the Red River of the North

While AMC performs real world operations daily, its members continually fly training missions to prepare for both conventional warfare and execution of the Single Integrated Operational Plan (SIOP). During 1996 and 1997, the command participated in more than 225 JCS exercises as well as exercises with former Warsaw Pact nations. For example, during the spring of 1996, in the largest single airdrop since World War II, 38 C-141s airdropped paratroopers and heavy cargo as part of BIG DROP III, the airborne assault portion of the U.S. Atlantic Command's Combined Joint Task Force Exercise 96 (CJTFEX 96).

OPERATIONS-RELATED GOALS AND OBJECTIVES

1a Provide rapid, seamless air mobility.

1a1 Integrate information operations into all aspects of command operations ....DOK, FY05, pg 2-17

1b Improve air mobility customer satisfaction.

1b3 Establish a customer/financially focused metrics system...................DOV, FY01, pg 2-36

1c Maximize the future potential of air mobility for America.

1c2 Develop and codify air mobility doctrine................................ XPD, Continuous, pg 2-10

1c3 Maximize successful mission performance in degraded operating environments ....DOK, FY06, pg 2-34

2a Capitalize on technology.

2a2 Reduce the air mobility footprint necessary for deployed operations ....DOO, FY03, pg 2-16

Special Emphasis Items (SEI)

SEI Integrate the Theater Aeromedical Evacuation System (TAES) and the Strategic Aeromedical Evacuation System (SAES) concepts of operations (CONOPS) under one Global AES CONOPS.............. SGX, FY98, pg 2-21

AMC'S GLOBAL OPERATIONS

As we have seen since the end of the Cold War, we can expect our mobility forces to be on call and in use every day . . . as far into the future as we can imagine.
General Ronald R. Fogleman

Throughout the Cold War, an era of bi-polar world relations, our National Security Strategy (NSS) was focused on a monolithic threat: the power of the Soviet Bloc. Our national policy stressed economic competition, nuclear deterrence, and preventing the spread of Soviet influence in Third World nations. With the risk of nuclear war always at hand, implementation of this policy required a graduated response, exhausting all non-military, non-lethal, instruments of national power prior to engaging in actual combat. During this period, air mobility was the preferred *military* instrument of national power to conduct a graduated non-lethal response. Examples are delivering humanitarian assistance to victims of natural or man-made disasters, evacuating civilian non-combatants from an impending war zone, and delivering military arms and equipment to an allied or friendly nation involved in regional conflicts. Delivery of critical war material to Israel during the Yom Kippur War in 1973 bolstered relations with allies and non-aligned nations alike by demonstrating U.S. resolve to support aligned countries.

Should the non-military instruments of national power have failed, rapid global mobility also stood as the backbone of our nation's lethal response. Our response to regional hot spots was predicated on the rapid global mobility of U.S. peace-keeping troops and air forces before the conflict became unmanageable. When the U.S. committed to armed intervention, global air mobility was responsible for supplying the initial response forces and mission-critical sustainment. And lastly, should deterrence fail, our nuclear bombers were dependent on air refueling forces to give them the range to reach their targets and return for second strike reconstitution.

During the Cold War, our political and military leaders were able to successfully neutralize the Soviet threat through a strategy of Containment, which had *forward defense* as one of its most critical components. This strategy depended on stationing large numbers of military forces overseas ready to deter the actions of aggressors by engaging and repelling their forces if necessary in the event of war. With the end of the Cold War came a new strategy of *forward presence*. Because large numbers of combat forces would now have to be rapidly deployed to meet potential threats, air mobility increased in importance. The new world reality has become increasingly chaotic as regional, national, and ethnic crises have increased in number and intensity. Today, open conflict often can only be avoided by the rapid deployment of a combat force capable of deterring aggression and maintaining an amenable peace. Implementing the National Military Strategy requires capabilities in rapid global mobility only the United States Air Force (USAF) can provide.

The capability air mobility provides our nation is critical to conducting operations overseas as the overseas force structure is reduced. By delivering U.S. forces and equipment in the face of natural disaster, to relieve human suffering, or preserve the peace, the USAF is the central element in our nation's ability to respond to any type of crisis rapidly. During DESERT SHIELD, air mobility forces conducted the largest concentrated movement of cargo and passengers in history. Air mobility enabled rapidly deployed combat forces to stand as a barrier to Iraqi forces, denying them an unimpeded path to the oil fields of Saudi Arabia and reassuring the Gulf Cooperation Council nations of our resolve. Later, the increased build-up of forces in the theater made possible by air mobility led to the total success of DESERT STORM. In this case, air mobility was an instrument of national power providing the NCA the ability to project power into the region and conduct operations to the degree and scope necessary to support national objectives.

Global mobility is achieved through the optimized use of ***military airlift and air refueling forces***, and is supplemented by the Civil Reserve Air Fleet (CRAF) during major operations. Chiefly, the essence of global mobility is quickly moving large quantities of personnel, equipment, combat forces, and supplies from the CONUS to theater, between theaters, and from ports of embarkation in the theater to a point as close as practicable to the final destination. Any movement is exercised as a single seamless process, providing a commander visibility over air mobility operations and customers a “single face” for their air mobility requirements. Subdividing the process into individual “links” subobtimizes the use of air mobility assets and reduces the effectiveness of the global air mobility system. Some cargo and troops will be delivered using direct delivery, which eliminates an intermediate transshipment point in the theater. This concept of operations is not limited to the support of combat operations or major contingencies; it is also applicable across the full spectrum of Smaller-Scale Contingencies (SSC).

Joined with airlift, the capability provided by in-flight refueling makes rapid global mobility a reality for all Services, and constitutes a major element of today’s power projection strategy. In 1986, Operation ELDORADO CANYON, the U.S. raid on Libya, was made possible by aerial refueling support to attacking forces. Tankers were critical to achieving mission objectives, in spite of airspace and political restrictions. Five years later, B-52s operating out of the CONUS demonstrated the global strategic reaction capability afforded by air refueling. Flying halfway around the world, B-52s launched cruise missiles against Iraqi air defense sites in the opening minutes of DESERT STORM. Tankers allowed them to conduct a “theater” mission directly from their home location at Barksdale AFB LA.

Likewise, rapid global mobility enables our *Global Presence* strategy. In 1994, tanker air bridges proved critical to delivering humanitarian relief supplies to Rwandan refugees during SUPPORT HOPE. Many water supplies in-country had become contaminated due to disease, leaving refugees without potable water. A C-5 transported a deployable water purification system to Goma in 22 hours--a 10,000-mile mission made possible by three aerial refuelings.

In 1995, air mobility forces operated into all but seven of the world’s nations. Aerial refueling can significantly enhance the range, endurance, and payload of most air assets--regardless of Service or nationality--and thereby expand the range of options available to commanders when conducting operations supporting theater or national objectives.

Aerial refueling forces can support intertheater or intratheater operations. Intertheater aerial refueling supports the long-range movement of airlift, combat, and combat support air forces. Typically, this movement will be between the CONUS and a theater, or between theaters. This flexible “air bridge” concept is extremely efficient in enhancing our nation’s force projection capability. The air bridge functions as a “force multiplier” by accelerating the deployment cycle and reducing dependency on forward staging bases and host nation support. During Operation RESTORE HOPE, tanker task forces (TTFs) at intermediate locations in the Atlantic and Europe allowed C-5s, C-141s, and KC-10s to fly non-stop to aerial ports within the AOR by refueling these assets on tracks over the Atlantic Ocean. TTFs can also support fighter deployments, intercontinental bomber operations, or training and exercise requirements. In 1995, TTFs allowed the U.S. to deploy F-117s, F-111s, F-16s, F-15s, F-4s, U-2s, RC-135s, OA-10s, E-3s, and EC-130s to the Middle East in response to Iraqi force posturing during VIGILANT WARRIOR. When Iraqi troop movements threatened a second invasion of Kuwait, this immediate U.S. response, facilitated by robust and flexible intertheater aerial refueling, helped prevent a second major conflict in the area.

Intratheater aerial refueling acts a “force enhancer” by extending the range, payload, and loiter time of combat and combat support forces. The increased range afforded by air refueling allows fighters and bombers to attack strategic and tactical targets well within the interior of the enemy’s defenses. The almost limitless range afforded by air refueling contributes to the principle of surprise by greatly increasing the complexity of enemy defense requirements.

The increased range afforded by tankers implements the principle of security by solving complex basing issues that would otherwise leave air assets vulnerable to enemy ground attack. With air refueling, combat aircraft can be based well outside the threat rings of theater missiles and enemy aircraft, while still possessing the capability of striking all targets in the AOR. Host nation support capabilities can also impact aircraft basing. There may not be adequate runways close enough to the area of operations to allow combat operations without air refueling. Political constraints can also preclude adequate aircraft basing. In DESERT STORM, B-52 strikes against Iraq were launched from Diego Garcia and the CONUS with multiple pre- and post-strike air refuelings.

Theater-assigned tankers will often be required to provide air refueling support to intertheater airlift aircraft operating on the air bridge. Aircraft maximum on the ground (MOG) constraints at theater airfields can prevent refueling of airlift aircraft without an adverse impact on the deployment/sustainment flow. To preclude this, theater-assigned tankers will refuel airlift assets immediately after takeoff to allow them to reach staging bases outside the AOR.

For most aircraft, maximum takeoff gross weight presents a tradeoff between payload and fuel (which in turn translates into range and/or loiter time). With air refueling, combat and combat support aircraft can take off with maximum payload and refuel in the air to achieve maximum range and loiter time. This ability gives the commander greater options in force packaging. Without air refueling, the size of strike packages will be limited by the time it takes to get the aircraft airborne and formed up, which translates into fuel expended. Payload can be traded for fuel, but that reduces the package’s overall effectiveness. With air refueling, aircraft can take off with a maximum payload, refuel for almost unlimited loiter time, and then form a strike package that provides sufficient mass and economy of force for mission requirements. This principle was dramatically demonstrated during both ELDORADO CANYON and by the massive, near-simultaneous naval airstrikes of DESERT STORM. By refueling aircraft in strike packages, tankers enabled them to concentrate maximum fire power against enemy targets. This eliminated the need for additional follow-on sorties and increased the rate at which the enemy lost key capabilities and forces.

The increased range, payload, and loiter time afforded by air refueling also supports the principles of economy of force and maneuver by providing the commander maximum flexibility in the assignment and reassignment of airborne assets. Increased loiter time is especially important for combat support assets like the Airborne Warning and Control System (AWACS), joint surveillance, target attack radar system (JSTAR), RC-135, and EC-130 airborne battlefield command and control center (ABCCC) and Compass Call aircraft. These are limited assets with long regeneration times. Extending the loiter time of these assets will reduce the number of missions that must be generated, and ultimately reduce the number of aircraft, by type, required in the AOR. Air refueling also allows the commander to assign, or reassign, airborne aircraft to higher-priority targets as intelligence is updated. During the Vietnam War, where the concept of tankers supporting daily air combat operations was developed, ordnance was frequently wasted on targets that had already been destroyed because of the inability to obtain and transmit reliable bomb damage assessment information. At other times, munitions were dumped into the South China Sea because the bomber, for whatever reason, was unable to reach the assigned target. With air refueling, commanders have the time to divert or reassign airborne assets as the battle progresses, intelligence is received, or as weather changes.

The USAF contains the largest and most experienced air refueling force in the world. With both boom and probe-and-drogue capability, USAF tankers can refuel all fixed- and rotary-wing aircraft which are capable of aerial refueling. This ability allows USAF tankers to robust support to all joint and combined air campaigns. This capability, however, requires that USAF tanker crews be trained in the procedures of other countries and Services, and that these procedures be practiced in joint and multi-national exercises.

The other component of air mobility is airlift. It is the ability to rapidly transport by aircraft personnel, equipment, combat forces, and supplies anywhere on the globe and constitutes an essential instrument of policy and a warfighting tool. Airlift offers its customers a degree of speed, range, and flexibility not available with any other mode of transportation. The demands placed on the nation’s airlift forces are unpredictable, numerous, and worldwide. During Operation DESERT STORM, airlift responded to the Iraqi SCUD threat to Israel by transporting Patriot Missile batteries to Tel Aviv in a matter of hours. This rapid response defused the tense political situation and helped preserve the fragile alliance. During JOINT ENDEAVOR, the region’s rail and ground transportation system could not deliver the Army’s bridging equipment in a timely manner to the flooded Savba River. Airlift demonstrated its flexibility when C-17s were diverted from other operational missions to transport bridge sections from the main operating base at Rhein Main to the austere environment of Tazar, Hungary. Airlift’s demonstrated versatility and responsiveness, in these and countless other recent operations, have made this finite and vital national resource a war-winning asset.

Airlift forces conduct both intertheater and intratheater common-user operations. The distinction between intratheater and intertheater airlift is, to a large degree, artificial, and has little to do with the capability of the aircraft employed or differing requirement for command and control (C^2) or aerial ports. Basic C^2 and aerial port requirements are common to the intertheater and theater airlift mission. Efficient, responsive airlift is a system characterized by a worldwide command and control network that ties together aircraft, aircrews, maintenance and supply organizations, and aerial port operations, to serve the airlift user. It provides both the unity of command and management vital to meeting varied competitive demands for a highly valued, scarce national asset.

Intertheater airlift missions move passengers and cargo between the CONUS and a theater or between theaters. From a position within the theater, these assets can (1) recycle for follow-on intertheater mission, or (2) augment the intratheater airlift system through the sortie augmentation system. When augmentation occurs, airlift aircraft, having flown an intertheater mission into the theater, fly one or more intratheater sorties before returning to intertheater operations. This augmenting capability would be in addition to those theater-assigned airlift assets already performing intratheater airlift missions.

As an example, during Operation JOINT ENDEAVOR, the primary offload location for inbound airlift missions was Rhein Main AB GE, which was the hub for intratheater airlift and a stage base. From that central location, C-5s, C-17s, and C-141s played a "swing" role: they either flew airlift missions back to their original CONUS onload location (Dover, McGuire, Charleston AFBs, respectively), or were tasked to fly intratheater shuttles to locations in Italy, Hungary, and states of the former Yugoslavia. Other intertheater missions flew directly from the CONUS to locations in Italy and Eastern Europe.

Intratheater airlift missions move passengers and cargo, but operations usually are conducted within or near a specific theater (as defined by the Unified Command Plan). These airlift missions provide a time-responsive airlift capability to a commander, which may be critically needed in fulfilling his operational objectives. During DESERT STORM, intratheater airlift missions surged to rapidly and inconspicuously redeploy 18th Airborne Corps to a position west of the Iraqi main defensive belt (the "Hail Mary" maneuver), just prior to the ground war. This provided the coalition an element of surprise when they engaged the enemy, and provided them an overwhelming numerical advantage on the flank of an unsuspecting and misaligned Iraqi force. Intratheater airlift missions provided the necessary surge capability, operational flexibility, and ability to complete a full transportation cycle (departure, delivery, return) quickly--all of which helped lead to the near-total destruction of the Iraqi ground forces.

While airland delivery is the preferred method of delivery from airlift aircraft, the airdrop of troops and equipment is a crucial capability that remains an integral part of joint warfighting doctrine. This method of combat employment and resupply of forces is used when the airland option is not available. Combat airdrop can be conducted during either intratheater or intertheater missions; however, it is a highly specialized mission requiring extensive crew training and preparation. An example of airdrop is the strategic brigade airdrop capability the AF provides for the Army. In this, the Air Force has worked with the Army to provide an immediate response capability to deploy airborne forces directly into combat anywhere in the world.

The backbone of global mobility is the en route system (ERS). Large-scale mobility operations require an integrated 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. It is the conduit for our nation's ability to rapidly project power anywhere in the world. While air bridge operations are used to project power initially, it cannot be sustained indefinitely. Protracted operations, such as DESERT SHIELD, are only possible with a robust and capable network of en route locations.

Rapid global mobility provides not only the USAF, but all of DoD and the nation its global reach and underpins our role as a global power. The ability to move rapidly to any spot on the globe ensures that tomorrow, just as today, the nation can respond quickly and decisively to unexpected challenges to its interests. The USAF provides our nation the ability to rapidly project forces anywhere in the world through the newly developed Air Expeditionary Force (AEF), a deployable force projection package that is heavily dependent on air mobility. This deployable package can be lethal or non-lethal in nature, thereby providing the NCA a full range of force options. Mobility forces can comprise a non-lethal AEF, providing essential airlift and aerial refueling expertise for missions conducted throughout the entire range of SSC. Consequently, regardless of the forces making up the AEF or their mission, air mobility forces will provide the essential capability to project U.S. influence anywhere in the world.

The ability of the United States to engage on a global basis, particularly in non-lethal situations such as disaster relief and humanitarian operations, is made possible by exercising air mobility as an instrument of national power. Events critical to our nation in the future will develop and evolve with increasing rapidity, and the transition from a state of tension to one of erupting conflict will occur concomitantly in an ever-decreasing time frame. For U.S. policy makers to possess a full range of potential responses, our nation must be able to project and establish a military presence quickly and effectively, under the most hostile and unfamiliar conditions. This requires an air mobility capability that maintains a high state of readiness and stands ever vigilant to provide a surge capability against all conventional and unconventional threats.

The threats may not develop in sequence but simultaneously. As a result, air mobility could be called upon to undertake several rapid movements in parallel. Air mobility provides the ability to rapidly "swing" or reposition forces anywhere in the world, so that our nation can respond decisively to any challenge to its national interest.

Lastly, in a multiple contingency environment, or any condition resulting in a high OPTEMPO, the ability to augment the current en route infrastructure and establish an en route presence at former bare base locations will be critical to meeting the air mobility support requirements of customers. This infrastructure must be able to handle a high volume of aircraft traffic under conditions stressing all airfield services.

Considering the future operating environment, air mobility is a valued asset in high demand, and will provide an increasingly essential capability for ensuring the United States maintains its global leadership role.

AIR MOBILITY DOCTRINE

> Objective 1c2
> *Develop and codify air mobility doctrine.*
> *XPD*, Continuous

As the United States transitions to a leaner, more CONUS-based force, it is becoming increasing more reliant on rapid global mobility to fulfill its worldwide mission. An important part of this transition is developing comprehensive air mobility doctrine that describes to our Service and unified command customers what capabilities air mobility can bring to the fight. The fundamental principles of air mobility operations must be available to everyone associated with, or requiring the support of, air mobility forces. There must be a homogenous, readily-available pool of doctrinal information which will provide the basis for seamless air mobility operations across the full spectrum of conflict from humanitarian assistance operations to global thermonuclear war. With this as a goal, AMC will review doctrinal documents currently under development for accuracy and thoroughness in describing air mobility operations,. Additionally, we will assess current publications to ensure they reflect up-to-date mobility tenets and principles, and we will propose the development of new doctrinal documents on air mobility, either through the Air Force Doctrine Center for AF Doctrine Documents or through USTRANSCOM for joint publications.

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 U.S. 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.

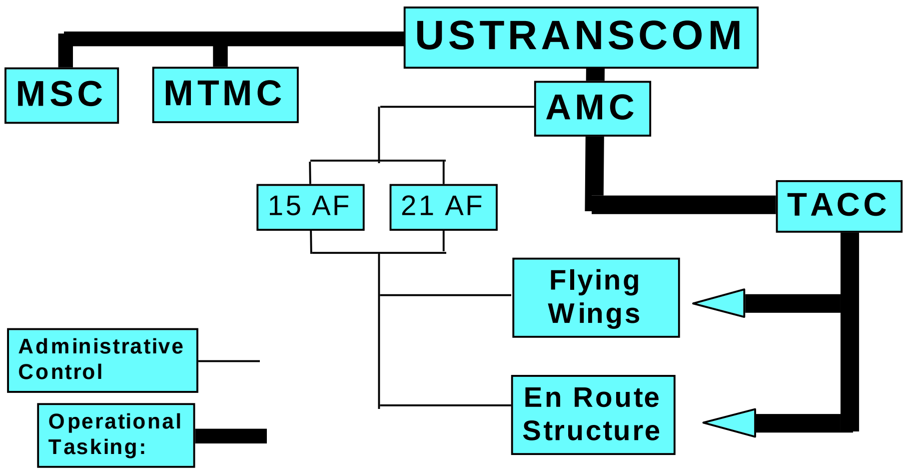

Figure 2-1. USTRANSCOM Structure

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).

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 600 professionals execute more than 1,000 air mobility missions in over 40 countries weekly. The TACC's efficiency depends on its major directorates:

Command and Control

Directs the execution of AMC's airlift and air refueling mission. Directs the C2 of AMC and AMC-gained forces when mobilized worldwide. Develops concepts and procedures and coordinates policies used to execute missions by AMC fixed and deployable C2 systems. Provides command diplomatic clearance and computerized flight planning program oversight and support. Ensures timely and accurate reporting of global tanker and airlift movement.

Mobility Management

Primary responsibility for tasking units to support strategic/theater airlift and tanker requirements. Coordinates with Air Force Reserve Command (AFRC) and ANG on their availability to support worldwide taskings. Manages the Joint Airborne/Air Transportability Training (JA/ATT) and Air Refueling Horse blanket processes.

Global Channel Operations

Directs responsive, agile, and effective scheduled passenger and cargo sustainment airlift and air terminal support to Global Engagement operations. Ensures effectiveness and efficiency for AMC and its customers by integrating regional CINC and Service channel route requirements, projected and actual cargo and passenger movement projections, and AMC organic and augmentation airlift fleet capabilities into a combined execution plan. Goal is to maximize On-Time mission reliability while minimizing cargo and passenger in transit time and maximizing payload performance against capacity. Ensures effective air mobility terminal performance through expert mission concept development and predeployment planning coupled with efficient force packaging and close execution oversight and support. Goal is to ensure supported force mission success through effective air transportation mission force employment.

Director of Operations

AMC's single point of contact for active mobility operations worldwide (a rated Colonel). Works daily with Unified, Specified, and Joint Commands to facilitate the timely, efficient, and effective use of AF Mobility assets in response to scheduled, contingency, national disasters, and short- notice requirements. Provides 24-hour supervision of TACC operations.

Weather

Manages operational weather support for AMC operations. Advises TACC decision makers of conditions that could impact AMC operations worldwide. Prepares and disseminates forecasts for all strategic-receiver refueling operations. Evaluates the adequacy of weather support at remote locations and develops support concepts for routine, SAAM, exercises, and contingency operations. Ensures that special mission forecasts, airborne requests, field unit assistance, and weather support to deployed forces are rapid and accurate.

Current Operations

Receives, analyzes, and identifies air refueling and special assignment airlift customer requirements. Plans, and monitors organic/commercial airlift and air refueling missions to meet the requirements for movement of passengers, cargo, support for National Command Authority (NCA)-directed classified programs, nuclear airlift, fighter and bomber deployment and employment air refuelings, aeromedical evacuation, and DV airlift. Provides technical expertise to NCA and Joint Staff for air refueling/airlift support of unified commands and DoD agencies. Acts as focal point for tanker/airlift special access required programs and airspace management.

Receives, analyzes, and identifies tanker and airlift customer requirements. Plans, schedules, and monitors organic and commercial airlift and tanker missions to meet the requirements for movement of passengers, cargo, aeromedical evacuees, support for NCA-directed classified programs, nuclear airlift, and air refueling requirements. Provides technical expertise to NCA and Joint Staff for air refueling/airlift support of unified/specified commands and DoD agencies. Acts as focal point for tanker/airlift special access required programs and airspace management.

Global Readiness

Single manager for integrating Global Reach--focuses airlift, air refueling, and mission support resources using Total Force concepts in response to directives and taskings from the NCA. Projects mobility forces to achieve national goals and objectives in support of CJCS directed operations for wartime, contingencies, exercises, and humanitarian efforts. AMC's sole source, tasking agency for theater augmentation and mission support assets.

Resources

Manages the center’s budget, manpower, facilities to include the Alternate TACC, and security programs. Provides an objective look at how command concepts, strategies, and relationships are developed, defined, integrated and brought to operational reality within the centers activities to lead implementation of new and existing mobility concepts.

Operations Management

Provides continuous operational and theoretical quality improvement support to TACC customers. Analyzes all aspects of TACC's mission planning, scheduling, training, and support functions required to direct worldwide airlift and air refueling. Responsible for administering the Crisis Support Staff (CSS) including maintenance of applicable CSS directives. TACC/CC's focal point when responding real-time to problems identified by users and aircrews throughout the AMC system. Generates reports for TACC from historical data base. Focal point for producing the TACC daily Operations Summary and Mobility SITREP. Responsible for developing and presenting operational and specialized briefings to support the mission of AMC and TACC. Provides briefings and tours in support of visiting dignitaries and civic groups.

C2 Operations Support Branch

Matrix organization within the TACC that manages its communications and computer systems and executes AMC’s deployable communication and combat camera support worldwide. Identifies, tracks, and resolves system deficiencies while managing system compliance by functional users. Develops Communications-Computer Systems and Combat Camera operations concepts and executes plans, during contingencies, crisis, and exercises. Manages frequency management, satellite communications, and other forms of comm-computer support. Sources and directs employment of comm-computer assets for AMC mission support and theater augmentation. As the primary AF Combat Camera execution agent, sources and directs combat camera assets for AMC, AF, and joint requirements. Oversees TACC comm-computer system modifications and identification of new requirements.

Logistics Readiness

Matrix organization within the TACC that manages AMC logistics support for all missions in peacetime and contingencies. Provides logistics command and control for operational missions. Directs 24-hour-a-day recovery support for Not Mission Capable AMC aircraft away from home station. Provides recovery service to other commands, as requested. Determines requirements and then directs the planning, coordination, and dispatch of logistics resources for mission support and theater augmentation. Manages the AMC execution of logistics core competencies of aircraft maintenance, contracting, fuels, plans, supply, and vehicle maintenance/operations in support of Global Reach.

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.

NUMBERED AIR FORCE (NAF)

As an AF 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 AF 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 AF ensure that AMC organic forces--active and Guard and Reserve--are ready to perform their assigned missions.

WINGS/GROUPS

AMC wings and groups consist of airlift, tanker, or combination of resources. These are in both the active and Guard and Reserve forces located throughout the CONUS, and include all CONUS-based C-130 combat delivery units. The active duty currently has 12 wings and 7 groups reporting directly to AMC NAFs. In addition, 27 Reserve, and 38 Air National Guard wings round out AMC’s air mobility forces.

A maturing concept within AMC 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, 13 key overseas locations serve as permanent waypoints to efficiently move aircraft and aircrews through the air transportation system. Additional locations support AMC as blue-suit detachments or 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 2a2
> *Reduce the air mobility footprint necessary for deployed operations.* DOO, FY03

Air mobility is a system, and the Air Mobility Operations Group (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 Guard and Reserve organizations. Four squadrons comprise the AMOG. Three will carry the designation of Air Mobility Squadrons (AMS). Two of the AMSs are staffed to provide two Tanker Airlift Control Elements (TALCE) and one 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 AMOGs are the heart of the GRL concept and are the key to expanding the fixed en route system. The TACC tasks the AMOGs to provide C2, aerial port, logistics, and combat camera to meet mission requirements. In addition, the AME staff provides functional expertise for C4I, civil engineering, security, weather, intelligence, and other functional areas. When operational forces from these functionalities are required for mission support, the TACC will task the appropriate units.

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 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 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.

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, AMC forces are assigned under the combatant command (COCOM) of USCINCTRANS. When deployed, AMC strategic 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 and intratheater airlift 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 DTS, in accordance with joint doctrine.

COMMAND AND CONTROL (C2) INFORMATION REQUIREMENTS

Objective 1a1
Integrate information operations into all aspects of command operations. DOK, FY05

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 Assignment 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 70 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 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. In the near future, TACC, in concert with USTRANSCOM, will employ a new web-based application called LOGBOOK to complement GDSS/C2IPS by generating C2 decision support material. This capability will automate the C2 information pull from mission planners by capturing work in progress, consolidating the information, then providing access to mission operators and managers. LOGBOOK will provide AMC decision makers with improved collective awareness of the urgency, criticality, and status of events during mobility operations.

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. 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 Operational 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, SAAMs, 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, U.S. 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 on the next page:

Command-Wide

- 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.

- Special Assignment Airlift Missions (SAAMs): Missions operated by AMC (other than 89th Military Airlift Wing) to satisfy a requirement needing special pickup/delivery at locations other than those established within the approved channel structure or, to satisfy a requirement needing special consideration because of the number of passengers, weight or size of cargo, urgency, or sensitivity of movement, or other special factors. Mission requirements are validated to USTC/MCC which in turn tasks AMC to plan and execute. The JCS priority system is used to allocate resources for SAAM missions as well as channel missions.

- 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 workshops conducted by TACC are attended by both customer and air mobility wing/group 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.

- 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.

Aeromedical Evacuation

Ninety-three percent of the current AE force structure is incorporated in Guard and Reserve units. Four active duty AE squadrons provide both a baseline support capability for contingency transition and day-to-day urgent, priority, and routine AE operations within Europe, the Pacific, CONUS, and near off-shore locations. The Guard and Reserve 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.

> Special Emphasis Item
> *Integrate the Theater Aeromedical Evacuation System (TAES) and the Strategic Aeromedical Evacuation System (SAES) concepts of operations (CONOPS) under one Global AES CONOPS.* *SGX*, FY98

The AMC/SG staff is currently working on revising the AMC OMNIBUS, AF Instructions and the AE White Paper to reflect the return of the Theater AE assets to AMC. AMC serves as the Lead Command for AE.

Theater Aeromedical Evacuation. Theater AE involves movement of patients within the theater of operations from the mobile aeromedical evacuation facilities located near the front lines, to the aeromedical staging facilities in the rear area. Theater AE is generally accomplished with C-130 and C-9 aircraft. While C-130s are not normally scheduled for peacetime AE missions, they occasionally provide backup support to the C-9As. However, C-130s would be the primary means for moving casualties out of the combat zone during contingency operations.

Strategic Aeromedical Evacuation. The phase of evacuation that provides airlift for patients out of the theater of operation to a main support area. C-141 aircraft perform weekly strategic AE missions supporting USEUCOM, USPACOM, USCENTCOM, and USSOUTHCOM. 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, KC-135, C-21, and C-12 aircraft are other sources of AE lift. In addition to this organic capability, 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.

AE Operations: AE operations within the theaters of operations are managed by the Air Component, normally executed through a theater Aeromedical Evacuation Coordination Center (AECC) working with the Air Operations Center (AOC). The Air Component Surgeon and designated staff will serve as medical consultants for the AE system. Intertheater AE operations are managed through the TACC. Operational control of AE forces employed in a theater of operation to provide intratheater AE is normally provided through the AOC or Director Mobility Forces (DIRMOBFOR). A Senior AE representative will be designated to assist the AOC Director, or DIRMOBFOR, concerning the employment of theater AE forces, management of the medical aspects of AE missions, and other issues affecting AE operations. Aircraft used for AE will be managed through the designated Air Mobility Element (AME) for intratheater missions, and the TACC for intertheater AE missions. Reference AMC Omnibus OPLAN Appendix 7 to Annex N.

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 fighter aircraft 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. AMC’s Integral Tanker Unit Deployment (ITUD) concept is used at most TTF locations. 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 air refueling operations are tasked in a similar manner, frequently combining several of the above processes.

CONTINGENCY OPERATIONS

Air Expeditionary Force Concept

AMC's commitment to the AF's vision of Global Engagement in the 21st Century is apparent in the operations arena. One of the core competencies of the vision is global attack in an era of declining resources and diminishing number of permanent forward locations. To project American presence and power in a period of limited resources AMC has been a strong advocate of the Air Expeditionary Force (AEF). In concept, the AEF provides regional CINCs with rapid and responsive air and space power, tailored to meet theater specific needs across the spectrum of response options from humanitarian relief to combat operations. AEFs normally respond to crises with capabilities tailored to achieve clearly stated objectives. These forces are designed to be light, lean, and highly capable, deploying and employing rapidly to leverage the inherent strengths of airpower-speed, range, and flexibility.

Designated AEF forces will maintain readiness to rapidly transition from peacetime to contingency operations in support of a theater CINC. As a general guideline, CONOPS will posture AEFs to begin operations within 48 hours of receiving an Execute Order. This guideline assumes designated units receive 24 hours of strategic warning pre-decision time.

Impetus for the concept grew in 1995 as the AEF came to be identified as a means to deter potential Iraqi aggression: a small but potent force deployed rapidly could have the same deterrent value as a large force assembled over a longer period of time. Since 1995, the AMC has honed the concept, identifying the airlift, tanker, and support requirements necessary to launch and sustain an AEF. It has produced a first playbook for an AEF deployment to a specific Middle Eastern location, identifying the assets necessary to support the deployment and a concept of operation that permits initial AEF operations within the desired timeframe. Planning is underway to develop similar concepts for a bomber, humanitarian, Pacific theater, and AFSOC AEF.

By mid-1997, AMC has exercised aspects of the AEF concept in four fighter deployments:

AEF I: Bahrain, Oct-Dec 95
AEF II: Jordan, Mar-Jul 96
AEF III: Qatar, Jun-Sep 96
AEF 97-1: Qatar, Feb-Jul 97

These deployments have helped refine the AEF concept and instill the confidence that mobility operations will facilitate the AEF's ability to strike within 48 hours provided units receive 24 hours of strategic warning pre-decision time.

DESERT STRIKE

While AMC continues to hone its role in the development of the AEF, it has demonstrated rapid global mobility support for global assault in Operation DESERT STRIKE. During August 1996, Iraqi forces violated United Nations resolutions by entering northern Iraq to intervene in a civil war among Kurdish factions. The United States retaliated with an attack on Iraqi air defenses. The AF portion of the strike was conducted by B-52s, which flew nonstop from Barksdale AFB La, to the forward position at Andersen AB, Guam. From Guam the bombers flew to the Persian Gulf region, launched their missiles, and returned to Guam on a 34-hour, 13,700-mile mission. Both legs of the bomber mission were dependent on air refueling from KC-10s and KC-135s. Fourteen tankers supplied 760,000 pounds of fuel for the deployment, while 15 tankers deployed to offload 1,360,000 pounds of fuel for the air strike. Additionally, the C-5 delivered B-52 support personnel to Guam. The timing of the operation demonstrated the command's ability to respond with dispatch. The deployment order arrived on 31 August, and on the same day tankers began moving into position. The attack launched on 2 September and was completed on the 3 September.

In the wake of DESERT STRIKE, the United States deployed additional forces to the Persian Gulf region to deter an Iraqi response to the attack. AMC provided airlift and refueling support to deploy F-117 stealth fighters. Patriot missile battery operators and 3,000 infantry troops were among the forces AMC transported to the area during a period of high tension.

Nonlethal Applications of Global Air Mobility

AMC people and aircraft support many and varied national objectives. For example, on behalf of arms limitation and reduction treaties, air mobility aircraft have transported inspectors representing the United States and the republics of the former Soviet Union. Transport and tanker aircraft have participated in the campaign to stop illegal drug trafficking.

On a regular basis, AMC flies a wide variety of humanitarian missions throughout the world. Through an on-going program called PROVIDE HOPE, AMC airlifted humanitarian cargo to the former Soviet republics and performed the 500th such mission in June 1997. Iraqi moves against the Kurds in August 1996 also prompted a humanitarian response by the United States government, which AMC supported. Kurds who worked as foreign service nationals or employees of American-based nongovernmental agencies against the interests of the government of Saddam Hussein were in danger. To protect these allies of the United States and their families, the Department of State contracted for an airlift that ultimately moved some 5,000 Kurds to Guam, where they lived until they could relocate in the United States as political refugees. In an operation called PACIFIC HAVEN, AMC helped develop the infrastructure needed to care for the refugees by deploying an air transportable hospital, field kitchens, rations, and security police.

After terrorists bombed Khobar Towers--the residence facility in Dhahran, Saudi Arabia, that housed American service members supporting Operation SOUTHERN WATCH--AMC displayed its ability for rapid mobility operations for humanitarian ends. On the day of the attack, 25 June 1996, a C-141 took a medical team and bomb investigators from the United States to

Dhahran on a 15-hour flight that required two air refuelings. Three more AMC aircraft arrived at Dhahran on the 26th with a surgical trauma team, aeromedical evacuation crews, and stress management units. On the following day, wounded service members were evacuated to Germany, while a C-5 arrived in the United States with the remains of those killed in the bombing. And in August 1996, command aircraft evacuated military dependents to the United States from Saudi Arabia in response to the continuing terrorist threat.

AMC assets were also employed to help Americans at home. In January 1997, a C-141 airlifted 40,000 pounds of winter clothing from California to South Dakota to help persons living on the Cheyenne River Sioux Reservation. And when flooding of the Red River of the North inundated Grand Forks, North Dakota, and neighboring communities, command aircraft assisted the Federal Emergency Management Agency by transporting disaster relief teams and emergency support equipment to North Dakota and Minnesota.

In recent years, Africa has been the destination of AMC humanitarian missions as the following operations illustrate.

ASSURED RESPONSE

In April 1996, during a civil war in Liberia, AMC participated in Operation ASSURED RESPONSE, the noncombatant evacuation of American citizens and other foreign nationals from the American Embassy in Monrovia. Command airlift and tanker aircraft assisted in positioning forces that transported the endangered to safety. AMC support was centered at Freetown, Sierra Leone, and Dakar, Senegal. Once in Freetown, many of the evacuees flew on AMC aircraft to Dakar, where they boarded commercial aircraft to other destinations. By 6 May 1996, AMC's role was essentially complete: 94 missions had been flown to deliver 2,153 passengers and 2,148 short tons of cargo.

GUARDIAN ASSISTANCE

By 1996, ethnic hostility, regional rivalries, and civil war embroiled the Hutu refugees who had fled Rwanda for eastern Zaire in 1994. Concern for their well-being prompted international calls for a humanitarian effort to save them. The AMC responded in Operation GUARDIAN ASSISTANCE, a quickly planned contingency that demonstrated once more the ability to move forces rapidly to any place in the world. The concept of operations for GUARDIAN ASSISTANCE positioned some air-refueled flights from the United States to Europe. Rhein-Main Air Base, Germany, was designated a stage location, and a tanker task force was established at Moron AB Spain. After being air refueled over the Mediterranean, the air transports were to offload in central Africa. Once cargoes had been unloaded, the aircraft would proceed to Mombasa, Kenya, for refueling before returning to Europe.

The plan for GUARDIAN ASSISTANCE was similar to Operation SUPPORT HOPE, which in 1994 had also helped Hutu refugees. It, too, had been built on the concept of staging through Europe, offloading in central Africa, and launching the retrograde flights from east Africa. AMC personnel commenced deploying to Entebbe, Uganda, and Mombasa on

19 November 1996. Tanker Airlift Control Element (TALCE) members were tasked to manage air mobility operations from Kigali, Rwanda, projected to be a major offload location. The TALCE members waited in Mombasa for the Rwandan government to approve beginning air operations at Kigali. By late November, more than 200 TALCE personnel had deployed to Africa. But when diplomatic approval for operations in Kigali did not materialize, AMC pared back its deployed forces and removed the last ones from Africa shortly before Christmas. A relatively orderly return of several hundred thousand Hutu refugees to Rwanda ended the immediate need to implement GUARDIAN ASSISTANCE. No missions directly aided the Hutu refugees in 1996, but rapid global mobility had again built the air bridge needed to sustain a potentially large-scale humanitarian effort and rapidly move forces to distant locations in support of national policy objectives.

GUARDIAN RETRIEVAL

In late March 1997, rapid global reach was needed once more in Africa. In Zaire, a civil war seriously threatened the security of the Americans living there. In Operation GUARDIAN RETRIEVAL, the National Command Authorities called upon AMC to deploy forces to Zaire's periphery in the event it became necessary to evacuate Americans. With the assistance of a tanker fleet deployed to Moron Air Base, Spain, AMC airlifted an "enabling force" consisting of a Joint Task Force and special operations forces to Brazzaville, Congo, and Libreville, Gabon. To facilitate the movement, AMC teams deployed not only to Moron, Brazzaville, and Libreville, but also to Ascension Island; Brussels, Belgium; and Yaounde, Cameroon. By the time Operation GUARDIAN RETRIEVAL ended on 17 April, AMC had flown over 115 missions, airlifting more than 1,200 passengers and 2,400 short tons of cargo.

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:

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

"Objective Utilization Rate" (UTE) is the average number of hours per day the primary aircraft authorization (PAA) fly, and is measured over two periods: "surge" and "sustained." The surge period is the first 45 days of a contingency (30 days for C-130 airlift) 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/Guard and Reserve 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 spare stock levels and aircrew programming.

Active duty and Guard and Reserve 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 Guard and Reserve. Very similarly, aircrews are split between active and Guard and Reserve forces and limit aircraft UTE rates until the Guard and Reserve forces are mobilized. Guard and Reserve 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 percent (14 percent duty TDY, emergency leave, illness, etc.).
- Flying hour limitations - waived to 150/400 (any 30 day/ 90 day period).
- Crew augmentation rate of 50 percent for first 7 days, 10 percent thereafter, to extend allowable crew duty day.
- Guard and Reserve volunteer rate prior to mobilization: 25 percent (Note: UTE rates require Guard and Reserve mobilization to augment the active forces with Guard and Reserve personnel.)

"<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 operational experience loading aircraft from Operation DESERT SHIELD/STORM.

"<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 2-1
SUMMARY OF STRATEGIC AIRLIFT PLANNING FACTORS

	UTE rate[c] (Surge)	UTE rate (Sustained)	Blockspeed (kts)	Payload (short-tons)	Productivity Factor	MTM/D (per PAA)
C-5A	10.0	8.39	409	61.3	.47	.1177
C-5B	11.4	8.39	409	61.3	.47	.1343
C-141 [a]	12.1	9.7	394	19	.47	.0426
C-17	15.15	13.9	410	45	.47	.1314
KC-10	12.5	10.0	434	32.6	.47	.0831
CRAF [b]	10.0	10.0	465	78	.47	.1705

Notes:

a. Based on FY97/4 Active/Guard and Reserve split and force structure, UTE rate will decrease as Active/Guard and Reserve PAA ratio decreases, PAA are transferred to the Guard and Reserve 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 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 2-2 is a notional depiction of the entire system capability, under optimum conditions, measured in million ton miles per day (MTM/D). This capacity does not include airfield capacity constraints. AMC can produce at this level only after full Guard and Reserve mobilization and CRAF Stage III activation. Figure 2-2 shows the overall contribution of each strategic airlift weapon system and incorporates the modernization plan for the airlift forces.

STRATEGIC AIRLIFT CAPACITY
FY99-03 APOM

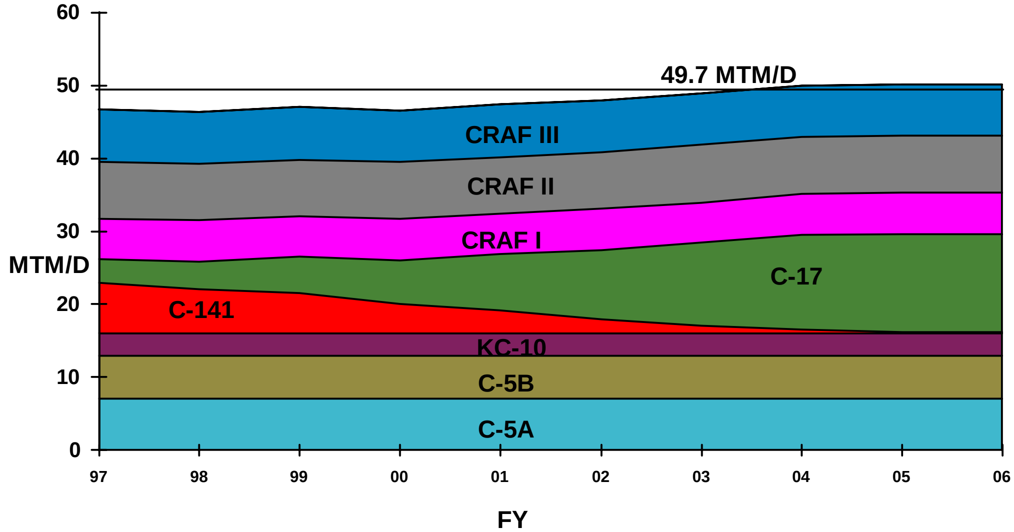

Figure 2-2. Strategic Cargo Airlift Capability

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.

Within a decade (by FY06), AMC will possess 120 C-17s and 126 C-5s; we will have retired all 266 C-141s. The total number of possessed strategic airlift tails in our Command will have dropped from 392 to 246. This loss of 146 total tails represents a significant loss in global flexibility to respond to multiple mission taskings. The airplanes remaining must be highly reliable, maintainable, and available for mission support activities. The success of the C-17 in this respect is indeed encouraging, but the C-5 fleet needs work now!

The MRS BURU set the airlift requirement for 120 C-17 aircraft. Unfortunately, the study did not factor in the requirement for airlift support to the special operations mission as directed in the Defense Planning Guidance (DPG). As the C-141 is retired, the need still remains to possess sufficient aircraft to simultaneously support the special operations low-level (SOLL II) mission and the two major theater war (MTW) requirement (formerly know as Major Regional Contingency). An additional C-17 squadron, over and above the initial 120 aircraft buy will be required to fill this validated requirement. No other additional requirements are currently known.

The MRS BURU recommendations are based on a 2 nearly simultaneous MTW scenario. However, AMC force structure is based not only on requirements for MTW 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 MTW 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 MTW. Therefore, the force structure required for the 2 MTW requirement is similar to that needed for a single MTW concurrent with a SSC 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 MTW.

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 2-3 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.

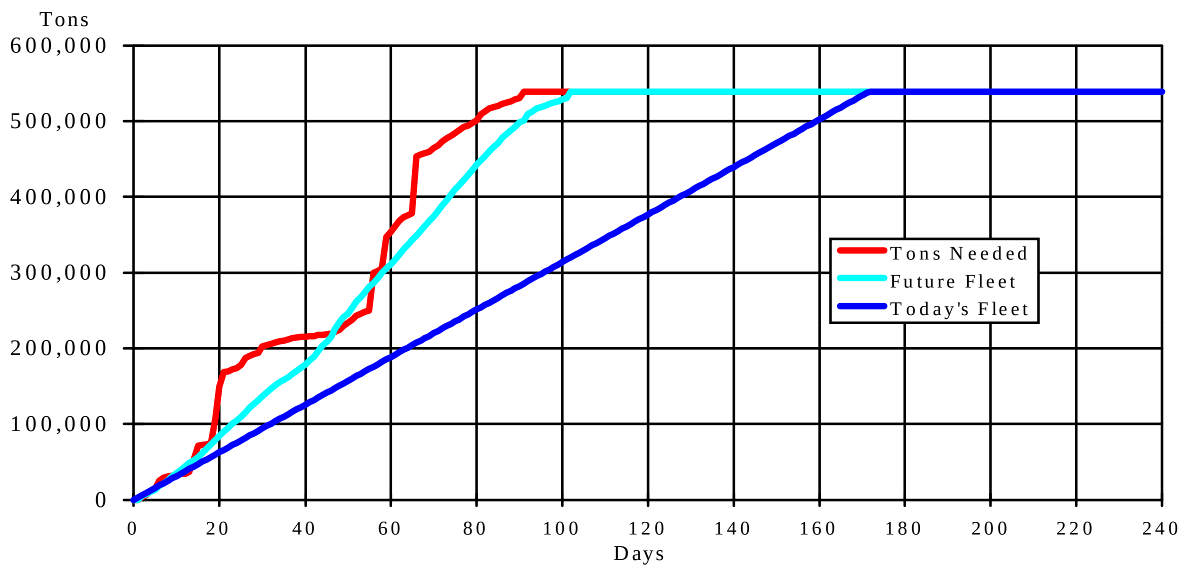

Figure 2-3. Notional Cargo Closure Requirement versus Capability

CRAF Passenger Airlift

USTRANSCOM analysis supporting MRS BURU set the strategic passenger airlift requirement at 136 B-747-100 Wide-body Equivalent (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. FY98 Stage III Long-range International passenger capability is approximately 172 WBE.

CRAF Cargo Airlift

AMC and USTRANSCOM analysis of the MRS BURU airlift requirement determined 120 B-747-100 WBE cargo aircraft (equivalent to 20.5 MTM/D) is the maximum usable amount of CRAF to support the bulk cargo requirements for two Major Theater Wars (2 MTW). FY98 Stage III Long- Range International Cargo capability is approximately 177 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 requirement; 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 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 (modified with dual row airdrop capability), coupled with 33 TAI modified C-5Bs, is needed to meet the strategic brigade airdrop requirement. Testing and modification programs are under way. The C-17 was certified in the SBA role during FY97 with dual row airdrop capability testing on going. Completion is scheduled during FY98. The C-5B heavy equipment modification continues with certification planned during FY98.

AIR REFUELING CAPABILITY VERSUS REQUIREMENT

The tanker fleet dedicated for air refueling is shown in Figure 2-4. The requirement is based on FY97-01 DPG scenarios and War Mobilization Plan commitments. The total air refueling capability is based on projected mission capable rates and assumes the KC-135's primary role is air refueling. 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 in both aircrews and aircraft. Although we have a shortage in the number of tanker aircraft, our most pressing shortfall is in the number of aircrews. Additionally, the crews will allow us to meet our wartime requirements and at the same time they will help to lower our peacetime pers tempo.

Total air refueling capability is based on projected mission capable rates for the entire PAA 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.

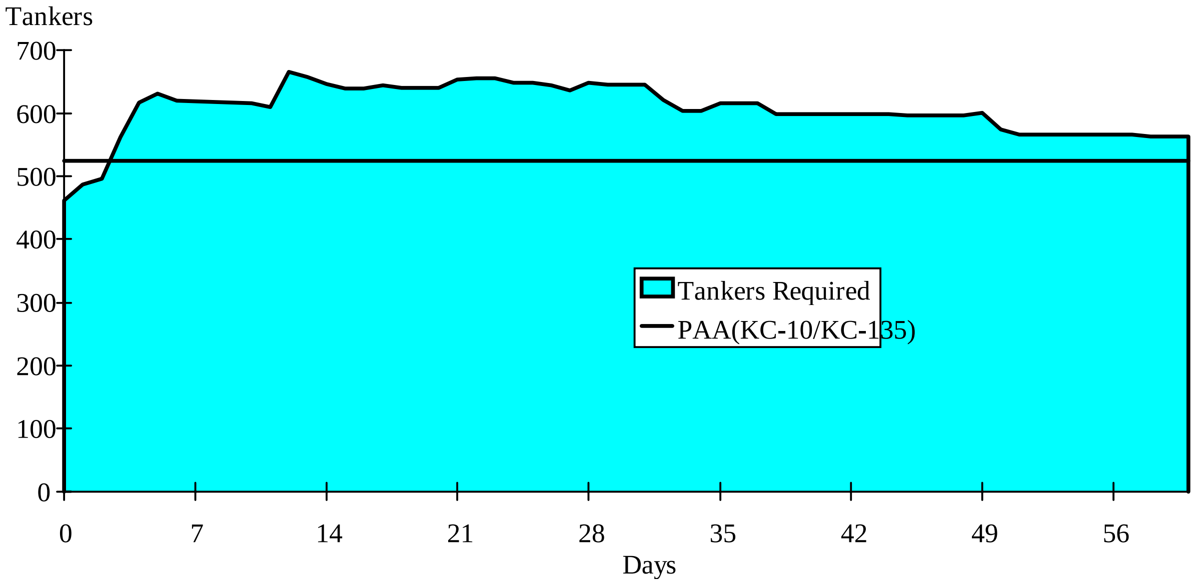

Figure 2-4. Air Refueling PAA (FY97 PB) versus Notional Requirement

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 2-5. 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.

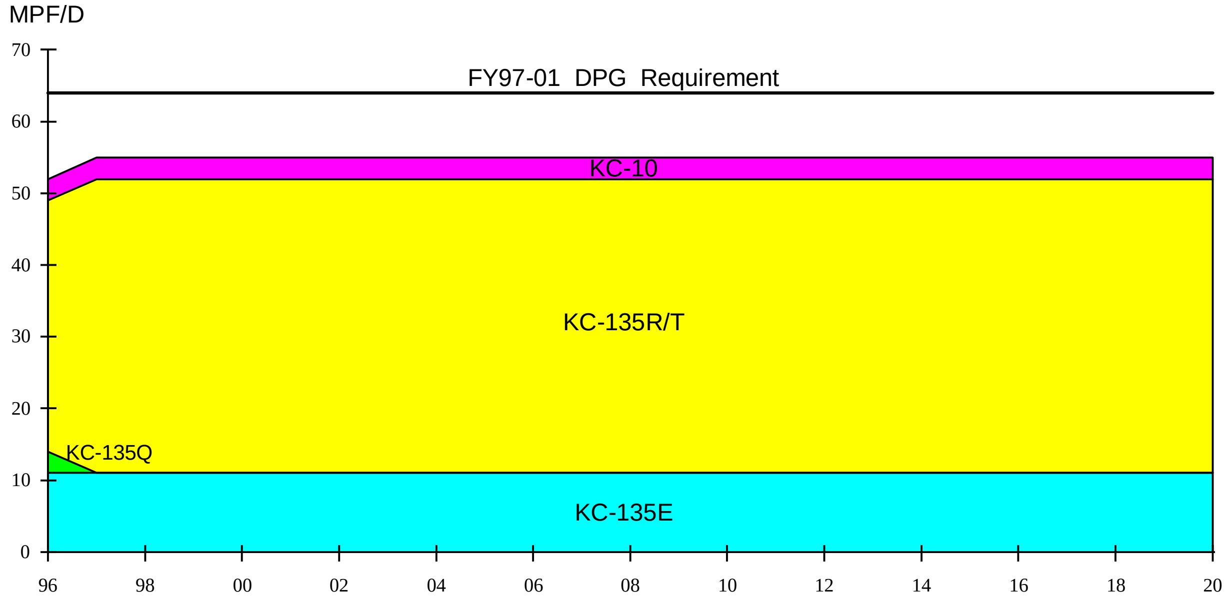

Figure 2-5. Notional Air Refueling Capability versus Requirement

DEGRADED OPERATING ENVIRONMENTS

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 NBC 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 U.S. interests against an opponent armed with WMD or missiles.

- Counterproliferation: all 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.

Objective 1c3
Maximize successful mission performance in degraded operating environments. *DOK,* 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 and aircrew 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 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.

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-U.S. 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 U.S. 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 U.S. 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 U.S. 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.

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 1b3
Establish a customer/financially focused metrics system. *DOV*, 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 FY16. These standards set goals for improvement to operations from current standards (Table 2-1) to those standards envisioned for FY16 (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 2-2 on the following page depicts AMC's exacting standards for its major weapons systems.

Table 2-2
FY98 OPERATIONAL STANDARDS

	Airland Ops				Air Refuel Ops	Combat Delivery		
	C-5/141	C-17	KC-135/10	C-130	KC-135/10	C-5/141	C-17	C-130
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	≤3.25	≤4.0 Hr
Mission Planning [1]	I	I	I	III	III	III	III	III
Route Study Time	45 Min	45 Min	45 Min	45 Min	Prior day (60 Min)	45 Min	45 Min	45 Min
Crew Alert	1 Hr	1 Hr	1 Hr	1 Hr	1 Hr	1Hr	1 Hr	1 Hr
Ground Ops								
Loading Times	≤60 Min 120 C-5	≤ 60 Min	≤ 120 Min	≤60 Min	≤120 Min	≤ 90 Min	≤ 90 Min	≤90 Min
Aircraft Preflight Time	≤ 75 Min	≤ 75 Min	≤ 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	≤ 15 Min	≤ 15 Min
Crew Support Delay [2]	≤ 15 Min	≤ 15 Min	≤ 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	+14 Min	+14 Min
Weather (RVR)	≥ 1000’	≥ 1000’	≥ 1000’	12 (w/ctrline lights)	≥ 1000’	≥ 1000’	≥ 1000’	12 (w/ctrline lights
Runway Characteristic[3]	147x6K[4]	90’ x 4K	150’ x 7K	60’ x 3K	150’ x 7K	147x6K[4]	90’ x 4K	60’ x 3K
En Route								
Threat Categories	I	II	II	II	II	II	II	II
Formation	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Visibility	IMC	IMC	IMC	IMC	IMC	IMC	IMC	IMC
Corridor[5]	10 Min	10 Min	5 Min	10 Min	5 Min	60 Sec	60 Sec	60 Sec
Nav Equip Performance	2.5 nm/Hr	2.5 nm/Hr	2.5 nm/Hr	.8 nm/Hr	2.5 nm/Hr	2.5 nm/Hr	2.5 nm/Hr	.8 nm/Hr
Altitudes (minimum)	1000’	300’	3000’	300’	3000’/10,000’[6]	300’	300’	300’
Time of Day	D / N	D / N	D / N	D / N	D / N	D / N	D / N	D / N
Delivery								
Threat Categories	I	II	I	II	II	II	II	II
Formation	No	2000/4000’	No	2000’/4000’	3000’[7]	2000/4000’	2000/4000’	2000’/4000’
Time	+/- 2 Hr	+/- 2 Hr	+/- 2 Hr	+/- 2 Hr	+/- 5 Min	+/- 60 Sec	+/- 60 Sec	+/- 60 Sec
Runway Characteristics	147 x 6K[4]	90’ x 4K	150’ x 7K	60’ x 3K	n/a	n/a n/a	n/a	n/a
Approach Nav Aids	CAT II	CAT II	CAT I[8]	CAT 1	n/a	n/a	n/a	n/a
Accuracy[9]	n/a	n/a	n/a	n/a	n/a	300 Yds	300Yds	300 Yds
Weather (RVR)	≥ 1200’	≥ 1200’	≥2400’	≥200’/1nm	≥.5 mi/1mi[10]	300’/.5 mi	≥300’/.5 mi	≥300’/.5nm

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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 FL 250
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 AFAir 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 Material Handling Equipment (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 2-3 depicts the expected standards for the year 2016.

Table 2-3
FY16 OPERATIONAL STANDARDS

	Airland Ops				Air Refuel Ops	Combat Delivery		
	C-5	C-17	KC-135/10	C-130	KC-135/10	C-5	C-17	C-130
Preparation								
Time (Show to Go)	≤2.0 Hr	≤1.5 Hr	≤2.0 Hr	≤2.0 Hr	≤2.0 Hr	≤1.5 Hr	≤1.5	≤2.0 Hr
Mission Planning [11]	II	III	I	III	III	III	III	III
Route Study Time	30 Min	30 Min	30 Min	30 Min	30 Min	30 Min	30Min	30 Min
Ground Ops								
Loading Times	≤30 Min	≤ 30 Min	≤ 60 Min	≤60 Min	≤60 Min	≤ 60 Min	≤ 60 Min	≤60 Min
Aircraft Preflight Time	≤ 45 Min	≤ 30 Min	≤ 45 Min	≤75 Min	≤ 45 Min	≤ 45 Min	≤ 30Min	≤75 Min
Crew Support Delay[12]	≤ 10 Min	≤ 10 Min	≤ 10 Min	≤ 15 Min	≤ 10 Min	≤ 10 Min	≤ 10 Min	≤ 15 Min
Takeoff								
Time	+14 Min	+14 Min	+14 Min	+14 Min	+14 Min	+14 Min	+5 Min	+5Min
Weather (RVR)	≥ 1000’	≥ 1000’	≥ 1000’	≥ 1000’	≥ 1000’	≥ 1000’	≥ 1000’	≥ 1000’
En Route								
Threat Categories	II	III	II	II	II	II	III	II
Formation	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Corridor[13]	5 Min	1 Min	5 Min	10 Min	5 Min	30 Sec	30 Sec	60 Sec
Nav Equip Performance	.25 nm/Hr	.25 nm/Hr	.25 nm/Hr	.25 nm/Hr	.25 nm/Hr	.25 nm/Hr	.25 nm/Hr	.25 nm/Hr
Altitudes (minimum)	300’	300’	3000’	300’	3000’/10,000’[14]	300’	300’	300’
Delivery								
Threat Categories	II	III	II	II	III	II	III	II
Formation	No	1500’	No	2000’/4000’	1500/3000’[15]	1500/3000’	1500/3000’	2000’/4000’
Time	+/- 15 Min	+/- 15 Min	+/- 15 Min	+/- 2 Hr	+/- 5 Min	+/- 15 Sec	+/- 15 Sec	+/- 60 Sec
Runway Characteristics	147 x 6K[4]	90’ x 4K	150’ x 7K	60’ x 3K	n/a	n/a	n/a	n/a
Approach Nav Aids	CAT II	CAT II	CAT II	CAT II	n/a	n/a	n/a	n/a
Accuracy[16]	n/a	n/a	n/a	n/a	n/a	50 meters	50 meters	100 Yds
Weather (RVR)	≥ 1200’	≥ 1200’	≥1200’	≥200’/1nm	≥.5 mi	300’/.5 mi	≥300’/.5 mi	0/0

*VARIANCES FROM FY98 STANDARDS HIGHLIGHTED IN SHADED BOXES

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11 Quality of Mission Folders: (I=Airway Ops; II= Low Level Ops; III=Ops w/i 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 FL 250

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. General Kross has declared FY98 as the "Year of the Enlisted Force" and you'll find a discussion of this under Quality of Life. The section also addresses the Total Force concept and how the various components contribute to AMC readiness.

> "The QDR highlighted once again that our major strength is our men and women and that our highest priority must be their welfare and that of their families."
>
> *Quadrennial Defense Review, 1997*

AMC people are a winning Total Force team comprised of the active duty force, Guard and Reserve forces, 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 that 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 (AF) standards. A high ops tempo and resulting personnel tempo are 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 AF Human Resources Development threads throughout the entire personnel life cycle--it's 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 ASSESSMENTS

MISSION CATEGORIES ASSESSMENT

MISSION CATEGORIES	PEOPLE				INFRASTRUCTURE				EQUIPMENT			
	T	S	M	L	T	S	M	L	T	S	M	L
Aeromedical Evacuation					See Applicable Section				See Applicable Section			
Air Refueling												
Cargo Airlift												
Combat Delivery												
Passenger Airlift												
SIOP												
Special Operations												

CORE SUPPORTING PROCESSES 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 Operations												
Logistics												
Training												
Force Protection												
Medical												
Cargo / Pax Handling												
Operations Support												
Base Operating Support												
En Route / GRL												

T: TODAY (FY98)
S: SHORT TERM (FY99-04)
M: MID TERM (FY05-13)
L: LONG TERM (FY14-22)

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

<u>PEOPLE- RELATED DEFICIENCIES</u>

Deficiency:

1. Quality of Life
   - Retirement System Impacts page 3-45
   - Commissary Benefit Reductions page 3-46
   - BAQ Gap page 3-46
   - Military Compensation Gap page 3-45
   - Health Care Access for Medical Eligible Retirees page 3-47
   - Family Support Center Shortfalls page 3-52

2. Manpower Resources
   - Phoenix Raven manpower shortfall page 3-13
   - Outsourcing & Privatization drives workload page 3-14
   - Weather Flight manpower shortfall page 3-14
   - AMC Local Area Network (LAN) manpower shortfall page 3-14
   - Maintenance manpower inadequate to work many airlift defensive systems page 3-14
   - Unit Intel authorizations insufficient page 3-14
   - KC-135 maintenance manpower page 3-15

3. Insufficient KC-135 crew ratio
   - KC-135 navigator manning is low page 3-15

4. Aerial Port Manpower Standards
   - Cargo/pax handling manpower may not be effectively distributed in the en route page 3-15

5. Personnel (Faces) Shortfalls
   - Inadequate number of 7 level C2 personnel page 3-16
   - Inadequate number of 7 level MSgt Intel personnel page 3-16
   - Pilot bonus take rate decreasing page 3-16
   - C-141 flight engineer manning page 3-17
   - C-5 loadmaster & flight engineer manning low page 3-17
   - C-130 navigator, instructor pilot, loadmaster & flight engineer flight engineer manning low page 3-17
   - Explosive Ordnance Disposal (EOD) teams manning short page 3-17
   - Air Traffic Controller (ATC) manning levels low page 3-18

6. Training Needs:

- Security police deficient in training for airfield security page 3-27
- 3 FIR lacks trained force protection advisors page 3-27
- AE personnel training and qualification shortfalls page 3-31
- Crews unable to practice threat avoidance maneuvers page 3-24
- Insufficient system operator and work group management training page 3-30
- Inadequate training to protect and exploit fixed and deployable C4I systems page 3-34
- Continuing need for information operations awareness/ education page 3-34
- Continuing need for C4I systems operator and administrator training, i.e., C2IPS, CAPS II, SATCOM, CIS, etc. page 3-30
- Counterproliferation/weapons of mass destruction (WMD) awareness training is lacking at all levels in the command page 3-34

6b Establish a fully integrated leadership system.
6b1 Strengthen air mobility leadership development and increase air mobility personnel awareness of Air Mobility Doctrine....AMWC, Continuous, pg 3-20

6e Ensure a skilled workforce is available to meet future requirements.
6e2 Build a system to maintain sufficient manning levels in each AF specialty to meet mission requirements. .... DPA, Continuous, pg 3-16
6e3 Meet the civilian drawdown challenge.... DPC, FY03, pg 3-11
6e4 Accurately size AMC medical units to sustain the readiness mission, cost-effective health care, and blue-suit capability.... SGA, FY08, pg 3-46
6e5 Assess Force Protection/Antiterrorism (FP/AT) and properly train all AMC personnel on FP/AT issues and ensure they are properly equipped....SFP, FY02, pg 3-27
6e6 Advocate HQ USAF implementation of comprehensive compensation programs to promote aircrew retention and prevent future shortages that would impact capability and readiness .... DPX, Continuous, pg 3-16

6f Provide care and support for our people.
6f1 Facilitate implementation and maintenance of a managed health care system that optimizes quality, access, and cost for all beneficiaries. .... SGS, FY99, pg 3-47
6f2 Build healthier AMC communities....SGP, FY05, pg 3-48
6f3 Achieve Five Star Fitness Program certification at all AMC bases....SVP, FY99, pg 3-49
6f4 Increase effectiveness and availability of support programs for all AMC members, as well as families, to ensure mission accomplishment....DPP, FY01, pg 3-49

Special Emphasis Items (SEI)
SEI Support programs that develop and broaden air mobility experts to increase mobility presence in AF and joint leadership positions .... DPA, Continuous, pg 3-38
SEI Increase awareness of recognition programs for air mobility personnel....DPP, Continuous, pg 3-41
SEI Eliminate improper or unlawful discrimination or sexual harassment ....DPP, Continuous, pg 3-43
SEI 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 3-45

TOTAL FORCE

This section describes the impact of AF accessions and the various components of our total force with an emphasis on what to expect in the future. It covers our 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 accession's applicant pool, then consider possible impacts. While accessions is a broad AF issue, it directly impacts AMC and must be considered when developing retention and human resource development strategies.

The AF Recruiting Service team faces a number of significant challenges in meeting the personnel needs for the twenty-first century AF. The recruiting environment is complex and is influenced by a number of factors.

Historically, recruiting becomes more difficult when the unemployment rate drops and the economy is perceived as strong. Potential applicants have more options available, and recruiters face increased competition from other potential employers.

A steady rise in the number of high school graduates who enroll in college, a decline in the U.S. recruiting population, military downsizing, base closures, and a shrinking veteran population have all combined to contribute to a challenging recruiting environment and fueled some friendly competition among the military Services for qualified recruits.

A very real challenge for recruiters is the growing isolation of the military from the rest of society. This is a natural outgrowth of the all-volunteer force and it's reflective of our nation's changing demographics. Most civilians who once served in the military are now in their twilight years. The veteran population in the U.S. under the age of 65 is down to six percent. Even in the Congress, the number of Senators and members of the House with military experience is down to historic lows. With base closures and force cuts, most Americans don't even know someone who has served in the Armed Forces, much less had a family member who served.

The decline in appreciation and understanding of the military way of life directly impacts recruiting. It explains why today, three of every five new AF recruits had a father who served on active duty. Roughly half of all recruits say a friend or relative in the Air Force encouraged them to join. We are recruiting from among our own members. This won't sustain the force; all Air Force people need to do a better job educating the society we are sworn to defend.

What people do "know" about the military is influenced by national and world events, television, and movies. For most Americans, this may be their only frame of reference; one typically distorted and inaccurate.

According to the Office of Assistant Secretary of Defense 1994 Youth Attitude Tracking Study, the propensity of American youth to join the AF declined from 15.3 percent in 1990 to 12.1 percent in 1996. At the same time, the percentage of high school graduates who enter college within 12 months of graduation has increased to 62 percent.

Despite the magnitude of the challenge, recruit quality remains high. Some 99 percent of AF enlistees are high school graduates and nearly 80 percent score in the top half of the Armed Forces Qualification Test. Over 18 percent of new recruits enter with 15 or more semester hours of college. We are pleased to note the number of females entering the AF continues to rise. Females now account for over 28 percent of new enlisted accessions.

In order for our smaller force to be successful, every AF member--blue suiter, civilian, and spouse--must think of themselves as recruiters. We need you to take every opportunity to spread the word about the AF way of life. By dispelling misconceptions, and letting young people, educators, and other community leaders know about the outstanding educational, training, and career opportunities we have to offer.

AIR MOBILITY AS A TOTAL FORCE

Four categories of people combine to make up the air mobility team--active duty military, Air National Guard and Air Force Reserve, 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). Guard and Reserve 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. Technicians and AGRs are responsible for peacetime training and management of Guard and Reserve 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 on the next page. AMC-gained Guard and Reserve assets are 50 percent of AMC's total force. Civilians are employed by the active, Guard, and Reserve components. This does not include the thousands of people who make up the contractor portion of the total force or CRAF.

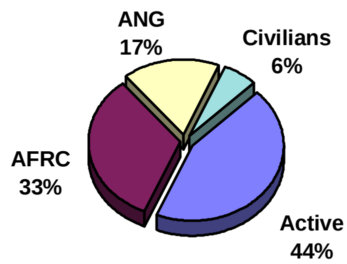

Figure 3-1. AMC Total Force

The following chart shows projected AMC active duty manpower force trends from FY96 to FY03. By FY01, AMC will number approximately 50,000 people.

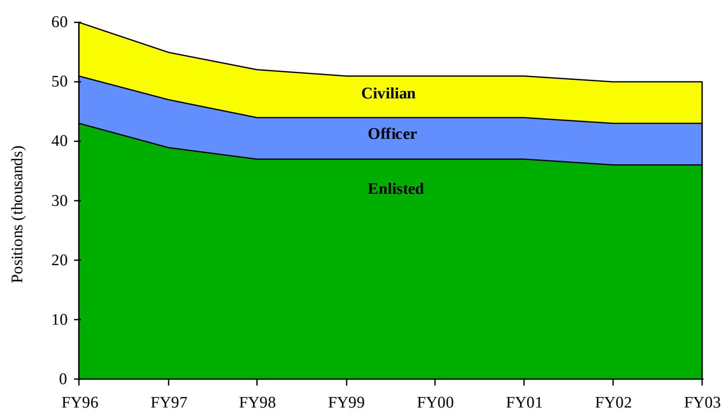

Figure 3-2. AMC Active Duty Manpower

Active Duty Military (AMC only)

Active duty force end strengths are at their lowest levels since December 1947. The current mix of 44 percent active and 50 percent Guard and Reserve personnel will likely change, with an even greater percentage of Guard and Reserve personnel performing AMC missions and duties in the future.

Air National Guard and Air Force Reserve (AMC only)

As the Guard and Reserve contribution to the total force increases, it will continue to represent a substantial portion of AMC capabilities. The majority of C-5, C-141, C-130, and KC-135 aircrews, as well as aeromedical and aerial port personnel, now reside in the Guard and Reserve. The C-141 fleet is currently programmed to leave Active Duty Forces by FY03 prior to complete retirement in FY06. This transition of force structure to the Guard and Reserve increases the command's nonmobilized contingency response time. Continuing mobility requirements will result in a greater demand for Guard and Reserve personnel. As the Guard and Reserve role increases, new operational concepts and employment issues will be explored to further maximize the Guard and Reserve's day-to-day contributions.

The following figure depicts the current percentage of Guard and Reserve aircrew and maintenance personnel by major weapon systems. For example, approximately 61 percent of C-5 and 59 percent of C-141 aircrews are Guard and Reserve personnel. The percentage of C-141 Guard and Reserve aircrews will increase over the next 10 years as the drawdown of C-141s in the active force continues.

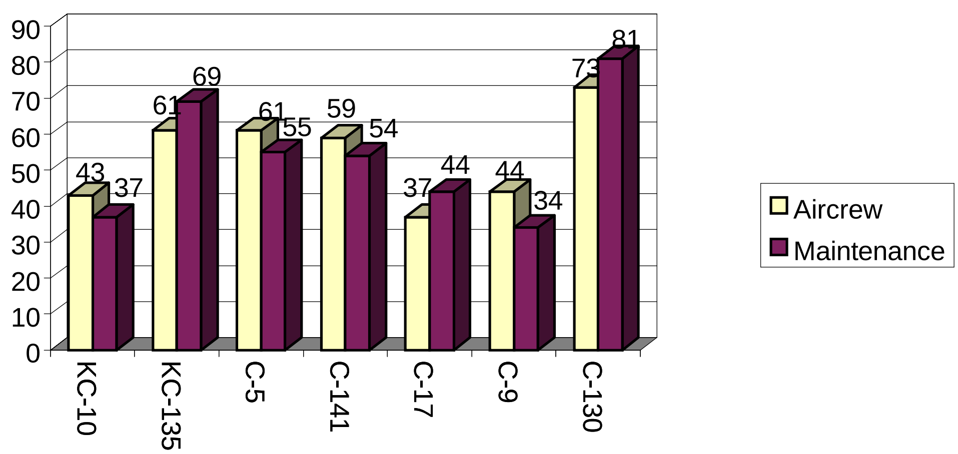

Figure 3-3. Guard & Reserve Contribution to Weapon Systems

AMC is also very dependent on the Guard and Reserves for mission support personnel as you'll see in Figure 3-4 on the next page. More than 90 percent of aeromedical assets, 81 percent of intelligence personnel, and over half of AMC's aerial port personnel currently reside in the Guard and Reserves.

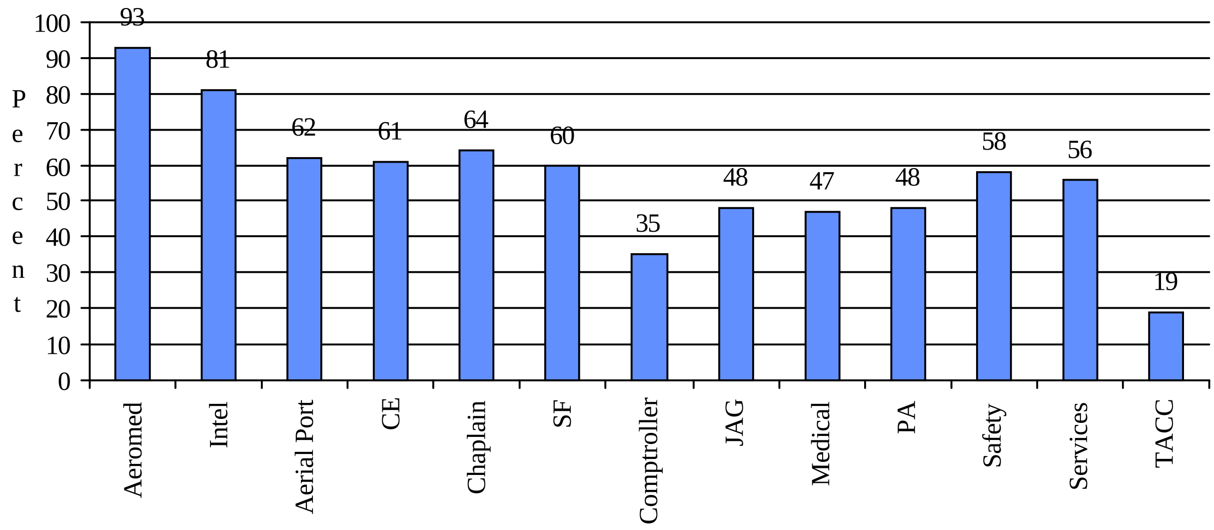

Figure 3-4. Guard & Reserve Contribution to Support Assets

Guard and Reserve Participation

In addition to our wartime surge requirements, AMC relies on the Guard and Reserves to support our day-to-day peacetime operations. The Guard and Reserves are assuming entire missions in air refueling in addition to augmenting the active duty force as they have done in the past. For example, the DELIBERATE GUARD mission at Pisa IT is supported by the Guard and Reserve. Most recently, the ANG stood up a Northeast Tanker Task Force (TTF) at Bangor ME and Pease NH to replace the Plattsburgh east coast TTF that closed. ANG will continue supporting North Atlantic Treaty Organization (NATO) Airborne Warning and Control System (AWACS) and Icelandic alert requirements. The Guard and Reserve cover a substantial portion of the Single Integrated Operational Plan (SIOP) requirements and is increasing its share of the AMC CONUS Business Efforts (see definition in the discussion of Air Refueling in the OPERATIONS Section).

The Guard and Reserve, working closely with the TACC, continue to increase their availability and participation for strategic airlift. Historically, the Guard and Reserve provide a minimum of 25 percent of the strategic airlift aircrews flying on a daily basis during peacetime operations. The Guard and Reserve are ready to surge through volunteerism for a short duration if a contingency requires it. The Guard and Reserve have 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 Guard and Reserve become a larger share of air mobility, this availability will be key to AMC mission planning.

In-Service Civilian Employees

Objective 6e3	
Meet the civilian drawdown challenge.	DPC, FY03

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-14/15, and 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 work force has been reduced. Continued VSIP funding is essential if the adverse impact of downsizing is to be minimized. AMC must support efforts 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 spouse employment 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 that 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, productivity may be decremented.

An improving economy and the emerging perception that federal employment is no longer a secure long-term employment contract will negatively impact our ability to recruit quality candidates into various career fields. Also, we expect increased 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. Also, there must be an attempt to reverse or stop the following: (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. In turn, this will curtail attrition among the most recently hired workers, those who have been expensively recruited and trained into specialty skills.

These issues, in concert with the emphasis on Outsourcing and Privatization (O&P) will produce a "portable civilian" work force. Their commitment and dedication will not mirror that of a career work force who envisioned 30 year AF careers. This will erode traditional civilian contributions to stability and continuity and hurt the reputation of the AF as an employer of choice.

<u>Civilian Contract Service Workers</u>

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 work force (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

<u>AMC Manpower Net Worth</u>

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 Defense Base Operating Fund (DBOF)-AMC. Currently, AMC has more manpower authorizations on its Unit Authorization File (UAF) than are actually funded by AF 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 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/Functional Operating Agencies (FOAs), shifting Combat Camera wartime requirement to the Air Force Reserve Command (AFRC), restructure of the Air Mobility Operations Groups (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 O&P 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. These savings will be used by AF to increase funds for Acquisition.

Funded Manpower

AMC's mission manpower requirements are funded at 100 percent. However, overall, only 95.9 percent of AMC's manpower requirements are funded. Areas less than 95 percent at base level are listed below:

Chaplain	93.8%
Supply	93.3%
Comptroller	92.6%
Civil Engineer	91.8%
Safety	90.4%
Services	89.7%
Transportation	89.5%
Contracting	89.4%
Intelligence	88.2%
Manpower & Quality	77.1%
Judge Advocate	77.1%
Family Support	76.0%

Budget pressure will continue to constrain manpower resources at a level less than requirements. Along with O&P, 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

The Khobar Towers bombing in Saudi Arabia illustrates just how vulnerable our deployed forces can be and the need to incorporate force protection into all operations. As a result, AMC has taken significant measures to increase the level of protection for its forces by initiating several force protection initiatives. AMC/CV has chartered the Force Protection Board, a multi-directorate headquarters body, to assess the status of force protection in the command, develop policy, and recommend specific command actions. To protect our aircraft deployed OCONUS to high terrorist/criminal threat areas, the command has initiated the PHOENIX RAVEN Program to provide trained, "fly-away" security force teams for these missions. Additionally, the command has added five manpower authorizations to the AMC Security Forces staff to accomplish the staff actions required to integrate force protection into all our operations. The PHOENIX RAVEN initiative consisting of 104 authorizations has been approved in the FY99 Amended Program Objective Memorandum (APOM). It is the first item below the line for the FY99 APOM after Air Force Council review, and AMC will continue to pursue alternate funding and submit this for the FY00-05 Program Objective Memorandum (POM). As long as the manpower authorizations remain unfunded, Security Forces units will be supporting the increased mission load "out-of-hide" or at the expense of other unit missions.

As the AF continues to downsize, a high priority has been placed on O&P. HQ USAF has set aggressive O&P goals for AMC to meet, which are driving increased workload for AMC Headquarters and Wings. The HQ AMC O&P office has requested funding from the Air Staff for approximately 100 command-wide authorizations to supplement existing resources. These will be used to help meet USAF goals and ensure O&P initiatives succeed.

Outdated manpower standards have resulted in a manpower shortfall for AMC weather flights. Current Weather Flight manpower standards are based on Cold War scenarios that do not reflect current deployments from home station. These deployments consistently reduce Weather Flight manning by 15 percent. Low manning, high Ops tempo, poor first term retention rates, an average of 4 months of 12 hour shifts for all AMC weather flights in 1996, and low experience levels in the weather flights contribute to a troubled career field. AMC/DOW will continue to work with AF XO counterparts to update the manpower standards to reflect current workload. A HQ USAF/XOW initiative to regionalize some weather functions is being reviewed.

Manpower standards covering Local Area Network (LAN) workload do not reflect current responsibilities and level of work. Specifically, wings have taken workgroup administrators “out of hide” in order to perform workload not identified in the manpower standards. HQ AMC/SC will continue to work with HQ USAF/SC to update the manpower standards to reflect current workload. On 1 Oct 96, Workgroup Administration (WGA) duties were officially added to the 3A0XX (Information Manager) career field. These duties were added without trading, reducing, or eliminating any previous information management duties. Information Management personnel are now required to perform traditional IM duties, full time, plus serve as WGA. Serving as a WGA is also a full time responsibility. In order for our customers to receive adequate IM staff support and IM WGA support, additional 3A0 manning is required.

Current maintenance manpower is adequate to work existing Defensive Systems (DS). As C-17 acquisitions continue and additional Mobility Air Forces (MAF) aircraft are upgraded with DS, our maintenance capabilities will be exceeded. Additional authorizations have been placed on the Unit Manpower Document (UMD) as unfunded requirements and AMC will request funding in the FY00-05 POM.

The command Inspector General identified inadequate unit-level intelligence manning as an AMC systemic issue. This results from insufficient wing manpower authorizations. Analysis indicates current total force authorizations could not meet a two Major Theater War (MTW) scenario requirement. 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 standards, recognizes the problem but provides only 14 unfunded positions in response to our request for 49 additional unit-level positions. 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 is pursuing appropriate changes to the manpower standard. In the meantime, active-duty authorizations for unit-level intelligence positions is 26 percent of the wartime requirement. To make-up for this shortfall, AMC relies on IMAs. Yet only 38 percent (96 of 256) of the required IMA positions are currently funded. These problems highlight a "spaces" shortfall.

We are currently experiencing a significant manpower shortfall in KC-135 maintenance manning positions. Logistics has 468 unfunded requirements for the KC-135 program. These positions are system wide and without them, the capability of the weapon system would gradually erode in a sustained wartime environment. This requirement was brought forward during the APOM procss as a disconnect.

Although we have a shortage in the number of tanker aircraft our most pressing shortfall is in the number of aircrews. 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. As a result, the requirement for aircrews increased without the associated addition in aircrew authorizations. With the retirement of the C-141 and subsequent elevated use of the KC-135s in the airlift role combined with increased support to numerous Smaller-Scale Contingencies (SSCs), ops tempo for the KC-135 aircrews has risen dramatically. Although an additional 14 crews are expected to be funded in the FY99 APOM allocation, AMC will remain 75 aircrews short of its wartime requirement. Currently, the AMC KC-135 crew ratio is 1.36, with the remainder of the active duty and Guard and Reserves at 1.27 (AETC is 1.00). KC-135 Navigator manning is at 87.7 percent; currently authorized 279, assigned 244, that number expecting to decrease to 84.2 percent; authorized 279, assigned 240. AMC has developed a navigator systems officer (NSO) program--training pilots to fill navigator requirement until PACER CRAG comes on-line. NSO will require overmanning tanker pilots to 120 percent. Fiscal constraints limit the AF'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 mitigate crew ratio shortfalls to ensure AMC has the required crew ratio to meet its wartime requirement. The addition of aircrews will allow us to meet our wartime requirements and at the same time will help to lower our peacetime pers tempo. However, the AF 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 in 1994 by an AF 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. In addition, AMC/DOZ staff has received feedback that the current manpower standard places too much emphasis on tonnage, and not enough emphasis on other factors, such as pieces handled. Although total manpower authorizations will probably not increase, we are concerned that the allocation of manpower authorizations between ports may need to be adjusted. HQ AMC/XPM and DOZ are jointly working a proposal for a new manpower allocation tool. The goal is for DOZ and XPM to finalize a new recommended manpower allocation tool to more efficiently allocate Air Transportation manpower authorizations. If approved, it could be implemented in FY98.

PERSONNEL (FACES)

The goal of AMC's Directorate of Personnel is to ensure commanders have adequate personnel resources in each AF specialty to accomplish their mission. Our strategy is to equitably distribute AMC's fair share of AF 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 AF-wide resources to preclude shortfalls. The following paragraphs highlight several areas of current personnel interest.

> Objective 6e2
> *Build a system to maintain sufficient manning levels in each AF specialty to meet mission requirements.* DPA, Continuous

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. Future projections show that sufficient 7-level enlisted controllers will not be available until 2 years after mandated elimination of the officer positions. A 7-level MSgt personnel shortage in Intelligence highlights the command's lack of experienced intelligence senior NCOs. This has been identified as an AF-wide problem, underscoring the need for additional 7-level MSgt intelligence personnel.

> Objective 6e6
> *Advocate HQ USAF implementation of comprehensive compensation programs to promote aircrew retention and prevent future shortages that would impact capability and readiness.* DPX, Continuous

It is vital that the Command retain sufficient experienced pilots in order to meet peacetime and wartime requirements. Aviation Continuation Pay (ACP, the "Pilot Bonus") offers increased pay for pilots accepting an active duty service commitment through the 14-year point. The percentage of pilots who accept ACP has shown a steady downward trend from a high of 71 percent in FY94 to 52 percent in FY96. The FY97 forecast is below the CSAF's 50 percent goal. This trend and airline hiring projections mean the Command will be operating with a reduced pilot force for several years. Air Staff and AMC have instituted several initiatives to increase overall aircrew retention including: post-deployment stand-downs, increased ACP and flight pay, and numerous quality of life improvements. AMC must continue to focus on ways to improve the ACP take rate, a critical pilot retention factor.

This year alone, the airlines will hire approximately 3,200 pilots. A large number of those pilots will come from the AF. This is a fact that could cause a catastrophic pilot shortage. Airlines hiring could also have an impact on retaining our experienced enlisted aircrew members.

Long and frequent deployments have taken their toll. Members want more time to spend with their families, have the opportunity to take advantage of off-duty education, and have time to complete training vital to mission accomplishment. Knowing this, our AF leadership from the Chief of Staff down to the AMC Commander are working hard on several initiatives to make life as an aircrew member a little easier. One of those initiatives is to support a comprehensive compensation package for all our aircrews.

Enlisted flight pay or hazardous duty incentive pay (HDIP) has not been increased since 1985, a fact that is not lost on our overworked members. Air Staff is currently trying to push through an initiative that would increase HDIP, across the board, by $40.00 per month. This is by no means the final solution to the problem, it is merely a near-term option for addressing enlisted flyer manning concerns. Another long-term initiative being worked is to establish an alternative career enlisted flyer incentive pay (CEFIP) similar to aviation career incentive pay for pilots. Both of these initiatives, however, face a long uphill climb. They must have backing from both OSD and all the Services before they can be put before Congress. For this reason, it is imperative that we advocate these programs at every opportunity presented to us.

Despite a constant drawdown in requirements, our C-141 flight engineer wing manning has averaged slightly below 90 percent of authorized since 1995. This has resulted in line qualification rates averaging below 90 percent--impacting day-to-day capability and causing some mission cancellations. Only recently, after an accelerated closure of an additional C-141 squadron is there finally a move toward 100 percent. The ultimate fix must address three issues: improved retention to slow the current high turnover, better tools to predict yearly loss rates, and better recruitment to ensure Program Flying Training (PFT) goals are met.

Similar to the C-141 Flight Engineer (FE) problem, C-5 loadmasters have hovered below 100 percent since 1995. Again, the fix must combine better retention, better loss forecasts, and recruiting that meets accurate PFT goals. C-5 flight engineers have just recently fallen into shortage due to efforts to divert an insufficient FY96/97 Training Personnel Requirement (TPR) toward the more seriously undermanned C-141.

C-130s suffer manning problems for reasons that differ by crew position. On the enlisted side, chronic undermanning of FE and loadmasters can be attributed to the same enlisted aircrew management deficiencies noted for the C-141 and C-5. However, these are compounded by instructor deficiencies which limit Little Rock training capacity, which in turn prevents a get well date even if the TPR could source sufficient accessions. On the navigator side, AF Specialized Undergraduate Navigator Training (SUNT) production has been insufficient to meet AF and C-130 needs. This problem should be corrected at the current SUNT rate of 300 per year. Instructor Pilot shortages are caused by training limitations and should be resolved in short order as experience levels continue to rise in our C-130 pilot force.

Explosive Ordnance Disposal (EOD) teams consist of personnel and equipment required to eliminate threats to people and resources posed by hazardous chemical, biological, nuclear, or conventional ordnance or terrorist devices. AMC requires a total of 290 EOD personnel to execute a two Major Theater War (MTW) scenario. Current manning is significantly short of the requirement. Although AMC has been successful in obtaining funded reserve positions to overcome the shortfall, filling the positions has been slower then expected. Total positions consist of 108 active duty which are about 81 percent manned and 182 reserve positions which are about 40 percent manned. HQ USAF has taken action to fix the active duty shortfall by offering enlistment and reenlistment bonuses. HQ AF Reserve Command (AFRC) is taking action to increase recruiting and offering incentives (enlistment bonuses) to increase this number. We anticipate an FY00 get well date.

Although funded air traffic controller (ATC) authorizations adequately support command requirements, long-term contingency deployment support and Air Force difficulty retaining qualified controllers are reducing manning levels to well below authorizations. Authorizations are based only on the local flying mission, without provisions for additional controllers to provide contingency support. As a result, AMC's ATC manpower force is continually depleted. Of additional concern, AMC air traffic controller manning (although fully funded) will be only 87 percent of authorized by December 1997 with Air Force controller manning at just 89 percent. Federal Aviation Administration hiring, coupled with a demanding deployment ops tempo, have created a competitive employment alternative for Air Force controllers. To offset losses, the Air Force obtained an increased selective reenlistment bonus variable of one-half point and approval for high year of tenure extensions, but both have had little impact on turnover. Additionally, projected technical school student graduation was raised from 364 in FY97 to 680 in FY98; however, the school is expecting to meet only 50 percent of its goal. ATC manning problems will be improved only when manpower standards include authorizations for overseas contingency deployment.

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 Air Education & Training Command (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 (AMWC), established in 1994.

USAF Chief of Staff, General 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 AF. Many of the unprecedented early separation and retirement programs implemented by the AF during the early 90s had a particularly heavy impact on the mid-grade technicians. The loss of 5- and 7-level technicians spanned the AF 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, the "training" solution requires its inclusion in this section. This problem is only one of our training challenges. As the following 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 FY97 over 3,872 AMC personnel attended advanced technical training at AETC installations. For FY98, AMC projects over 6,000 training requirements.

Technical Training

The AF "Year of Training" policy released in June 1993 drastically changed technical training and skill level requirements for AMC personnel. All enlisted members entering the AF will now attend a 3-skill level awarding course (unless waived by AFPC under special circumstances). They 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 AF Specialty Codes (AFSCs). After completing all training requirements and at least 15 months (12 months for retrainees) of 5-level upgrade training, airmen are eligible to be awarded the 5-skill level. Upon receiving a line number to staff sergeant, airmen are entered into 7-skill level upgrade training effective the first day of the promotion cycle. [(Exception 1: SSgt or above retrainees are entered into 7-skill level upgrade training upon award of the 5-skill level. Exception 2: For AFSCs without a 5-skill level, airmen are entered into 7-skill level upgrade training upon completing the 3 month apprenticeship period.]) After completing at least 12 months (6 months for retrainees) of 7-skill level upgrade training, airmen are eligible to attend the mandatory 7-skill level technical school for his/her AFSC. After completing all training requirements and at least 18 months (12 months for retrainees) of 7-skill level upgrade training, airmen are eligible to be awarded the 7-skill level.

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 continue to influence MAF operations throughout the world. AMC personnel are called upon to deploy in support of numerous humanitarian and contingency operations each year. Personnel Support for Contingency Operations (PERSCO) teams assist deployed commanders with their responsibility to achieve 100 percent accountability of their deployed forces within 24 hours upon arrival. In addition to accountability, PERSCO teams provide casualty reporting, and perform a myriad of other personnel actions to support deployed commanders and their people. PERSCO training prepares personnelists for such duties. Training is conducted both on and off-station. Training conducted at Keesler AFB provides instruction on 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. Keesler also dispatches a Mobile Training Team (MTT) to various bases worldwide in an effort to train more users on the MANPER-B system. PERSCO training is conducted both at home and on the road. The Air National Guard conducts a 1 week long PERSCO course at McGhee Tyson ANGB in Tennessee. This course is open to active duty, guard, and reserve personnel and serves as an invaluable training opportunity for AMC PERSCO teams. Training on-station is conducted weekly, allowing experienced PERSCO members to train others. PERSCO members also take the opportunity to work with other agencies (e.g., SF, CE, and SV) to learn new skills and develop working relationships to be used in local exercises and in real-world deployments.

Air Mobility Warfare Center (AMWC)

Objective 6b1

Strengthen air mobility leadership development and increase air mobility personnel awareness of Air Mobility doctrine.

AMWC, Continuous

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 AF. A wide variety of courses are designed to meet student's needs. The AMWC will take the training provided by AETC a step further. Over 6,000 students graduate annually and are prepared to lead, employ, and support all aspects of the air mobility system. Much of 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 goal of maximizing successful mission performance. This is done by building, protecting, sustaining, and restoring mission capability when it is degraded by hostile threats, disasters, or major accidents.

AMWC graduates participate in every current U.S. 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 visible as Bosnia. Stage Manager Course graduates have immediately impacted fixed and nonfixed locations worldwide, directing en route air mobility support. Included in the Center's more than 35-course curriculum are:

- The Air Mobility Doctrine Awareness Course (AMDAC) provides officers and NCOs in supervisory positions with the information necessary to foster air mobility cultural awareness within their respective organizations. The course presents both an introduction and an advanced review of current and evolving air mobility doctrine. The course also addresses other AF and Joint doctrine as they relate to air mobility.

- 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 AF earn a master's degree in air mobility through the AF 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 Weapons Instructor Course prepares graduates for combat units who possess the instructor abilities, knowledge, and flying skills to provide expertise in all aspects of C-130/HC-130 combat employment at the squadron, wing, and headquarters level.

- The Joint Training Division enhances our joint combat capability through support of Joint Readiness Training exercises composed of Army, AF, Navy, and Marine Corps forces. They use joint doctrine in a simulated low- to medium-threat environment.

- The Test and Evaluation Division support command initial operational test and evaluation, and conduct follow-on and logistics test and evaluation of new and modified aircraft systems, materials, and support equipment.

- The Contingency Air Base Operations Course prepares group commanders and key personnel to identify, plan, and execute air base operability and support actions for Rapid Global Mobility 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 Unit Type Codes (UTCs) tasked to provide deployed base support operations. Common combat skills and critical functional tasks are taught. Security Force, 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 for improved deployed command and control operations.

- 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 Course 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 Maintenance Officer Procedures Course 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 AF 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 AMWC to address the critical 1C3X0 shortage within AMC. It also provided command core standardized training for newly assigned command and control personnel.

- The AMWC also 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 AF, joint, and allied test programs. The 33 FLTS maintains a detachment at Charleston AFB SC, responsible for follow-on test and evaluation for the C-17. Also there are three operating locations at Natick Labs MA, Yuma Proving Grounds AZ, and Ft Lee VA.

- The AMWC applies AF 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.

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 (CBT) as multimedia and virtual reality technologies mature. Currently, many tactical maneuvers taught in the classroom and practiced in the simulators are not practiced in the airplane. There needs to be dedicated flying hours to increase tactical proficiency to practice tactical threat avoidance maneuvers essential to aircraft survival in a hostile environment.

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 Joint Airborne/Air Transportability Training (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. AMC will 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

Each aircraft-specific Standardized Training Plan (STP) outlines overall training objectives and aligns training to support Production Team Maintenance (PTM). The goals support a reduction in the number/variety of technicians required to perform a task and the need 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 on-the-job Training (OJT) process with designated instructors. Future plans include expanding into off-equipment AFSCs such as Aerospace Ground Equipment (AGE).

AMC conducted a needs analysis to establish training requirements. CBT is being developed for procedures/operation training (primarily graphics based). Interactive Video Disk (IVD) technology is also used for troubleshooting/simulation of tasks where required.

AMC acquired interactive courseware training systems (ICWTS) to enhance the development of interactive courseware to be used at student stations at all AMC operational locations. Students 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 is 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.

In 1992, numerous locations throughout AMC reported a reduction in the experience levels of aircraft maintenance AFSCs. In particular, we had a low number of highly experienced KC-10 maintenance personnel. Several factors contributed to this, including separation incentives (Voluntary Separation Incentive (VSI), Special Separation Benefit (SSB), and the early retirement program), units relocating to different bases, and base closures, all exacerbating the normal cycle of accessions/rotations/retraining/separations/retirements. AMC's goal is to provide training to at least 75 percent of the maintenance workforce to ensure an adequate number of maintainers are available to meet mission requirements.

Although we can provide training when needed, we have less control over the experience level of our maintenance force. We are working several initiatives in concert with DP designed to increase the percentage of qualified maintainers at en route and CONUS locations. We will also ensure units 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 AF sanctioned the Acquisition Professional Development Program (APDP), a 3-level certification program that combines experience, training, and education. Objectives are to allow for 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, OJT, and monthly training to maintain proficiency in this dynamically changing world of acquisition reform.

- Formal Training:

  - • The Defense Acquisition University, AF Institute of Technology, and the AETC 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 AF TOP DOLLAR programs enhances 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 Force (SF) 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 five ways:

- AETC Formal Training: Ensures SF 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 SF 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 SF forces to integrate with other AF specialties and Services to exercise their skills in a joint environment under realistic conditions.

- Specialized Training: Provides SF members advanced training and certification for protection of AMC resources worldwide. Provides SF members with the ability to serve as force protection advisors to aircraft commanders and crew members.

Current SF deficiencies lay in the area of training for airfield security, the ability to conduct convoy security, operations on urban terrain, and countersniper 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, SF personnel must be highly trained and capable of rapid deployment.

Toward this end, the SFs have three training initiatives:

- Increase emphasis on joint and multinational exercises that stress interoperability, joint warfighting doctrine, and rapid deployment to enhance their convoy, military operations on urban terrain, and countersniper 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.

<u>Force Protection Advisor Training</u>

Objective 6e5 *Assess Force Protection/Antiterrorism (FP/AT) and properly train all AMC personnel on FP/AT issues and ensure they are properly equipped.* SFP, FY02

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 some agents not fully trained in 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 counterintelligence and force protection operations. In conjunction with the TACC and AMOGs, agents will deploy with AMC personnel to locations where there is a threat to MAF 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. Engineers must train the way they expect to fight. They must train in wartime engineering, construction, operations, and maintenance, because they all will be required. They must train to be innovative, because shortages of supplies, equipment, and personnel will demand it. Their training must stress flexibility and multiskilling capabilities, because casualties and unforeseen situations will demand the most from them. Engineers must train in contingency engineer skills, as well as their primary and secondary AFSCs. Field maneuvers must challenge their physical and mental limits to build stamina and to minimize the trauma and friction of war should it come to pass. They must train for all conceivable missions in all kinds of weather and climate; they must train for all spectrums of conflict from military operations other than war (MOOTW) to major theater wars (MTWs) with nuclear, biological, or chemical (NBC) considerations.

In preparation for conflicts that will most likely be violent and lethal, engineers must receive, as a minimum, enough combat defense training to give them a reasonable chance of survival. Force protection awareness and training are paramount to supporting the engineer's ability to survive and operate. Putting it all together, engineers must be prepared technically, physically, and psychologically to operate in environments of extreme stress. Finally, the officers and NCOs must train to be leaders in these wartime environments. As leaders, they must be imaginative, innovative, and completely reliable. To meet the training requirements mentioned above, all existing training avenues must be used to their full potential. The training is accomplished in the following ways:

- Formal Training: Our engineers enhance their skills and peacetime capabilities by attending AETC and AF Institute of Technology schools. These two valuable resources provide initial and follow-on formal education courses which give our civil engineers the minimum essential skills to perform their peacetime and contingency missions. These courses provide an appropriate balance between the wide spectrum differences in the civil engineer peacetime and wartime responsibilities. Pre-established formal specialty courses lend to the opportunities for "just-in-time" training of engineering personnel on a vast amount of unique contingency related equipment.

- Contingency Training: The readiness of civil engineers to meet worldwide contingency programs is accomplished threefold: participation in the SILVER FLAG task certification every 2 years, AMWC's Contingency Support Operations (CSOC) and Contingency Base

Operations Course programs and an aggressive home station training program which provides hands-on training with real world assets.

- SILVER FLAG Training: SILVER FLAG is AF formal contingency task team training for civil engineers that builds upon the basics taught in home station training. Training is conducted at three possible sites: Tyndall AFB FL, supporting CONUS based forces, Ramstein AB GE and Kadena AB JA supporting the theaters and en route locations. They offer a standardized curriculum by which engineers are fully task certified and evaluated to perform their contingency mission. This training includes familiarization and use of unique equipment such as ROWPU, EALS, MAAS and Harvest Falcon, etc.

- AMWC: The AMWC has developed a curriculum to enhance home station and SILVER FLAG training. Their Contingency Support Operations Course (CSOC) and Contingency Air Base Operations Course not only stress individual responsibilities but make training realistic by conducting exercises which integrate several AF specialties (CE, SF, SV, etc.) into realistic wartime scenarios. AMC policy requires EOD personnel attend the CSOC every 2 years, enhancing skills vital to deployment operations and advance EOD procedures.

- Home Station Training: The key to engineer readiness is an active home station training program providing hands-on training and integration with other combat support units. This represents the bulk of the engineer contingency training effort. Home station training varies in scenario from bare base environment to full integration with an established wing. Home station also includes sustainment training for civilians. This training usually does not incorporate the unique WRM equipment like ROWPUs, EALS and Harvest Falcon provided by SILVER FLAG and the AMWC. Emphasis must be placed on command and control plus team work. Additionally, every effort must be made to incorporate engineer training scenarios into wing-level training plans and exercises--to tie engineer wartime capabilities directly to the operational mission.

- On-the-Job Training: The Career Field Education and Training Plan is a comprehensive education and training document that identifies life-cycle education/training requirements, training support resources and minimum core task requirements for each specialty. This document provides the avenues to standardize training plans throughout the CE community and ensure our personnel are mission ready with the mandatory core task certification.

- JCS exercises: AMC engineer 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 AF 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 operations/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 and 3C2X1 (Comm-Computer Operations and the Comm-Computer Systems Controller) AFSCs. In the near future (currently projected for FY99), the two AFSCs will merge and become 3C0X1s, Systems Technicians. The Technical Schools for both AFSCs have been changed, and have been training with greater 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. AETC now teaches a new AF Network Control Center (AFNCC) Systems Network Support course. Workgroup Administration (WGA) training is provided at the 3A0 technical school at Keesler AFB. Also, a mobile course funded by Air Staff and currently under contractor development, will be available to field units the first quarter of FY98 in the form of video tapes. However, until fully developed, it is not anticipated all 3A0XXs will receive sufficient training.

This 7 week supplemental course covers the entire network arena. There is a 4 week course in C2IPS System Administrator (SA) duties (a 1 week deployable C2IPS portion is projected to be added in the fall of 1997). AETC also has Mobile Training Teams (MTT) that train UNIX, SQL, ORACLE, and Networking.

The Technical School curriculum for the new AFSC is being written along with the new Specialty Training Standard (STS). AF Communications Agency (AFCA) is funding the training for Base Information Protect (BIP). AMC has leased limited CBT from CBT Systems in networking for the past 3 years for all AMC bases. The AF just leased the entire CBT Systems library (over 400 courses) for the entire AF. Workgroup Administration (WGA) training is provided at the 3A0 technical school at Keesler AFB. Also, a mobile course funded by Air Staff and currently under contractor development will be available to field units the first quarter of FY98 in the form of video tapes. However, until fully developed, it is not anticipated all 3A0XXs will receive sufficient training.

All this training is in place for AF C4S personnel. However, the number of personnel trained currently falls below AMC standards, 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 in the C4 AFSC arena.

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 Air 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. Seven training programs were approved in FY98-03 POM cycle to provide training at centralized locations. A flight qualification program will begin in Oct 98, enabling 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 crew members to maintain proficiencies or learn critical care skill to care for the stabilized, critically injured patient. The CCATT and AE physician course will begin in Oct 97 and will familiarize them with the AE environment and effectively integrate with the AE system and the personnel assigned to care for these patients.

The Aeromedical Evacuation Contingency Operations Training (AECOT) course will begin in Sep 98 and standardize training for the AE System total force structure. It will allow training for AEMS and AECM personnel, CCATTs, and AE physician augmentees, and ASTS personnel and allow for direct interface and assumption of duties in any AE unit or operation. A POM for 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 formal ASTS training program will begin in 1998 and provide personnel with the opportunity to work with equipment they will use and train as they would go to war. 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 also 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.

Joint Readiness Training Center (JRTC) AE and Medical Training

The main objective of AE and medical participation at the JRTC is to provide an ongoing training opportunity. This includes providing a realistic environment and reciprocal familiarization training of USAF AE and medical units with Army field medical units. The USAF Medical portion of this exercise tests the Air Transportable Clinic (ATC) ability to provide service to the deployed personnel tasked to maintain and defend a Forward Landing Strip (FLS). The AE piece of this training exercise deploys many combinations of AE Unit Type Codes (UTCs) to form a theater aeromedical evacuation system (TAES). They service all JRTC participants through the U.S. Army deployed medical health care system.

Tanker Airlift Control Center (TACC) Training

In order to ensure adequate initial, recurring, and refresher training for headquarters-level command and control personnel, we have developed an extensive 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 completion of a dedicated training facility; development of formal programs for controllers, planners, directors, and transportation managers; and systems and formal course development for GDSS, 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 additional courseware development, leading-edge technology expansion, and commitment to world-class training in all disciplines. That vision came to initial fruition in FY96; continued to grow with the dedication of the Lt Col Stuart Sauerbry training facility in Jan 97 and will 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 8 to 9 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 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 AF Institute of Technology (AFIT) at Wright-Patterson AFB also conducts services-unique training. Training focuses on modern techniques and programs for providing quality service that will 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 AFB. 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 AF standard intelligence system, all personnel in the career field require both 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. To help meet this objective, 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.

Information Operations (IO) Training

The AMC/DOKI Division continues to search for improved methods of executing AMC IO awareness, training, and education. This will follow AF programs aimed at training and educating all personnel at basic entry level and in technical training courses. Through future developments of Professional Military Education, AMC personnel will receive further IO education and awareness. Additionally, personnel directly involved with the command IO effort at all levels are being afforded the opportunity to attend the Information Warfare Application Course taught by Air University College of Aerospace Doctrine, Research and Education (CADRE) at Maxwell AFB AL. Selected personnel will be identified and afforded a further opportunity to attend intermediate and advanced DoD IO courses. The IO Branch will continue to develop the education and training programs in response to the future publication of *Air Force Doctrine Document 2-5, Air Force Doctrine for Information Operations; Air Force Instruction; and Air Force Concept of Operations for Information Warfare*. 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 IO principles and practices. These measures will ensure that AMC personnel are adequately trained to protect and exploit fixed and deployable C4I systems. The IO Branch is determining how the AMC program will relate to AF IO training requirements.

Counterproliferation/Weapons of Mass Destruction (WMD) Awareness

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

EDUCATION

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 employs to 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 AF. 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.

The AMC education programs continue to maintain extensive course enrollments despite the force drawdown. During FY96, AMC personnel enrolled in 44,226 courses. Officers earned 390 master's and 3 doctorate degrees; enlisted members earned 1,615 associate, 460 baccalaureate, 65 master's degrees and 1 doctorate degree. Our people are preparing for increasingly competitive promotional opportunities and focusing on making themselves marketable within and outside government service.

Emerging technology is making educational experiences more assessable to all of our personnel. Satellite networks, computers, teleconferencing, E-mail communications, and other technologies are making their debut in our education classrooms now. 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 AF must develop and maintain high quality civilian employees. It is AF 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 AF-sponsored training is to supplement employees' self-development activities.

The AF Personnel Center, Directorate of Civilian Personnel (DCP) 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. DCP publishes an annual civilian training guide that gives details on these opportunities. Included are programs offered through Professional Military Education (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. AMC military members face uncertainty about career opportunities. While the AF 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 all these members and provide career guidance.

CLASSIFICATION

The AF classification system establishes the occupational structure of the officer and enlisted force and identifies duties and tasks for every position needed to accomplish the AF 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 AF 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 AF needs and within the established patterns of specialization. An AF 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 are afforded through such avenues as Community College of the AF, continuation training, off-duty education, and self-training.

OFFICER PROFESSIONAL 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 when eligible, either by correspondence, (CD-ROM for Intermediate Service School), 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 when 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 before self.” It also provides for better utilization and professional development of AF 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 AF 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 AF-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.

Special Emphasis Item

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

AMC and the MAF are committed to creating a pool of highly qualified mobility experts to groom for future unified command, AF, AMC, 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 Permanent Change of Station (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 AF, 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 AF 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 (hard copy 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) AL. 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 AF vacancies by CAFSC and rank. Since implementation, the EQUAL system has provided 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	
AF Requirements	Member
Allocate/Advertise/Match	Reporting Months
Jan/Feb/Mar	Oct/Nov/Dec
Apr/May/Jun	Jan/Feb/Mar
Jul/Aug/Sep	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 that 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 AF, and the Chief of Staff. Most of this subsection directly supports one of the Air Mobility Total Force Goals: *Provide care and support for our 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 AF 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. This will help to maintain readiness so those air mobility men and women can provide responsive, strategic Global Reach for America.

YEAR OF THE ENLISTED FORCE

During Spring Rally 97, AMC unit commanders collectively chose "Year of the Enlisted Force" as AMC's 1998 theme. The AMC Commander fully endorsed that decision. Commanders, senior enlisted advisors, first sergeants and superintendents were asked to forward suggested initiatives through their points of contact to HQ AMC/CCX who will consolidate and continue to work these issues. Emerging themes include programs focused on growing enlisted leaders, enhancing and promoting enlisted pride, prioritizing funding to support specific enlisted corps initiatives, and encouraging enlisted empowerment command-wide. So far, examples of individual suggestions include tuition assistance, command orientation programs, and recognition programs as well as retirement medals, modification of feedback forms, and changes to Enlisted Performance Rating format.

Many issues will be worked at HQ AMC; others may require Air Staff involvement which will be pursued when warranted. This "Year of the Enlisted Force" will have the commands top billing in FY98. The goal is simple--each enlisted person in this command should be able to say the Year of the Enlisted Force made a positive impact on his or her life. With command-wide support, this goal will become a reality.

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 AF Symposium. AMC has recognized PAT members through AF 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 AF 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

> Special Emphasis Item
> *Increase awareness of recognition programs for air mobility personnel.*
> DPP, Continuous

The AF 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. Our people are now recognized in a more timely manner than in the past. Each unit should 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. This program recognizes those individuals who rise above their peers in job performance, off-duty extracurricular activities, off-duty education, and general AF 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. As a reminder, we should, by no means, advocate making unit submissions mandatory. Submitting someone just to have a nominee serves no purpose. We need to keep a balanced approach. Not every unit will have someone qualify for each award. Our primary concern must be to submit quality nominations on our most deserving personnel.

HQ AMC functional communities conduct competitions for annual winners prior to further competition at AF level. For example, Security Forces, 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. It greatly increased the number and quality of award submissions within the command. This guide is a handy tool to have when preparing and processing future awards.

Civilian

The AF 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 AF, 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 AF 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. This further enhances 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 AF level. The AF 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 AF-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

Special Emphasis Item
Eliminate improper or unlawful discrimination or sexual 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 AF 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 or sex. 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 AF 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 a 6 week basic Social Actions Course at the Defense Equal Opportunity Management Institute. Our approach is proactive with emphasis on viable in-place complaint systems.

TDY TEMPO

The very foundation of our warfighting 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 have seen an increase in the tide of ethnic strife and a tremendous expansion of peacekeeping 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 peacekeeping 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. 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 nearly all specialties. In the last year, KC-135 aircrews averaged 96 days of TDY, and TALCE members averaged 90 days. Aerial port personnel average 135 days, and C-141 aircrews averaged 87.6 days. KC-10 aircrews averaged 90 days of TDY in the last 12 months, and C-5 aircrews averaged 96 days. Finally, our C-17 aircrews averaged 64.8 days of TDY during the last 12 months. A key contributor to our success in keeping averages under 120 days is Guard and Reserve participation in deployments.

PAY AND BENEFITS

Special Emphasis Item

Support AF and DoD efforts to close military-private sector pay gap, maintain retirement benefits, close BAQ gap, and support commissary benefits.

DPX, FY03

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 that have become a big part of their everyday lives.

Military-Private Sector Pay Gap

When Congress previously determined we would have an all-volunteer force, 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. Then in FY97 the President proposed, and Congress approved, an above statute pay raise of 3 percent. It was the largest pay raise in 4 years, further demonstrating the commitment to close the gap. 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” that 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. This 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. General Shalikashvili, Chairman of the Joint Chiefs of Staff, expressed his concern about maintaining the integrity of the system and has 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 that will bring our family housing (FOCUS HOMES) and our dorms (FOCUS DORMS, AMC's portion of the AF dormitory master plan) 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 noncash 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 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 nonpay compensation benefit.

Health Care

> Objective 6e4
> *Accurately size AMC medical units to sustain the readiness mission, cost-effective health care, and blue-suit capability.* *SGA, FY08*

The Air Force Medical Service (AFMS) recognizes the same economic and political forces towards downsizing as all components of the DoD. A strategic objective of the AFMS is to ensure that over the out years, medical units are resourced (meeting medical treatment requirement with a mix of peacetime civilian and military personnel). This will ensure full medical readiness capabilities and maximal efficiency through business-cased resourcing decisions. Through medical readiness reengineering, detailed Mission Support Planning, and application of tools such as the Strategic Resourcing Portfolio Tool, AMC medical units will generate their planned resourcing requirements for support of all missions through FY08. This will ensure the most optimal balance of requirements for medical readiness capability and appropriate, cost-effective health care services support.

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, rightsizing initiatives, and force reduction, timely access to medical treatment for dependents and retirees will be even more difficult to provide. However, the TRICARE system that will be in full operation by 1998 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. Beginning 1 Jan 98, DoD will implement a Medicare/Military managed care demonstration allowing retires over the age of 65 to enroll in TRICARE. The project will be conducted at six sites across the country, most of which currently have TRICARE contracts in place. Successful implementation of the demonstration will provide an improved health care benefit to its Medicare participants. Just as importantly, a successful implementation will ensure that DoD is prepared to quickly implement the full Medicare/Military managed care demo across DoD should Congress pass authorizing legislation. This will allow timely access and adequate coverage at a fair price for all military beneficiaries.

Objective 6f1

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, at a fair 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 based 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 U.S. are divided into 12 geographical medical regions. The commander of the largest MTF within the region is designated the Lead Agent for TRICARE contract development, monitoring and coordination of regional resource planning. AMC will serve as a strong advocate of TRICARE. 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 (Operations & Maintenance (O&M) and Civilian Health & Medical Program of the Uniformed Services (CHAMPUS)) will be distributed by DoD Health Affairs on a per capita basis. The local detachment area manager will be responsible for providing or arranging necessary care for the identified patient population (number of covered lives) within their area.

Objective 6f2	
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 percent by 2015.

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 AF, 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 Guard and Reserve forces into contingency operations.

Mortuary Affairs

The AF 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 AF deaths, and providing semiannual training for units tasked to support port mortuary contingency operations.

Military Support & Community Support Activities

Objective 6f4 *Increase effectiveness and availability of support programs for all AMC members, as well as families, to ensure mission accomplishment.* DPP, FY01

Military support provides AF 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 6f3 *Achieve Five Star Fitness Program certification at all AMC bases.* SVP, FY99

Five Star Fitness Program

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 AF 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 developing an outreach program supporting youth, family, and recreation 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: staff, equipment, facilities, athletic programs, and outreach programs.

As each AMC base fitness center progresses through the levels, recognition will be presented in the form of the bronze, silver, and gold star to be placed on the Five Star plaque. AMC Pamphlet 215-11 details the program. 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

Peacetime/Wartime

The Chaplain Service provides opportunities for the free exercise of religion in the AF 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, Chaplain Service 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

Circumstances may vary at deployed locations, and the conditions change 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 predeployment 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 (FSC)

Family Support Centers (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 AF 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 downsizing bring with them hardships and accompanying stress for active duty members and their families alike. The FSC is involved in proactive 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.

In the Future: The results of recent needs assessments are forming the basis for futuristic planning both in the short-range and the outyears. A number of recent family-related needs assessments both AF 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. 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 AF and DoD level. Funding was historically adequate, but beginning in FY97 the command was short $1M in funding needed to maintain mandated programs and services. Continual budget and manpower reductions are significantly challenging the command's ability to provide all mandatory services and are creating greater and greater issues for service delivery. Further exacerbating the problem is the redirection of program funds at the base level. If we are to provide critical support to families and personnel, we must be willing to dedicate the necessary resources to service the needs of our population.

RETIREMENT & SEPARATION

All AF personnel are faced with a critical decision throughout their military career. Should they separate or remain on active duty to retire from the AF later? A person's separation from the AF 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 10 years Total Active Federal Commissioned Service (TAFCS) to retire as an officer.

The AF 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 (TAP)

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 (P.L.) 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 preseparation 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 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 drawdown 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.

Section Four
INFRASTRUCTURE

INTRODUCTION

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

- Fixed Facilities Infrastructure
- Organizational Infrastructure
- Information Infrastructure

An assessment of the infrastructure supporting AMC mission categories, core support processes, and a synopsis of the key shortfalls is provided on the next few pages. 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.

<u>INFRASTRUCTURE ASSESSMENTS</u>

MISSION CATEGORIES ASSESSMENT

MISSION CATEGORIES	PEOPLE				INFRASTRUCTURE				EQUIPMENT			
	T	S	M	L	T	S	M	L	T	S	M	L
Aeromedical Evacuation	See Applicable Section								See Applicable Section			
Air Refueling												
Cargo Airlift												
Combat Delivery												
Passenger Airlift												
SIOP												
Special Operations												

CORE SUPPORTING PROCESSES 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 Operations												
Logistics												
Training												
Force Protection												
Medical												
Cargo / Pax Handling												
Operations Support												
Base Operating Support												
En Route / GRL												

T: TODAY (FY98)
S: SHORT TERM (FY99-04)
M: MID TERM (FY05-13)
L: LONG TERM (FY14-22)

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

INFRASTRUCTURE-RELATED DEFICIENCIES

Deficiency:

1. Inadequate Dormitories
   - Current facilities do not provide quality, private housing for assigned personnel — page 4-12

2. Inadequate Housing
   - The majority of existing housing units do not meet current Air Force (AF) Whole House Standards — page 4-12

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 deficient in automating aircrew management, assisting unit level scheduling, and providing ease of use — page 4-35
   - C2 systems possess limited compatibility with theater and STRATCOM C2 systems — page 4-35
   - SIOP sortie generation reporting is manual and not integrated into AMC C2 systems — page 4-35

5. Inadequate AMC & CRAF Aircraft Communications
   - AMC aircraft not equipped with Global Air Traffic Management (GATM) Communication Equipment — page 4-51
   - Inadequate C2 data capability to the front and back of AMC & CRAF aircraft — page 4-52
   - Limited C2 voice capability to the front & back of AMC & CRAF aircraft — page 4-52

6. Inadequate C4I Systems Architecture
   - Current C4IS architecture inadequate to support global in-transit visibility and C2 requirements — page 4-55
   - C4I systems infrastructure does not support the target architecture, is not in place to meet command needs, and is vulnerable to Information Operations (IO) attack — page 4-55
   - AMC data systems not integrated nor meet “open system” standards — page 4-56

7. Insufficient Deployable Communications for the Theater
   - Existing initial and sustaining, deployable communications capabilities do not satisfy air mobility requirements — page 4-45
   - Insufficient common user, day 0, deployed force communications capability — page 4-46

8. Insufficient In-Transit Visibility (ITV)
- Insufficient cargo, and passenger data capture capability for unit moves, and insufficient patient and Patient Movement Items (PMI) tracking capability — page 4-48

9. Aging Facility Infrastructure
- AMC facilities deteriorating faster than they are being upgraded to meet mission requirements — page 4-11
- Investment levels inadequate to construct new or upgrade existing facilities — page 4-9
- Aging medical facilities rated “unsatisfactory” in Commander’s Facility Assessment — page 4-10
- Support, Operations, Logistics, and Command Facilities rated “degraded” in Commander’s Facility Assessment — page 4-8

10. Intelligence Systems and Requirements Management Shortfalls
- Inadequate deployable intelligence systems, capabilities, and connectivity — page 4-33
- Lack automated means of correlating operations information needs to available intelligence — page 4-32

11. Imagery Architecture and Dissemination Deficiencies
- Poor capability for timely imagery receipt and application — page 4-32
- Inadequate secret/collateral imagery availability to meet operational requirements — page 4-32
- Inadequate imagery dissemination capability — page 4-32

12. Information Operations Vulnerabilities
- HQ/AF Information Operations (IO) doctrine and CONOPS not complete, threat not clearly defined — page 4-28
- Limited vulnerability assessment for current AMC systems — page 4-28
- No IO acquisition strategy for future AMC systems — page 4-29
- Lack of sufficient worldwide C2 connectivity to withstand IO attack — page 4-38
- Lack of protection and inadequate detection against intrusion/attack of C4I systems and networks — page 4-47

13. En Route System (ERS) Infrastructure
- AMC survey team identified over $1B worth of infrastructure deficiencies; AMC concerned infrastructure may not be adequate — page 4-17
- Deficiencies having greatest impact are antiquated, deteriorating fuel systems — page 4-17
- Airfield pavements and port facilities need modernization and capital investment — page 4-17

14. Inadequate Aircrew Mission Planning
- Inadequate aircrew mission planning systems — page 4-47

15. Common User Communications Infrastructure Shortfall at AMC Fixed Bases and En Routes
    - Current common user communications infrastructure is inadequate at AMC fixed and en route locations — page 4-46

16. Paperless Office
    - Current records management system does not meet DoD standards — page 4-26
    - Current electronic forms (E-forms) system is inadequate — page 4-26

17. Inadequate LAN Infrastructure Support
    - Programmed funding is inadequate to support AMC LAN infrastructure (to include software) and work group management — page 4-26

INFRASTRUCTURE-RELATED GOALS AND OBJECTIVES

1a Provide rapid seamless air mobility.

- 1a1 Integrate information operations into all aspects of command operations ....DOK, FY05, pg 4-25
- 1a4 Provide total ITV from receipt to delivery ....DOU, FY00, pg 4-48
- 1a7 Provide global voice/data connectivity to aircraft and worldwide locations....DOU, FY02, pg 4-51
- 1a8 Migrate to AMC's target corporate architecture ....SCT, FY03, pg 4-62
- 1a9 Establish an information superhighway at base level.... SCP, FY03, pg 4-60

1c Maximize the future potential of air mobility for America.

- 1c1 Foster innovative new mobility concepts and aggressively promote and exploit new technological opportunities .... XPX, Continuous, pg 4-49

2b Upgrade working environments to improve capability.

- 2b1 Complete the Squadron Operations/Aircraft Maintenance Unit Facility program ....CEP, FY04, pg 4-12
- 2b2 Upgrade en route facilities to meet command standards........CEP, FY20, pg 4-8, 4-21, 4-22
- 2b3 Complete the FOCUS LOGISTICS program ....CEP, FY07, pg 4-13

5a Identify, investigate, and clean up contamination associated with past activities.

- 5a1 Clean up to lower level of risk or have remedial systems in place for half of our high relative risk sites by FY02, all of our high relative risk sites by FY07, all of our medium relative risk sites by FY10, and all of our low relative risk sites by FY14 .... CEV, FY14, pg 4-14

5b Enhance and maintain a sense of environmental responsibility.

- 5b1 Upgrade all underground storage tanks to Environmental Protection Agency (EPA) standards ....CEV, CY98, pg 4-14

5c Minimize adverse environmental impacts from all air mobility processes.

- 5c1 Reduce solid waste 50 percent from CY92 baseline ....CEV, CY97, pg 4-15
- 5c2 Reduce hazardous waste 50 percent from CY92 baseline ....CEV, CY99, pg 4-15
- 5c3 Reduce pesticide use by 50 percent from FY93 baseline.... CEV, FY00, pg 4-15

6f Provide care and support for our people.

6f5 Complete the quality of life facility upgrades....................................CEP, FY04, pg 4-11
6f6 Complete the FOCUS DORMS program .... CEH, FY10, pg 4-12
6f7 Complete the FOCUS HOMES program .... CEH, FY35, pg 4-12

Special Emphasis Items (SEI)

SEI Prevent future enforcement actions.. CEV, Continuous, pg 4-14

FIXED FACILITIES 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 2b2
Upgrade en route facilities to meet command standards. CEP, FY20

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 ERS. 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 ERS 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 budget reductions, AMC will critically review and establish its mobility force basing requirements, clearly articulate them, then fight hard for a basing plan that meets them. However, all overseas bases fall under the command of another MAJCOM, therefore, we will continue to work with those MAJCOM's to ensure our global mobility needs are understood. 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 AF 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 AF 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 AF 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 AF 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 three time (FY95, FY96, and FY97). 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. Our goal is to make the AMC facilities as safe and functional as possible with the funding available.

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 views NAF major investment programs as an overall indicator of the health of our facilities. We compete for funding for Morale, Welfare, Recreation, and Services (MWRS) facility programs at the AF 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 6f5
Complete the quality of life facility upgrades.
CEP, FY04

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, we are upgrading these facilities to meet command standards. The total program requires $46.0M ($19.2M in MILCON) to complete. The program execution for FY95 through mid FY97 is $13.4M ($2.2M MILCON).

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 6f6 *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-1s through E-4s by FY02. This requirement is based on the single-occupancy policy. The FOCUS DORMS program outlines the renovation and new construction required at each base to provide rooms of sufficient quality and quantity to meet new AF and DoD requirements. The FOCUS DORMS program is still being revised and validated by HQ AMC and 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, the program will construct enough 1+1 standard dorms to take care of the projected FY01 dorm deficit.

Objective 6f7 *Complete the FOCUS HOMES program.* CEH, FY35

AMC's family housing 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 FY35 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 FY35.

Objective 2b1 *Complete the Squadron Operations/Aircraft Maintenance Unit Facility program.* CEP, FY04

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 consisting of a multi-year MILCON facility improvement program . The current estimated program has 37 buildings with an estimated cost at $269 million. AMC funded $10.5 million of operations and maintenance and Transportation Working Capital Fund (TWCF) 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 FY04.

Objective 2b3

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 TWCF 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 5a1

Clean up to lower level of risk or have remedial systems in place for half of our high relative risk sites by FY02, all of our high relative risk sites by FY07, all of our medium relative risk sites by FY10, and all of our low relative 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 5b1

Upgrade all underground storage tanks to Environmental Protection Agency (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. By Dec 1997, 77 percent of our tanks will meet EPA standards. We are on track to complete the upgrades in time. This will be accomplished through a combined O&M/MILCON funding program.

Special Emphasis Item

Prevent future enforcement actions. CEV, Continuous

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 5c1	
Reduce solid waste 50 percent from CY92 baseline.	CEV, CY97
Objective 5c2	
Reduce hazardous waste 50 percent from CY92 baseline.	CEV, CY99
Objective 5c3	
Reduce pesticide use by 50 percent from FY93 baseline.	CEV, FY00

Pollution Prevention Program

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 four major components: 1) increased recycling, product substitution, and training, 2) reduced hazardous material use and waste generation from installations, 3) reduced life-cycle use of pollutants as an integral part of weapon system acquisition, and 4) reduce pesticide usage by 50 percent. Reductions in 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. By the end of FY96, we reduced solid waste generation by 32 percent, and hazardous waste and waste pesticide generation both by 35 percent from their baselines.

ORGANIZATIONAL INFRASTRUCTURE

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 earmarked but not scheduled for demolition. An architect is currently designing a new ATACC facility that will be part of HQ AFRC's facility at Robins AFB. Construction of the new ATACC will begin in FY00.

Objective 1a7 *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 worldwide air mobility operations. Thirteen key overseas locations, manned with a squadron-size presence of AMC personnel, serve as peacetime waystations for aircraft and aircrews as they transit the globe in accomplishing the air mobility mission (see Figure 4-1). AMC sends the majority of its peacetime air mobility missions through one of these key locations, or one of 17 smaller military or contract civilian detachments. These 30 locations form the framework AMC relies upon whenever it must expand the overseas ERS to meet other than routine peacetime operations.

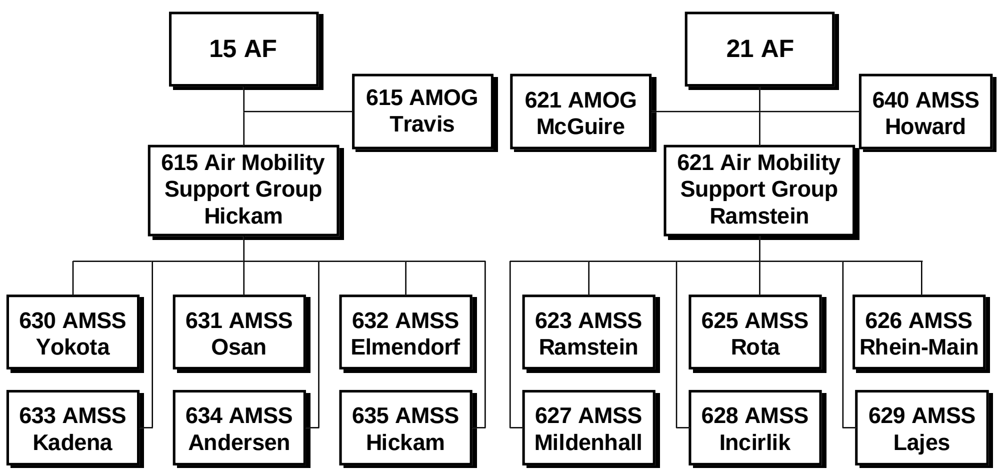

Figure 4-1. Overseas ERS - Key Players

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

FY97--Year of the En Route System

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 a major theater war (MTW) in both the Pacific and European theaters. To date, the team has identified nearly $1.2B 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.

To highlight the importance of the ERS and the need for sustained infrastructure improvements, the Commander of AMC declared "FY97--Year of the En Route System." At his direction, the command focused throughout 1997 on the ERS, worked hard to obtain the funding to get it repaired, and sought ways to improve the processes we employ in support of the air mobility mission.

As AMC transitions from "Year of the En Route" to the "Year of the Enlisted," we need to look back and see what we have accomplished and continue with our efforts to heal and strengthen the ERS. Undercapitalizaion, particularly in the form of fuel systems, is the largest limitation to our ability to use the ERS as a conduit for projecting the nation's military power. As we assessed the state of the ERS, in particular our overseas air bases, we also realized our roles during the Year of the En Route would be educator and advocate.

AMC maintains an overseas presence but does not own the overseas bases. We are a tenant. Furthermore, fuel system repairs are not a base, theater, service, or component commander's responsibility, but a Defense Logistics Agency (DLA) responsibility whose purse strings are controlled by the Office of the Secretary of Defense (OSD) and Congress. Recognizing our role in this process led us to focus our efforts where they had the greatest impact.

A crowning achievement of Year of the ERS was the working relationships developed outside AMC and TRANSCOM. For the past year, USAFE and AMC worked together to identify contingency airlift en route locations and develop a "Blue Suit" strategy for getting the dollars needed to retain a robust European ERS infrastructure. In the Pacific, the depth of undercapitalization has been greater. PACOM and TRANSCOM, with great assistance from their components, PACAF and AMC, have been studying the problem of Pacific infrastructure. They are in the process of devising workarounds and are developing a coordinated strategy to improve fuel systems infrastructure.

Through the command's strong and convincing advocacy, both DLA and OSD recognize overseas infrastructure capitalization efforts for fuel systems have been woefully inadequate. In fact, both are now advocating significant plus ups to DLA's fuel systems construction program. While a lot of effort is focused on the decision makers, we have also educated our team on the importance of the ERS through public affairs news releases, the Airlift Tanker Association, PHOENIX RALLY, the Stakeholder's Report, the Mobility Forum, and the AMC Worldwide

Web Mobility Page. Finally, establishing a single office (HQ AMC/XPXS) to coordinate the efforts of the AMC staff as they tackled ERS issues paid big dividends. AMC's external and internal customers now have a single point of contact where they can bring their issues. In turn, HQ AMC/XPXSE gathers the functional experts who, in turn, research the issue and make a recommendation to the AMC leadership.

As the ERS advocate, XPXS works hand in hand with USTRANSCOM to remedy current infrastructure undercapitalization. At DLA's FY98 Installation Planning and Review Board (IPRB), officers from TRANSCOM's Airfield Infrastructure Division presented an assessment of overseas infrastructure. Their presentation left a lasting impact; DLA has invited TRANSCOM to return each year and provide an update on the ERS.

In terms of actual dollars spent in the theaters of greatest concern to our nation's leaders, we've made excellent progress. In Europe, there are over $612 million in identified infrastructure deficiencies. In FY97, we were able to obtain nearly $118 million in funding. Some $86 million came from the agreement reached with the Frankfurt Airport Group when we moved the C-130s from Rhein Main AB to Ramstein AB. DLA also funded another $18 million in fuels projects, primarily to replace Moron's 40-year-old Type 2 hydrant fueling system. In Europe, AMC spent $7.2 million of Transportation Working Capital Funds (TWCF) and over $4 million in Mobility Enhancement Funds (MEF) in FY97 to improve our capability and increase Europe's ability to support the Defense Transportation System (DTS).

Looking west, AMC spent $6.5 million of MEF and $9.1 of TWCF on improving Pacific ERS infrastructure in FY97. DLA funded an $18.6 million project at Elmendorf AFB to improve its hydrant fueling system.

As we learn more about the health of the ERS and what projects are needed to support a future air mobility fleet, the list of new projects keeps growing and the competition for scarce defense dollars gets keener. As we transition into a new fiscal year, we must continue our advocacy. The mood in Congress reflects a nationwide consensus; our allies should be paying more to improve their infrastructure. The reality is our wealthy allies do contribute; the poorer nations simply can not afford to build infrastructure of little immediate value to their own nation's survival.

Education is another success story. As we look in detail at each base, we have a better understanding of the depth of the problem and how to fix it. The AMC Analysis Flight has been key to determining where best to focus infrastructure dollars. In the arena of Base Support Plans (BSP), AMC has finally broken the logjam and is accomplishing BSPs throughout the Pacific and Europe. Significant amounts of manpower and material to survey new locations has been dedicated in order to determine the cost feasibility of using these facilities as en route contingency locations. In Europe, USAFE and AMC teams surveyed 10 airfields and concluded Naval Station Rota and Fairford are places to focus our infrastructure capitalization efforts.

Infrastructure is but one component of the ERS; the other two are manpower and equipment. In these areas, we're on the path to success. We have approval to put rated officers back in the Command Posts which provides a valuable learning environment and operational focus. Pilots and navigators can develop a bigger picture and it improves our command and control services to our own internal customers, the aircrew.

Air Mobility Support Group (AMSG)

The AMSG formulates plans, establishes procedures and directs the administration of subordinate units in support of 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. In addition to the previous listed tasks, the 623 AMSS and 633 AMSS manage an Air Mobility Control Flight (AMCF), which provides 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 the 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 specialists, and air transportation specialists.

Intelligence Support

AMC maintains two en route intelligence detachments, Ramstein AB and Yokota AB, to provide transient aircrews with timely and tailored intelligence. All en route intelligence detachments have global connectivity through the Secret Internet Protocol Router (SIPRNET) and Quick Dial-Up Communications (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 85 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. A significant portion of these spares are part of AMC's strategic wartime spares requirement. Included in the FSS are Forward Supply Locations (FSLs) and Forward Supply Points (FSP). These AMSS units receive, store and issue critical aircraft parts in theater. Primary Supply Points (PSP) in the CONUS perform parts distribution to FSLs and the repair of remaining "3-level" reparable items. Immediate future focus is on improving responsiveness by reevaluating the actual source of repair for each item and sending the part directly to the correct repair location (PSP or depot). In addition, significant steps are being taken to incorporate FSS parts requirements in overall wholesale logistics parts requirement computations and to incorporate FSS distribution policy into the Global Combat Supply System (GCSS), the evolving AF supply system of the future. These changes 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 refining actual parts requirements at both CONUS and en route locations.

En Route Facilities

Objective 2b2	
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 hosts 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. The current requirement totals approximately $1.2B and will take 22 years to accomplish. AMC's share of this requirement is $127M. As a direct result, AMC has established a 9-year plan to improve the living and working conditions of people assigned to our en route locations.

Intertheater Aeromedical Evacuation (AE) Interface

Intertheater support structures will be specifically tailored to each situation. In order to improve Intertheater AE communications, efforts are underway with AMC/SC to determine the requirements to meet the 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.

AMC, in coordination with 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, an expeditionary en route support system is needed. Global Reach Laydown (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 AF 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, Materiel 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, as well as other AF MAJCOMs, 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 U.S. 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 2b2	
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 FY99-03 Defense Planning Guidance (DPG). 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 Guard or Reserve 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, aircraft maintenance, 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, provide command and control, communications, aerial port services, aircraft maintenance, logistics; and with augmentation - 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 AF wide area network system.

Medical Global Reach Laydown Teams (MGRLT)

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 has been developed. AMC is reviewing access to ATCs and associated Unit Type Codes (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 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.

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, ID card sized medical records containing essential elements of 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

The processes and systems which bring information to AMC are gaining prominent importance. Given that AMC commanders use information to direct their forces, it becomes apparent that these commanders cannot exercise superior military capability without superior information. The means to obtain information superiority will be through new and emerging information technologies. Information technologies will have lasting effects on AMC. They will affect the way we search for, communicate, display, and use information and our vision of the future must be adjusted accordingly. The importance of information superiority is highlighted in recent military doctrine such as the Department of Defense's Joint Vision 2010 (JV2010) and the Air Forces' Global Engagement (previously discussed in the FUTURE Section).

Vision resulting from information superiority initiatives form the basis for AMC's information infrastructure. This section begins with Information Resource Management and Information Operations, where the business rules and concerns for managing information are covered. Following those sections, information infrastructure is described in Ground and Airborne Information Requirements, and the resultant C4I Systems Architecture.

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. To take advantage of the "power of information," AMC has developed an architecture that permits every user to have secure access to relevant and accurate information in a timely and useful manner.

The DoD records management process has been reengineered under the Records Management Business Process Reengineering effort of 1993-1994 to effectively and efficiently manage information as records. This effort coincided with changes in Federal law requiring increased emphasis on the management of official records. The DoD Records Management Task Force developed a strategic plan which set the goal of having electronic records management systems (ERMS) in place by the year 2003. The Assistant Secretary of Defense for Command, Control, Communications and Intelligence issued a draft DoD directive establishing responsibilities to further this initiative. Under this guidance, Defense Information Systems Agency (DISA) will test commercial-off-the-shelf records management software and certify that it meets DoD criteria. DoD organizations will then procure a certified records management application to enable them to manage records electronically. To posture AMC for command-wide implementation of ERMS, a prototype is needed to acquire, evaluate, test, and select a preferred ERMS; and draft policies, plans, and procedures. Additionally, funding for acquisition and implementation of the ERMS solution for AMC headquarters, bases, tenants, and en routes will be sought through the Program Objective Memorandum process.

An upgrade to electronic forms software (PerForm Pro) is needed throughout AMC. Perform Pro is no longer supported by the vendor and has been replaced by FormFlow. FormFlow provides the ability to link electronic forms to data bases for automatic fill of information on the form. It provides rules based, electronic routing capability to electronically send information to coordinating and approving personnel. It will allow AMC to move from a paper (fill and print) forms environment toward a paperless forms environment. Productivity increases may be achieved through analysis and improvement of business processes using advanced forms capabilities.

AMC relies on the operation of computers and networks to process and share information in support of its mobility mission. Requirements include the end-users' desk top computers and software, the hardware and software needed to integrate these systems into an enterprise network, and work group management and network administration training to ensure end-users' operational needs are met. Currently network and end-user computing requirements are being addressed through unfunded requirements. It is becoming increasingly difficult to fund critical unfunded requirements with end-of-year funds. The Command continues to take work group management out of hide and this essential support is often an additional duty being performed by individuals with limited training. This approach often does not support current requirements nor requirements for growth and modernization.

INFORMATION OPERATIONS (IO)

IO Concepts and Definitions

Objective 1a1
Integrate information operations into all aspects of command operations. DOK, FY05

Information superiority, the most recent addition as an AF core competency, is the ability to collect, exploit, and defend information while denying an adversary the ability to do the same. IO are those actions taken to affect adversary information and information systems while defending one's own information and information systems. Also, IO are conducted throughout all phases of an operation, across the full spectrum of military operations, and at every level of warfare. It requires the integration of activities composed of gaining information (surveillance, reconnaissance, and traditional intelligence collection), information exploitation (intelligence analysis and production; weather; navigation and positioning; and command, control, communications, and computers), and offensive and defensive capabilities. It is a rapidly evolving concept incorporating many disciplines, fueled by technology, and with information superiority as its ultimate goal. IO 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 IO components will help us achieve the three objectives of IO, 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 IO against the enemy; and **enhance** overall force effectiveness by fully developing military information functions.

Information Warfare (IW), which has offensive and defensive components, is IO conducted primarily during a time of crisis or conflict to achieve Information Superiority and other military objectives. IO are to IW what air operations are to air warfare. The subset to control the information realm, known collectively as Counter Information, is 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 IO 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.

IO 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 IO is *any* information function, whether it is C2 systems and networks, an oil refinery's control system, or a telephone switching station. IW 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. These issues are addressed more fully in AMCI 10-704, the command's IO instruction.

Threat Description and Recent IO Initiatives

The Global Mobility mission requires AMC aircrews to fly into harm's way on a regular basis. As the IO threat develops, our aircrews and other deployed personnel will become increasingly vulnerable. Similarly, the global nature of the IO threat will put even CONUS-based AMC assets and operations at risk. Adversaries intent on employing offensive IO tools 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 attacks including hackers, malicious software, espionage, terrorism, and direct IW 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 air base 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/CC directed the creation of an IO Branch within DO as the focal point for all AMC IO policy, procedures, regulations, and guidance. The IO Branch (DOKI) was formed on 1 Oct 96 as the core unit for all IO issues. In conjunction, an IO Working Group (IOWG) was created from members of the IO matrix consisting of intelligence, information protection, security forces, AFOSI, and IG representatives. This matrix organization allows IO specialists from across the staff directorates to work together and better coordinate to bring IO into the mainstream of AMC operations. This synergism will continue to pay dividends as the command's IO program develops. AMC Instruction 10-704 was developed, detailing AMC IW roles and responsibilities as well as awareness, training, and education requirements. From this instruction, a baseline list was developed for the command Inspector General to use during ORIs. The IO Branch will refine and update this instruction as further guidance is provided in the form of Joint IO Doctrine, AF IO Doctrine, AF Instruction, and AF IW CONOPS.

Continuing IW Deficiencies

Despite these successes, AMC still has a number of IO-related deficiencies. First, the HQ AF IO doctrine and master plan are not complete, nor has the AF produced a comprehensive IO threat assessment. As a result, AMC and the other MAJCOMs have no blueprints to follow as they develop their IO programs. The lack of a clearly defined IO threat makes it difficult for AMC to develop DCI policies and procedures for air mobility operations or incorporate IO 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 IO program, leading to coordination problems. In addition, basic network and systems vulnerability assessments are far from complete, but we are making some headway in this area. The Air Force Information Warfare

Center (AFIWC) has conducted initial vulnerability assessments, confirming AMC currently has insufficient protection and detection 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 IO capabilities must be addressed as soon as possible. Further assessments performed on a regular basis are essential if AMC is to develop effective IO protective measures. Additionally, IW awareness, training, and education programs are not yet up to speed, despite attention to this issue in the IOWG. Nor is security measures training keeping pace with technological changes and the developing IO threat. Robust security training programs must be a key element of any IO awareness program. Finally, consideration of IO concepts in war and exercise planning is not fully institutionalized within the command. This, combined with the lack of an IO acquisition strategy for future networks and systems, demonstrates a clear need for integration of IO concepts into all aspects of AMC operations.

Current Status of AMC IW Initiatives

The IO Working Group continues working initiatives. The first of these tasks is the continued development of a command-wide IW awareness, training, and education program. The program will be an extension of the Air Force program providing readings and current videos. Also, select AMC personnel directly involved with the IO effort are afforded the opportunity to attend the Information Warfare Applications Course taught by Air University CADRE at Maxwell AFB AL. In addition, the IO Branch is coordinating with AF and the Air University staff to ensure the appropriate personnel receive intermediate and advanced IW training. AMC is also fielding COTS protection and detection software that will greatly enhance our ability to protect our systems. Additionally, we are developing a security architecture strategy that will help guide us in the acquisition of future systems. Equally important is the need for an AMC-specific IO threat assessment, which gives command decision makers the insight they need to tailor our IO program to the command's requirements. The IO Branch also has coordinated 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. Another vital aspect to the IO program is coordination with Air Force Materiel Command (AFMC) to incorporate the AFMC-developed Counter Information acquisition policy for new systems into the AMC acquisition process. This will make it easier to ensure IO protective measures are built into all C4I systems and networks. Finally, the IO Branch is ensuring all AMC directorates support initiatives to develop a global C4I architecture with an inherent capability to withstand IO attack. This last step is critical if the command is to assure Information Superiority for AMC operations into the twenty-first century.

GROUND INFORMATION REQUIREMENTS

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.

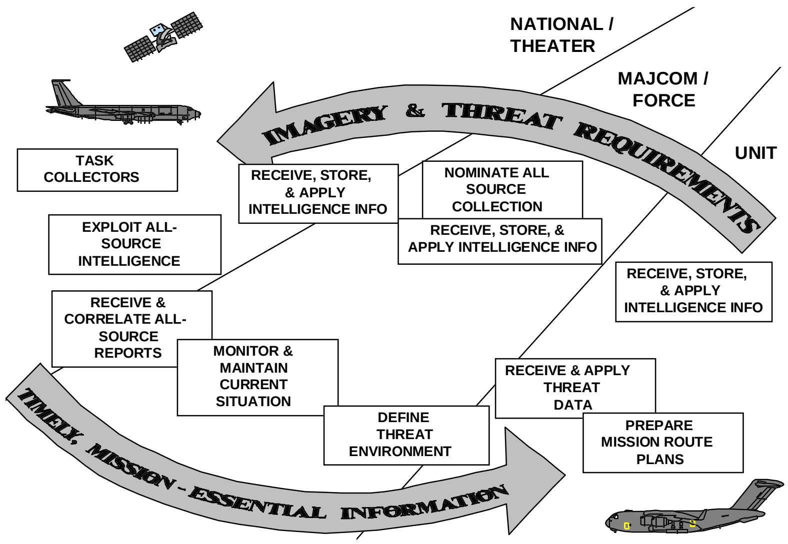

Figure 4-2. Intelligence Functions

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.

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 theater 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 intelligence information requirements are classified to protect the collection process and sources. Making this information available to our units remains our number one priority.

HQ AMC achieved global connectivity for our units and deployed personnel via the Secret Internet Protocol Network (SIPRNET), Quick Dial-Up Communication (QDUC) using commercial phone lines, and a newly developed deployable intelligence support kit (DISK) which uses satellite communications. These initiatives 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 Intelligence Infrastructure and Initiatives

Fixed Location Initiatives

HQ AMC continues to upgrade intelligence systems and establish global connectivity in support of air mobility operations. Key current initiatives include continuing acquisition of the Combat Intelligence System (CIS) for the headquarters, units, and en route intelligence locations. CIS is the Air Force migration system for intelligence and automates the daily functions performed by intelligence personnel at both the headquarters and unit levels. AMC has fielded the Combat Intelligence System (CIS) to all active-duty and most Guard and Reserve 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 is designed to network with operational squadron systems, such as AFMSS, C2IPS, CTAPS, and the next-generation RTIC system, to provide a seamless flow of intelligence to operations. In addition, CIS will be fully interoperable with the Joint Deployable Intelligence Support System (JDISS) enabling full operational capability in a joint environment.

AMC accesses national level intelligence through the Intelligence Data Handling System (IDHS, a SCI-capable system). Supporting headquarters intelligence requirements, this system 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. A 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 has integrated a secret-level Defense Commercial Telecommunication Network switching capability into its JWICS facility, delivering greater VTC flexibility through our scarce resources. 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 Dissemination Element (DE), and teaming with the National Imagery and Mapping Agency (NIMA) and 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.

Despite the enormous potential CIS demonstrated during recent operations throughout the command, a number of shortfalls remain. While most active-duty units have high-speed connectivity through SIPRNET, our Guard and Reserve mostly depend on the slower QDUC. We'll continue pursuit of SIPRNET or faster ISDN connections for the Guard and Reserve. Units will retain QDUC even after SIPRNET or ISDN installation to maintain an alternate means of global connectivity.

Two other CIS shortfalls exist affecting intelligence support to air mobility operations; maintenance and training. AMC is determined to provide unit-level CIS maintenance and to ensure all intelligence personnel receive formal and recurring (internal) CIS training. First, 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 has included a dedicated CIS maintainer in certain Unit Type Code (UTC) packages. Until contract support 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. The second CIS shortfall is training. Many AMC/IN personnel have not attended formal CIS training, and units are still 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.

Before AMC can overcome these CIS shortfalls, the Mobility Air Intelligence System (MAIS) initiative must be fully funded. 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 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.

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. AMC accesses imagery through a USTRANSCOM/AMC joint use IPA server. USTRANSCOM acquires national level imagery through their DE. These two means of receiving and disseminating imagery are part of the solution to the command's imagery shortfalls. In addition, AMC has teamed with USTRANSCOM/J-2 and AIA to develop procedures for transferring products to imagery servers for rapid dissemination to units, en route locations, and FOLs worldwide. We continue working to gain unrestricted access to theater imagery servers. This global connectivity will ensure aircrews and staff receive imagery in a timely manner. It also ensures rapid access to specialized products such as color multispectral imagery (MSI) which AMC uses to support air mobility operations. The key issue at this point is who will populate the IPA server with imagery for AMC missions. As noted above, some of this support comes from USTRANSCOM personnel loading imagery from DE onto the IPA server. In addition, AMC has agreements with NIMA and AIA that 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.

Deployed Location Initiatives

Closely related to our fixed location initiatives are ongoing efforts to acquire a deployable (laptop) CIS. This deployable system will be part of a "fly-away" intelligence systems package providing connectivity and good data transfer capabilities at austere and bare-base locations. 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.

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 and DISK has enhanced our CIS capabilities, making it possible for unit-level personnel, anywhere in the world, to dial directly into the AMC collateral Local Area Network (LAN) and from there obtain global connectivity.

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. 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 rely on DISK and QDUC to dial-into global networks. One or two intelligence specialists can deploy with their equipment, establish day-0 global connectivity, and rapidly transfer large quantities of data for use by transient aircrews and staffs at higher echelons. 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.

Airborne Initiatives

Another area of concern is the flow of intelligence into the command's current RTIC platform, the Multi Source Tactical System (MSTS). MSTS is difficult to set up, requires excessive space on the aircraft, and cannot receive feeds from CIS. AMC is replacing MSTS with our Airborne Broadcast Intelligence (ABI) initiative. This system is described in the EQUIPMENT Section of this document. AMC will work to ensure the new system allows aircrews to receive intelligence on demand during the mission planning process and in the cockpit.

Future Perspective

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.

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-0, robust connectivity to AMC aircrews and staffs around the world. Recent operations in Africa continue to provide 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/XOI 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

Information superiority initiatives have created a Command and Control (C2) vision and implementation plan to support Joint Vision 2010 and Global Engagement. The AF C2 vision is to provide **global awareness** to the Joint Force that enables commanders to **dynamically assess, plan, and execute** global missions to achieve strategic, operational, and tactical objectives for the Joint Force Commander (JFC) with C2 forces which are **tailorable**, and **horizontally and vertically integrated**. AMC will operate within this framework, providing the unique capabilities of rapid global mobility to joint forces.

Global awareness will provide an integrated picture of friendly, enemy, and unknown aircraft status for all joint forces. Dynamic assessment, planning, and execution (dAPE) will provide an AF C2 process for orchestrating Air & Space elements using "effects based planning," predictive modeling, and real-time adaptation. Its overarching goal is to permit planning and execution to cycle within an opponent's decision loop to force them to react to our plans. Tailorability allows joint forces to operate in changing environments with changing requirements and users. This feature will capitalize on distributed and reachback networks, delegation of authority to the appropriate levels, and responsive, rapidly adaptable and deployable C2 components. Horizontal and vertical integration enables unity of effort through seamless organizational and functional connectivity, across and within C2 levels of command, functional domains, core competencies, and nodes.

The following AMC ground C2 information goals are categorized in accordance with the C2 vision. The accomplishment of each goal is annotated for the short (FY98-02), mid (FY03-11), and long-term (FY12-21).

Global Awareness

- Attain total asset visibility of mission support equipment (short-term)
- Real Time Vehicle Information System (ReVIS) and Mobile Real Time Information System (MOReVIS)

Dynamic Assessment, Planning & Execution (dAPE)

- In conjunction with the combat AF, migrate mobility information systems to achieve interoperability with the Theater Battle Management Architecture (short-term)
- Develop capability to process classified/unclassified information on the same system (mid-term)
- Provide C2 system support capabilities within the command (short-term)
- Upgrade and standardize C4I equipment in AMC command posts and en route locations (short-term)
- Maintain pace with proven commercial technology (long-term)
- Upgrade Advanced Computer Flight Plan (ACFP) to support AMC dispatch

In conjunction with the Defense Advanced Projects Agency (DARPA):
`

` Develop a prototype Virtual Airline Integration and Evaluation Tool (VALIENT)
- for better allocating requirements and tasking commercial airlines at all operating tempos. Prototype is short term; implementation is mid-term
- Develop an AMC-wide, integrated, real time, work flow and scheduling environment using emerging technology. Short term projects will concentrate on aircraft and aircrew scheduling support for the Barrelmaster function in the TACC. Mid-term projects will extend the environment to the wing level
- For mid-term implementation, identify and develop corporate information environment functionality that leverages the Advanced Logistics Program (ALP) and the Joint Office of Logistics Technology (JOLT)

<u>Tailorability</u>

- Exploit Commercial Off-the-Shelf Technical Order Technologies (short-term)
- Obtain deployable C4I equipment (short-term)
- Exploit the concepts of deployability within our C2 systems (mid-term)

<u>Horizontal/Vertical Integration</u>

- Implement worldwide logistics communication (short-term)
- Improve AMC base communications infrastructure (short-term)
- Receive seamless feeds from intelligence systems (short-term)
- Establish interoperability in AMC, AF, & Joint/Combined C2 systems (mid-term)
- Maintain equipment and system survivability (mid-term)
- Standardize C2 equipment within the command (mid-term)

Global Awareness

Attain Total Asset Visibility of Mission Support Equipment (short-term)

Objective 1a4
Provide total ITV 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.

Real Time Vehicle Information System (ReVIS) and Mobile Real Time Information System (MOReVIS)

Overall global visibility and management of MHE will be possible under a fully funded and functional AF Real-time Vehicle Information System (ReVIS). This system will allow up-to-the minute real-time status updates to MAJCOM functional managers. Status will be available at all CONUS and OCONUS sites, to assist in day-to-day vehicle management and deployment decisions. This system will allow transfer of assets electronically from losing to gaining bases, and virtually eliminate the need for paper to pass between various agencies on vehicle shipments. An off shoot of ReVIS for contingencies will be Mobility Real-time Vehicle Information System (MOReVIS). This system will allow for deployment of ReVIS reporting to austere operating environments utilizing laptops with SATCOM technology.

Dynamic Assessment, Planning, and Execution (dAPE)

In Conjunction with the Combat Air Force, Migrate Mobility Information Systems to Achieve Interoperability with the Theater Battle Management Architecture (short-term)

AMC's decision to move C2 systems, like C2IPS, to a distributed architecture, will greatly ease their interoperability with the Theater Battle Management Core System (TBMCS). C2IPS and TBMCS interoperability 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. Today, this interoperability is provided by an Early Operational Interface (EOI) which processes airlift data from C2IPS for the Contingency Theater Automated Planning System (CTAPS). The EOI supports the incorporation of airlift missions into the theater Air Tasking Order (ATO) and execution system. In FY99, C2IPS will pass scheduling and execution messages to TBMCS 1.0. TBMCS 1.0 will evaluate mission schedules, deconflict airspace, assign theater data, notify C2IPS of mission rejects, and open gates (time windows for approach & landing or take-off & departure) for additional missions. Additionally, TBMCS will process execution messages for incorporation into the theater Force Level Execution System (FLEX).

In FY00, C2IPS will interoperate 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.

AMC will upgrade Advanced Computer Flight Plan (ACFP) to allow aircrews to file DD Form 175/1801 flight plans electronically and append NOTAMs and weather. This will increase the number of available takeoff times in the European theater. An interactive map overlay with "click and drag" routing will decrease the time it takes to schedule flights requiring diplomatic clearances. Also included is automatic flight plan computing based on departure with diplomatic clearance, passenger, and payload information. These capabilities will increase the ability to meet aircraft departure times and save fuel costs.

In FY02, theater airlift planning and execution functionality will be compliant with the Defense Information Infrastructure Core Operating Environment (DII COE). Theater air mobility missions will be tasked, scheduled, and tracked on DII COE compliant workstations using DII COE compliant applications. 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/Unclassified Information on the same System (mid-term)

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. Commercial off-the-shelf (COTS) encryption software may solve this problem and limit an adversary’s ability to collect and analyze unclassified information.

The lack of capability to link C2 systems requiring different and 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.

Provide C2 System Support Capabilities Within The Command (short-term)

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 6 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.

Upgrade and Standardize C4I Equipment in AMC Command Posts (CPs) and Air Mobility Control Centers (AMCCs) (short-term)

The C4I equipment in AMC’s CPs and AMCCs is 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 subprograms. 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 installed with Scott AFB to be installed before the end of FY97. Three additional bases (Grand Forks, McConnell, MacDill) are projected to received the AMACS in FY98.

- 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 five sites, with four additional sites scheduled for operation by 30 Sep 98.

- Command Post Console Replacement (Overseas): Phase I of this program replaces logistically unsupportable consoles at Andersen, Kadena, Osan, Incirlik, Lajes, Mildenhall, Rhein Main, and Rota with proprietary phones. Installations have been completed at Andersen, Elmendorf, Kadena, Osan, Lajes, and Rota. 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 subprogram 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 FY97.

- 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 (Incirlik is renovating AMCC). Phase II of this program will replace all analog recorders with state-of-the-art digital recorders.

- VHF Radios AN/TRC-181: The AN/TRC-181 provides AMC command posts and AMCCs access to the DoD HF high power global communications network. There are 19 sites operational with 10 remaining to be completed by early FY 98.

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- AMACS II: Provides replacement and standardization of the console telephone systems used in the AMCCs. The are 7 En Route locations scheduled for site surveys in FY97. With installations set to begin in FY 98. Six En Route locations remain to be funded.

Maintain Pace With Proven Commercial Technology (long-term)

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.

Develop A Prototype VALIENT For Better Allocating Requirements And Tasking Commercial Airlines At All Operating Tempos. Prototype Is Short Term; Implementation Is Mid-Term.

Managing the Civil Reserve Air Fleet (CRAF) entails assigning dedicated commercial assets and crews to specific airlift requirements. This “mission by mission” use of commercial assets is inefficient for the DoD and costly to the airlines. Using commercial airlines’ command and control systems and expertise are as important as their pilots and planes. Preliminary studies comparing mission-by-mission operations with a virtual airline CRAF operation, show significant potential mission-mile savings.

The nature of war requires that DoD retain the ability to assert control over a logistics operation. A virtual airline operation can increase the commander’s effectiveness and allow him to exert greater control over the operation because missions become more reliable, because virtual airline operations have greater ability to adapt to changing demands, and because the commander has more information, a more complete situation assessment is possible.

Developing the VALIENT prototype is a cooperative effort between AMC and the DARPA/USTRANSCOM/DLA Advanced Logistics Program (ALP). It is a collaborative approach to tasking the commercial airlines to support AMC operations. The objective is to build and test a decision support prototype that facilitates the efficient use of commercial aircraft for day-to-day and surge airlift operations. VALIENT will leverage the airlines' own command and control systems through a collaborative framework to satisfy the DoD's requirements for commercial airlift. The prototype will interface with existing AMC command and control and scheduling systems as well as those system counterparts within the commercial airline community. The prototype will be designed to work within the existing and planned CRAF architectures.

Develop An AMC-Wide, Integrated, Real Time, Work Flow And Scheduling Environment Using Emerging Technology. Short Term Projects Will Concentrate On Aircraft And Aircrew Scheduling Support For The Barrelmaster Function In The TACC. Mid-Term Projects Will Extend The Environment To The Wing Level.

AMC is integrating DARPA-and Rome Laboratory-developed scheduling technologies into the Consolidated Air Mobility Planning System (CAMPS). Existing scheduling engines lack the capability to support a "living schedule," that is a schedule which continuously accepts both new requirements and execution monitoring reports to seamlessly maintain a current schedule. AMC is incorporating Distributed Transportation Scheduling in Opis/Intratheater Airlift Scheduler (DITOPS/ITAS) "like" technologies as the CAMPS scheduler rather than rehosting current algorithms contained in the systems of ADANS and CMARPS. This new scheduling capability for CAMPS will make it a continuous scheduler rather than a batch oriented scheduler with significantly improved schedule visualization, continuous replanning, analysis, and explanation capabilities.

Today, many commercial operations work on a master schedule paradigm. This will form the basis of the extended work flow and scheduling environment.

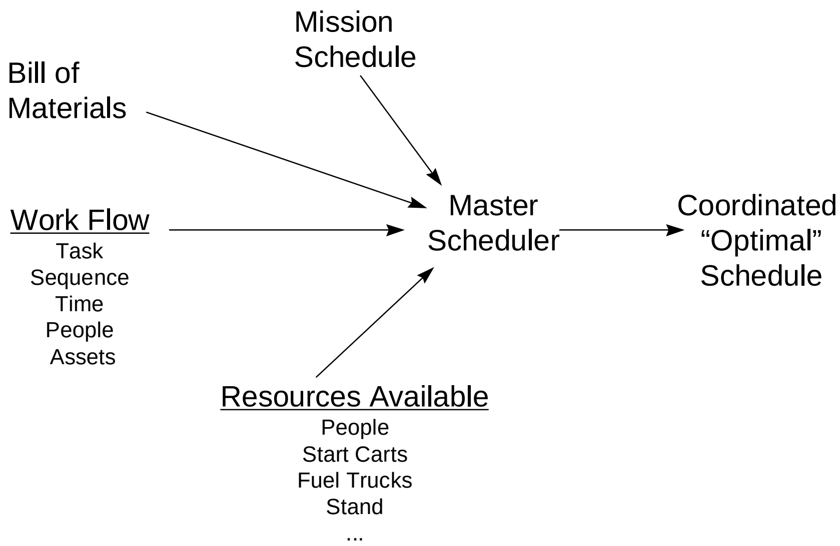

Figure 4-3. Master Schedule Maximizes a Unit's Capability

Emerging CONOPs in the commercial environment envision systems that continuously plan, execute, and monitor events. As soon as one cycle of allocating assets to a task is complete, the next cycle is begun. Each cycle employs the most up-to-date real world information as well as the results from the previous cycles operating at other locations. As each allocation cycle completes, the results of that cycle are assessed, problems are propagated to parts of the command and control system that control and modify the input assets and tasks, and are further propagated to users. This master scheduling "web" monitors appropriate data bases, typically using events or triggers, for changes in the real world. Thus, each cycle of allocating assets to tasks within system works from the most current information. Through such a CONOPs, AMC and its units will make seamless transitions between planning and execution by continuously scheduling requests for support from the present into the future and issuing appropriate orders to fulfill those requests. As time passes, the orders to do something in the future (planning) become orders to do something today (execution). The unit (or base) role in such a distributed master scheduling environment includes coordinated schedules for all direct functions of mission execution—maintenance, fuels, aerial port, etc. (Figure 4-4) AMC's corporate applications envision such a more robust scheduling environment.

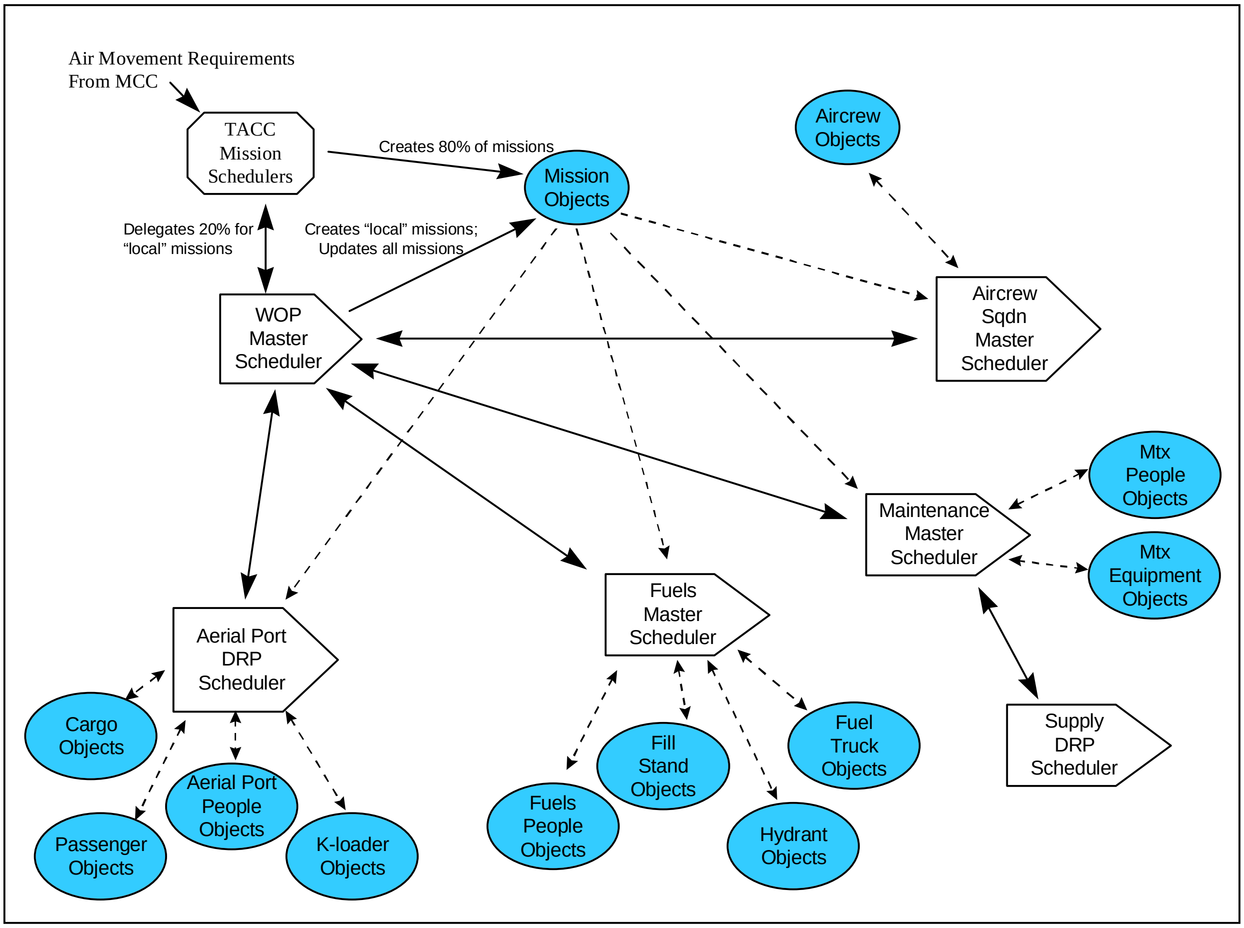

Figure 4-4. Hypothetical Wing Operations Plan in Integrated Scheduling Environment

For Mid-Term Implementation, Identify And Develop Corporate Information Environment Functionality That Leverages The Advanced Logistics Program (ALP) And The Joint Office Of Logistics Technology (JOLT).

ALP and JOLT will become the source of technologies to meet the corporate information environment (CIE). Cooperative projects between AMC and these programs will provide technologies and prototypes for the following CIE applications:

– Air Mobility Ground Support Determination Capability: Determines and tasks air mobility support requirements (TALCE, CCT, MST, etc.) and submits airlift requests when required. Application broadly affects the C2 community as it supports Air Mobility missions. It automates the manual process of analyzing and selecting needed support assets at a particular mission location. It will provide a more efficient analysis of station capability through a common sharing of information.

– Ground Support Requirements Capability: Manages development, analysis, and documentation of ground support requirements. Provides real-time requirements analysis in creating management plans for critical mission needs. Allows integral analysis of ground support requirements to determine most effective solution. Current applications allow for organization unique ground support requirements processing. This application will provide for a standard AMC ground support requirements application that will include TPFDD Sizing, Sourcing, and Analysis System (TSSAS) component functionality.

– Aircraft Maintenance Scheduling Capability: Allows aircraft maintenance personnel to schedule life cycle maintenance events on AMC owned aircraft. Produces aircraft maintenance functional schedules for AMC-wide integrated work flow and scheduling environment. Current applications allow for the automation of AMC unique aircraft maintenance requirements. This application will provide for a standard AMC maintenance scheduling application that will include CAMS/GO81 functionality.

– Ground Support Equipment Maintenance Scheduling Capability: Allows maintenance personnel to schedule life cycle maintenance events on AMC owned ground support equipment. Produces ground support equipment maintenance functional schedules for AMC-wide integrated work flow and scheduling environment. Current applications allow for the automation of AMC unique ground support maintenance requirements. This application will provide for a standard AMC maintenance scheduling application that will include functional components of CAMS/GO81, On-Line Vehicle Interactive Management System (OLVIMS), and Reliability and Maintainability Information System (REMIS), functionality.

– Load Planning Capability: Use optimal estimation techniques to create automated load plans, which can be modified or approved using a drag and drop graphical user interface (GUI). This approach will allow evolution over time to provide a very robust and accurate load planning system. This evolution will include improved artificial intelligence, a 3D GUI, the creation of surface shipping load plans from an air load plan, the ability to allow multiple users to perform load planning against the cargo on-hand and scheduled to arrive, the ability to maintain previous versions of a load plan, the ability to check-in and check-out load plans, and provide a means to map an existing load plan to a new aircraft or aircraft type.

– Air Mobility Aircraft Tasking Capability: Assigns aircraft tail numbers to scheduled, alert, and training air mobility missions. This application provides the capability to select aircraft tail numbers and assign them to missions based on air mission requirements and characteristics of the mission. Eliminates double tasking possibility. Automatically determines available aircraft to support a given air mission. Dynamically reprioritizes when problems occur and when available resources cannot support the requirements.

– Air Mobility Aircrew Tasking Capability: Assigns aircrew member names to scheduled, alert, and training air mobility missions. This application provides the capability to schedule aircrew members based on aircrew qualifications and requirements and characteristics of the mission.

Tailorability

Exploit Commercial Off the Shelf (COTS) Technical Order Technologies (short-term)

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 (short-term)

A key element in AMC’s Global Reach Laydown (GRL) 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 AF 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 AF 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 GRL 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 expeditionary 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 TWCF for the remaining 11 packages. Once fielded, these packages will enable AMC's deployable communications units to support GRL 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 expeditionary communications community to take advantage of new technology providing smaller, lighter, more capable, scaleable, and more flexible C4I systems.

Exploit The Concepts Of Deployability Within Our C2 Systems (mid-term)

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.

Horizontal/Vertical Integration

Implement Worldwide Logistics Communications (short-term)

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.

Improve AMC Base Communications Infrastructure (short-term)

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 in FY96, 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.

Receive Seamless Feeds from Intelligence Systems (short-term)

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, we will ensure the follow-on RTIC system, ABI, 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.

Establish Interoperability in AMC, AF, and Joint/Combined C2 Systems (mid-term)

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 (mid-term)

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 redesignate 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 IW 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 (mid-term)

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.

Transportation Information Requirements

Achieving ITV 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 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 1a4
Provide total ITV 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 1c1
> *Foster innovative new mobility concepts and aggressively promote and exploit new technological opportunities.* XPX, Continuous

GATES development and implementation will follow an incremental approach. Build 1 (FY98) will provide passenger reservation functionality and headquarters cargo management capabilities. Build 2 (FY99) 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. Build 3 (FY99 and beyond) will add AIT enhancements and provide automated resource management tools for AMC's aerial ports worldwide.

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 AF-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 weather 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 the end of 1998, 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.

AIRBORNE INFORMATION REQUIREMENTS

As discussed in the Operations chapter, AMC aircraft operate throughout the world and across the entire spectrum of conflict. As the importance of rapid air mobility increased, the need for AMC Commanders to maintain situational awareness of aircraft status increased. In accomplishing Operations Other Than War, AMC aircraft transit austere locations with no or limited communication infrastructure. Communication with these aircraft is more difficult. The resultant AMC airborne C2 information goals emphasize the need for global awareness of AMC assets. The accomplishment of each goal is annotated for the short (FY98-02), and mid-term (FY03-11).

<u>Global Awareness</u>

- Install a common Air Mobility fleet C2 capability (short-term)
- Provide assured C2 connectivity (mid-term)

Global Awareness

Install a Common Air Mobility Fleet C2 Capability

A common C2 system throughout the mobility fleet will give AMC a universal set of capabilities. 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 1a7
> *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 solution 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.

Finally, AFMC's Rome Laboratories Information for the Warrior (IFTW) advanced technology demonstration (ATD) program will present, and assess the value of, the integration of multiple communications-related technologies to improve and enhance the operational C^4I capability available to AMC in its worldwide air mobility environment. The IFTW ATD will take place over several days during Nov 97. Multiple demonstrations are planned during this period as a specially configured aircraft transits the Pacific Ocean on a channel mission en route from the west coast of the United States to Australia. Key capabilities to be demonstrated during this ATD will include airborne and satellite communications, information management, network and bandwidth management, and commercial communications interface technologies for the front and back ends of AMC and CRAF aircraft.

The IFTW advanced technology demonstration has multiple operational and technical objectives. From an operational perspective, during trans-oceanic flight, the objectives of the demonstration are to:

- Provide AMC aircrews with multimedia connectivity to CONUS-based C3 nodes ("reach back", in-transit visibility)

- Provide CONUS-based C3 nodes with multimedia connectivity to aircraft ("reach forward")

- Support interoperability among AMC elements and telemedicine applications with multimedia communications connectivity

- Plan for, adapt to, establish and maintain seamless, multimedia communications in AMC's changing in-flight network

From a technical perspective, also during AMC long-haul transoceanic operations, the objectives of the IFTW demonstration are to assess the capability of the integrated IFTW technologies to:

- Leverage asynchronous transfer mode and other technologies to provide multimedia communications connectivity

- Adapt to, and manage, competing information and bandwidth requirements and availability

- Access, from the aircraft, information from Corporate Database, and other databases, at the TACC

- Establish and maintain multimedia communications connectivity over multiple, diverse satellite communications links

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 reroute communications without loss of connectivity.

C2 systems must support AMC elements, including CRAF carriers, 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.

C4I SYSTEMS CORPORATE ARCHITECTURE

Introduction

AMC's future C4I systems are driven by a robust target architecture that reduces system proliferation, eliminates expensive and difficult to maintain interfaces between AMC systems, enhances operational mission effectiveness, reduces support requirements, and provides opportunity for continuous improvement via technology insertion throughout the command. Achieving this target architecture is extremely challenging due to continued significant manpower and funding constraints with deeper reductions anticipated. Consequently, the importance of exploiting new approaches, process re-engineering, and revolutionary technology to provide affordable "must have" capability, cannot be overstated.

AMC's future C4I systems environment will be dynamic with major capability gains clearly evident over the next several years. AMC is committed to provide an information and computing infrastructure, modernized and robust, to meet the demands of a superior mobility force of the twenty-first century. Regardless of a users location or communications capability, AMC’s vision is a corporate database and enterprise applications environment that will provide a command wide information system to meet all mobility warrior’s needs for global information access. We refer to this new approach of placing AMC’s knowledge at your fingertips via the advanced technology information services as “Corporateness.” Corporateness will be an all-encompassing structure that allows all mobility C2 entities (fixed, deployed, or airborne), worldwide, real-time data access on demand. All source information will be readily available to the mobility user through new, smaller, re-engineered corporate applications which meet user requirements, and greatly reduce the deployed footprint and administrative overhead associated with our current nonintegrated computing infrastructure. Corporate applications will provide information management capabilities for all users (fixed, deployed, airborne) in user familiar form. These applications will present information that is easily manipulated, shared, and cross-referenced, and will allow the user to drill down to whatever level of detail required. New artificial intelligence technologies will be introduced which will show details that are imperceptible or unquantifiable today and will allow cost savings and process efficiencies in our rapid global mobility mission. Though widely distributed, all information will be current and consistent system wide. By including expert systems, 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 evolving to our target architecture. Thus, we need modern, integrated, interoperable, multilevel secure, world class service to AMC's forces into the next century. As a design criteria, corporateness will make use of outsourced services to the maximum extent possible.

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 corporateness, that is, a seamless, integrated, rapid global mobility C4I architecture. It is an architectural discussion which focuses on capabilities rather than individual systems, briefly discusses the operational, systems, and technical architectures, and provides a macro level view of the fixed, deployed, and airborne environment. Detailed information on AMC’s architectures, 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
- A single, user friendly, secure terminal
- "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
- Shared utility services for overall cost savings
- Enforce software, network, and hardware standards and engineering practices
- Standard user interfaces
- Assure built-in IW protective measures

C4I Systems Deficiencies

The goal of AMC's target architecture is to develop for the fixed, deployed, and airborne environment, 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
- Inability of computer systems to utilize new technology and reengineered business processes

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. 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. AMC overcame this challenge with the Compartmented Mode Workstation (CMW). This allowed for classified and unclassified information to be processed and displayed with one PC. However, customer dissatisfaction with the speed and user friendliness of this platform has forced AMC to reevaluate the CMW. Customers are demanding user friendly systems with no difference between the unclassified and classified OIS applications. They are also demanding access to all external systems from one workstation with no compatibility problems. These demands forced AMC to replace the CMWs with two CPUs, one connected to the unclassified OIS LAN and the other connected to the SIPRNET. These CPUs are connected to one keyboard, monitor and mouse via a switchbox. This provides the customer access to the same software packages on the unclassified and classified systems with acceptable processing and accessing speeds.

However, true Multi-Level Security (MLS) is an still an essential element in achieving AMC's target architecture and realizing the ability to integrate classified and unclassified processing on the same system. 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 built on three underlying architectures:

- Operational Architecture - A description of the tasks, operational elements, and information flows required to accomplish or support a warfighting function (how we perform our mission).

- Systems Architecture - A description, including graphics, of the systems and interconnections providing for or supporting a warfighting function (the communications and computer systems and software we use to perform our mission).

- Technical Architecture - A minimal set of rules governing the arrangement, interaction, and interdependence of the parts or elements of a system, whose purpose is to ensure that a conformant system satisfies a specified set of requirements (the codes, standards, etc., we use to achieve our target architecture).

The target C4I systems architecture is also based on six characteristics: (1) shared corporate data base and enterprise wide applications; (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 4-5 depicts AMC's target corporate vision. This vision 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.

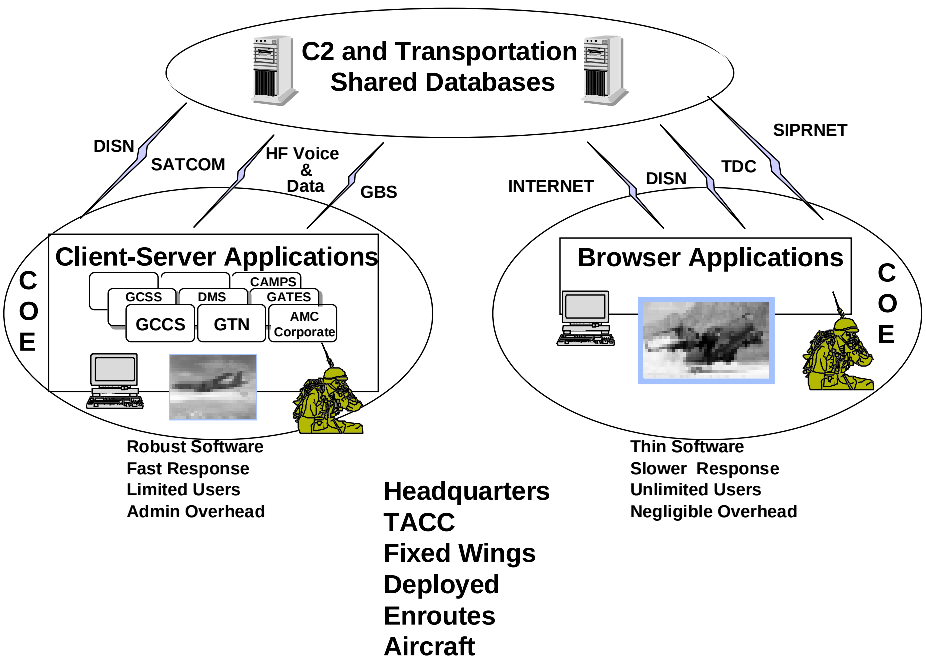

Figure 4-5. AMC Corporate Information Vision

Shared Corporate Data Base and Enterprise Wide Applications

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 reinvented for each system or is not passed between “systems,” but is accessed from the common data base by multiple corporate software applications , 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. Together, the corporate database and enterprise applications have been specified to eliminate the duplicative processes and data integrity issues of the current mobility systems. The applications detailed in the C4S Master Plan have been specified along business process lines rather than organizational lines, aligning functions and processes that have been duplicated over the years in multiple systems. This allows the corporate database and applications to present a fused picture of mobility operations and allow the business computer systems to be changed as the business process is changed. All echelons of command will have access to the corporate data base via these business applications; from a C-141 flying over the Pacific, to a bare base operation in Africa, to a tanker task force on Diego Garcia, to a staff officer in HQ AMC.

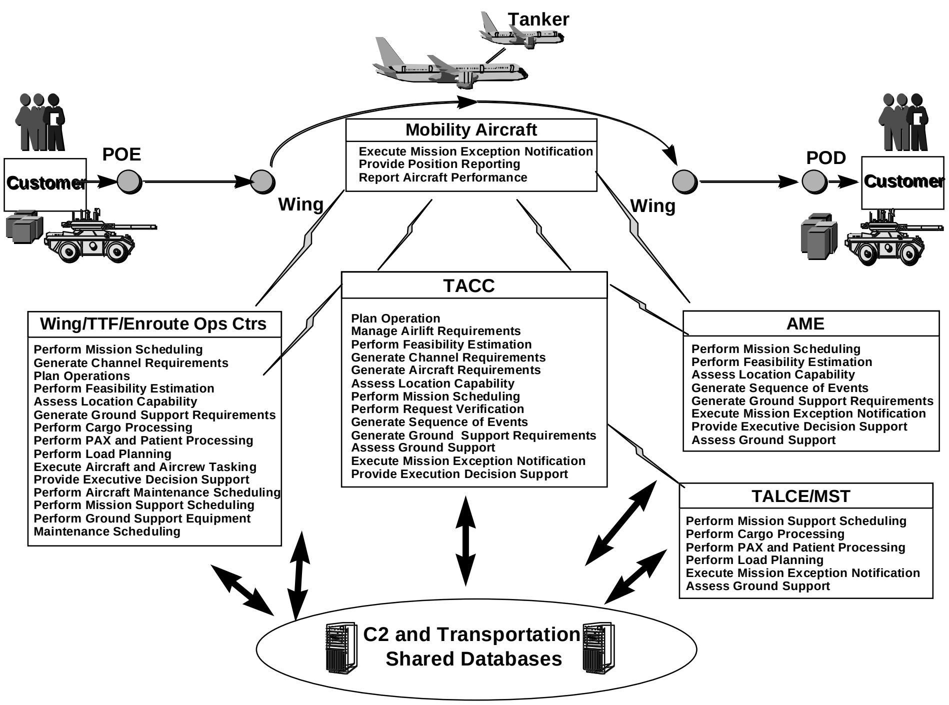

Figure 4-6. AMC Operational Architecture

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.

Enterprise Software Applications and Hardware

Enterprise software applications and hardware will remove the “system” boundaries by allowing every mobility terminal across the command to access information, provided all security challenges have been addressed. These “corporate” applications, described in the C4S Master Plan, will essentially eliminate “systems” as we know them today. They 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 AF 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 AF/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, low earth orbit satellite, 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 (airborne, fixed, deployed), 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.

Objective 1a9

Establish an information superhighway at base level.

SCP, FY03

Common High Speed Multi-media Transport Utility

AMC personnel rely on the common-user high speed multi-media transport utility to provide intrabase connectivity supporting secure and nonsecure voice and data information transfer. Each AMC base has at least a limited data network capability, and AMC base networks are growing as a result of the Combat Information Transport System (CITS) program and in-house initiatives. Assuming only marginal CITS funding adjustments, AMC will have high-speed network connectivity to all mission direct and indirect support facilities by FY00. Continuing through the FYDP to FY04, AMC will continue to update existing base transport utilities with modern state-of-the-art network electronics. This 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 SONET where bandwidth will no longer be a limiting factor. 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.

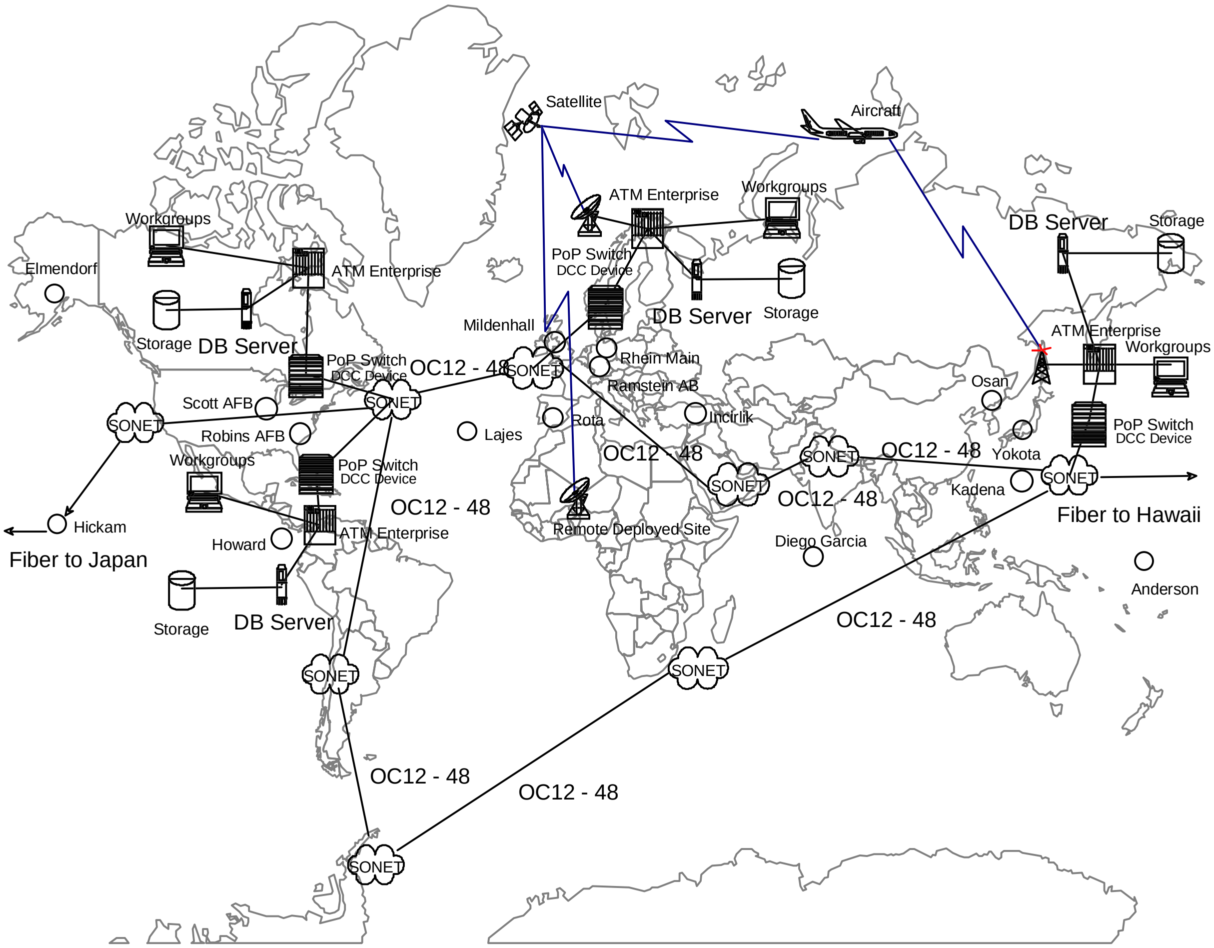

Figure 4-7. AMC Systems Architecture

Air Mobility C4I Systems Architecture Strategy

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 foundation 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 1a8 *Migrate to AMC's target corporate architecture.* SCT, FY03

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. <u>Architecture</u> 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 fixed and deployed locations, and airborne (both the cockpit and back of the aircraft).

b. <u>Standards</u> 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. <u>Information Engineering</u> 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 its 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 AF Data Dictionary tool and has turned it over to the AF for operation and maintenance. We are members of the AF 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 reuse 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 a transparent environment to execute other DoD C4I migration software in AMC's operational C4I Air Mobility System.

Section Five
EQUIPMENT

INTRODUCTION

Air Mobility Command (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 Mobility Requirements Study Bottom-Up Review Update (MRS BURU) requirement of 49.7 million ton miles per day (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. 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) are short in numbers, lack high-reach capability, and are becoming increasingly expensive to maintain. Both the 40K loader and 25K loader cannot reach the cargo loading height of commercial wide-body aircraft. The cargo handling shortfall will be solved with the procurement of new MHE. The Tunner (60K) loader and next generation small loader acquisitions provide 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 mid term, airlift and air refueling aircraft were assessed to have partial capability because of inadequate GATM systems to satisfy requirements for unrestricted, global operations in the future aerospace architecture.

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 ASSESSMENTS

MISSION CATEGORIES ASSESSMENT

MISSION CATEGORIES	PEOPLE T	PEOPLE S	PEOPLE M	PEOPLE L	INFRASTRUCTURE T	INFRASTRUCTURE S	INFRASTRUCTURE M	INFRASTRUCTURE L	EQUIPMENT T	EQUIPMENT S	EQUIPMENT M	EQUIPMENT L
Aeromedical Evacuation	See Applicable Section				See Applicable Section				Yellow	Yellow	Green	Green
Air Refueling									Yellow	Yellow	Green	Green/Yellow
Cargo Airlift									Red	Red/Yellow	Yellow/Green	Green
Combat Delivery									Red	Red/Yellow	Green	Green/Yellow
Passenger Airlift									Yellow	Yellow/Green	Green	Green
SIOP									Yellow	Yellow/Green	Green	Green/Yellow
Special Operations									Yellow	Yellow	Yellow	Yellow

CORE SUPPORTING PROCESSES ASSESSMENT

CORE SUPPORTING PROCESSES	PEOPLE T	PEOPLE S	PEOPLE M	PEOPLE L	INFRASTRUCTURE T	INFRASTRUCTURE S	INFRASTRUCTURE M	INFRASTRUCTURE L	EQUIPMENT T	EQUIPMENT S	EQUIPMENT M	EQUIPMENT L
IRM / C4I Systems	See Applicable Section				See Applicable Section				Yellow	Yellow	Green	Green
Command and Control									Yellow	Yellow/Green	Green	Green
Intelligence									Yellow	Yellow/Green	Green	Green
Information Operations									Red/Yellow	Yellow	Yellow/Green	Green
Logistics									Yellow	Yellow	Yellow	Yellow
Training									Yellow	Yellow/Green	Green	Green
Force Protection									Yellow	Yellow/Green	Green	Green
Medical									Yellow	Yellow/Green	Green	Green
Cargo / Pax Handling									Red/Yellow	Yellow/Green	Green	Green
Operations Support									Yellow	Yellow/Green	Green	Green
Base Operating Support									Green	Green	Green	Green
En Route / GRL									Yellow	Yellow	Yellow	Green

T: TODAY (FY98)
S: SHORT TERM (FY99-04)
M: MID TERM (FY05-13)
L: LONG TERM (FY14-22)

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

EQUIPMENT-RELATED DEFICIENCIES

Deficiency:

1. Strategic Airlift Fleet Capability Shortfall
   - Insufficient overall organic strategic airlift capability to meet MRS BURU requirement for outsize/oversize equipment — page 5-14
2. Materiels Handling Equipment (MHE)
   - MHE fleet capability/shortage/condition/reliability/maintainability — page 5-78
3. Strategic Brigade Airdrop Shortfall — page 5-73
4. Combat operations vulnerability
   - AMC aircraft are vulnerable in a hostile environment — page 5-73
5. C-5 Reliability, Maintainability, and Operating Costs — page 5-28
6. C-141 Reliability, Maintainability, and Operating Costs — page 5-19
7. C-130 Maintainability and Operating Deficiencies — page 5-35
8. Patient Loading Systems.
   - Inefficient process and insufficient quantities of MHE/CTS to on/offload patients from B-767s — page 5-57
9. Insufficient AE Equipment
   - Current AE patient care equipment is inadequate to meet new JSCP tasking to support movement of stabilized patients — page 5-82
   - Lack development of joint service equipment — page 5-82
10. Global Reach Laydown (GRL) Deployable Equipment
    - Insufficient deployable equipment to support GRL — page 5-85
    - Inadequate deployable weather equipment to support GRL — page 5-85
11. Inadequate Simulator Capabilities
    - Simulator fidelity lacks capability to maximize training — page 5-92
    - Lacks interactive capability required for formation/air refueling /SOLLII mission rehearsal — page 5-92
    - C-130/C-141 simulators inadequate to train aircrews in NVG operations — page 5-92
    - Several AMC simulators do not meet FAA Level “C” standards — page 5-92
12. KC-135 Cockpit Avionics Deficiencies
    - KC-135 compass system unsupportable — page 5-46
    - Existing KC-135 radar systems expensive to maintain — page 5-46
    - Single HF radio isn’t ALE compatible — page 5-48
    - Interphone has poor R&M and no individual volume control — page 5-47
    - Current FSAS will not support full R-model software and has poor reliability — page 5-46
13. KC-135 Maintainability and Operating Costs
    - Cost to maintain aging KC-135 are escalating — page 5-45
    - Excessive number of aircraft in depot — page 5-45

14. Uncertain KC-135 Service Life page 5-50
15. Uncertain C-130 Service Life page 5-43
16. Inadequate Global Air Traffic Management (GATM) Systems
- Many AMC aircraft have inadequate communication, surveillance, and navigation systems to meet future airspace requirements page 5-9
- Inadequate GATM systems to satisfy requirements for unrestricted global operations in the future aerospace architecture page 5-11

17. Inadequate Special Operations Capability
- C-141 not equipped to effectively accomplish/survive SOF augmentation mission page 5-74

18. Insufficient Ground Training Devices
- Ground training devices lack crew integration capability for loadmasters, scanners, and boom operators page 5-92
- Realistic preflightable C-5 Loadmaster Training Device (LMTD) required to implement second loadmaster training program at Altus page 5-94
- Ground based trainer capacity can't meet expected increase in load page 5-92

19. Special Air Mission Aircraft Modernization
- Aging SAM (89th) fleet page 5-64
- Communication equipment increasingly unsupportable page 5-63

20. Insufficient Aircraft Life Support
- Depots experiencing shortages of multiperson life rafts and life preservers page 5-87
- AMC aircraft lack adequate passenger smoke and fume protection page 5-88
- A credible detection capability does not exist for chemical vapors page 5-90

21. Insufficient Night Vision Goggles (NVGs)
- Insufficient quality and quantity of NVGs and NVG compatible lighting to deploy forces page 5-74
- Lack of standard NVIS criteria for AMC cockpits page 5-74

22. Cumbersome Ground Training Media
- Ground training media are cumbersome/expensive to update page 5-92

23. No Multifunctional Aerospace Ground Equipment (AGE)
- AMC limited by single function AGE page 5-77

24. Nuclear, Biological, and Chemical (NBC) Operations Equipment Shortage
- Aircrews lack sufficient protective equipment to operate in NBC environments page 5-67
- Emergency protection equipment shortfall for civil crews page 5-68

25. Meet Noise and Emission Standards
- C-9 does not meet Stage III noise restrictions page 5-63
- C-137 does not meet Stage III noise restrictions page 5-64
- C-20B/C does not meet Stage III noise restrictions page 5-64
- KC-135E does not meet Stage III noise restrictions page 5-50

26. Limited Funding for War Reserve Material page 5-69
- AMC has no funding in PEC 28031 to inspect, purchase, store, transport, and maintain WRM

- AMC/SG received only 58 percent of funds needed for medical/AE WRM

27. KC-135 Expanded Air Refueling Capability
    - KC-135 support of joint and combined operations limited page 5-69
28. C-130H3 Support
    - Insufficient funds to provide depot logistics support page 5-35
29. C-130 Aerial Firefighting Equipment
    - C-130 Firefighting equipment is old and nearly unsupportable page 5-35
30. Contingency Precision Approach and Landing Capability
    - Limited precision approach and landing capability at forward operating locations with minimal approach availability during reduced visibility/adverse weather page 5-83
    - Rapidly deployable precision approach and landing systems do not support all civil aircraft page 5-84
    - Lack of flight inspection capability in hostile fire areas/bad weather conditions page 5-83
    - Requirement for a near zero/zero autonomous landing capability for a core fleet page 5-10
31. Air Base Security Shortfall
    - Poor capability to assess and target air base security threats page 5-79
    - No deployable tactical vehicles available for mounting heavy weapons or for mobile patrols page 5-80
32. Flightline Maintenance Communications Shortfall
    - Lack of connectivity between flightline mechanics to supply and source documents/databases page 5-66

EQUIPMENT-RELATED GOALS AND OBJECTIVES

1a Provide rapid seamless air mobility.

- 1a6 Develop CONOPS, acquire equipment/storage facilities, develop an automated tracking system, and outline program management for Patient Movement Items .... SGA, FY04, pg 5-82
- 1a7 Provide global voice/data connectivity to aircraft and worldwide locations. ....DOU, FY02, pg 5-77

1c Maximize the future potential of air mobility for America.

- 1c1 Foster innovative new mobility concepts and aggressively promote and exploit new technological opportunities .... XPX, Continuous, pg 5-14
- 1c3 Maximize successful mission performance in degraded operating environments ....DOK, FY06, pg 5-10, 5-74

2a Enhance Mission Capabilities Through Modernization.

- 2a1 Acquire/modernize the MHE fleet to meet user requirements across the spectrum of conflict .... XPR, FY01, pg 5-78
- 2a3 Modify the aging air mobility fleet to maintain the capability to meet future requirements. .... XPR, Continuous, pg 5-8
- 2a4 Achieve the strategic air mobility requirement established by MRS BURU and the Defense Planning Guidance (DPG) .... XPX, FY05, pg 5-22
- 2a5 Replace C-141 aircraft capabilities to meet the broad spectrum of customer airlift requirements. .... XPX, FY05, pg 5-22

4b Improve Operational Capability While Protecting Resources.

- 4b2 Increase aircraft availability and reliability to meet command goals and requirements. .... LGA, FY07, pg 5-71
- 4b3 Modify/sustain support equipment to improve reliability and availability. .... LGB, FY06, pg 5-78

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.

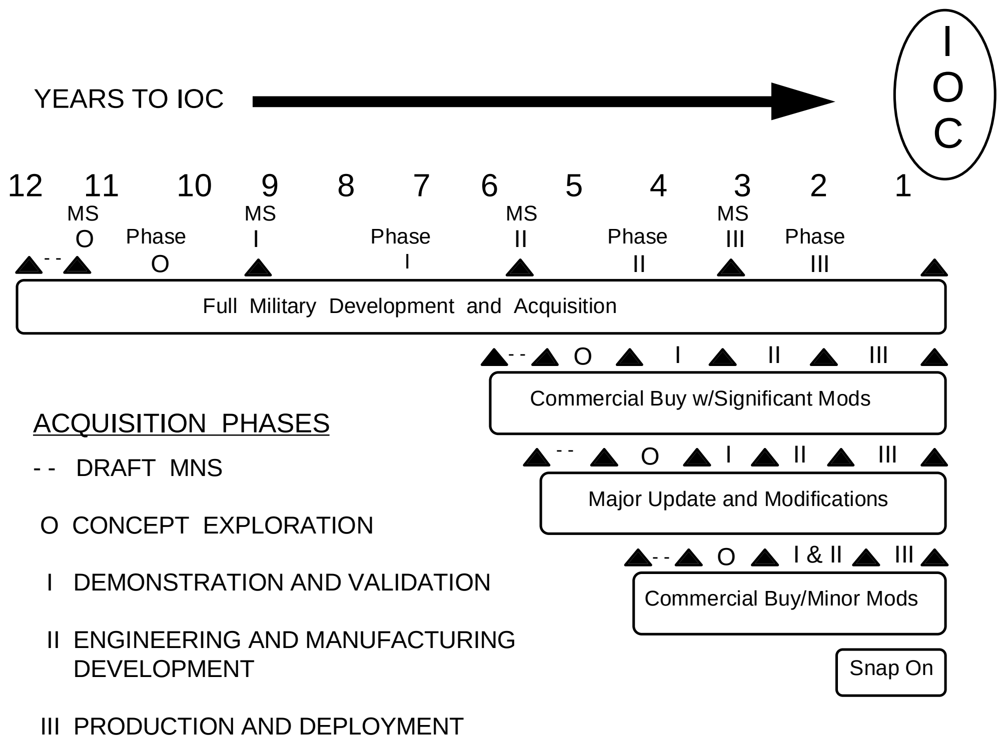

Figure 5-1. Acquisition Timelines

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 1 year of the initiation of an acquisition program. In order to meet this aggressive time line, commercial off-the-shelf, and nondevelopmental 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

Objective 2a3

Modify the aging air mobility fleet to maintain the capability to meet future requirements.

XPR, Continuous

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 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. The lead command is the weapon system advocate and responds to issues addressing weapon system status and use. The lead command is also 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-130, 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.

In an effort to more efficiently and effectively manage the programs or concepts mentioned above, AMC utilizes Integrated Product Teams (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 Guard and Reserve, AETC, Theater Commands, AFMC, and industry ensures that major players are kept informed while also providing a forum which facilitates faster communication and coordination.

With air traffic increasing at a rate of 5 to 10 percent per year, the worldwide civil aviation community 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 ICAO's Communication, Navigation, Surveillance/ Air Traffic Management (CNS/ATM) referred to as GATM within AMC. As the increased capabilities of the newer systems are integrated into normal operations, civil aviation authorities will increasingly restrict aircraft that do not meet the new standards. Our mobility fleet requires avionics upgrades to preserve unrestricted access to prime global routes into the twenty-first century.

The basis of most of the air traffic control upgrades is a digital satellite data link between aircraft and air traffic control centers. 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), satellite and HF data link, air traffic control will have effective coverage worldwide. There additional advantages with data link. Controllers and crews can pass clearances, weather forecasts, and more through the data link which will reduce the need for voice 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 desirable airspace. Increasing communication capacity is also being addressed in Europe by splitting the standard VHF radio frequency bandwidth from 25kHz to 8.33kHz and is planned in the U.S. through the FAA's next-generation air/ground communications (NEXCOM) program.

By reducing vertical clearance requirements, more aircraft can concurrently occupy a given airspace. Aircraft not certified for the reduced vertical clearance will be restricted from heavily used routes. The Reduced Vertical Separation Minima (RVSM) which doubles available airspace vertically, is already in effect in areas of the Pacific and North Atlantic and will continue to expand to include other areas throughout the world. Required Navigation Performance (RNP) increases available airspace by reducing horizontal separation between aircraft. RVSM combined with RNP will dramatically increase airspace capacity in the coming years.

Traffic Alert and Collision Avoidance System (TCAS) adds an automated capability to detect a collision course with another aircraft and can share that data with other aircraft and ground controllers. Additionally, AMC will use TCAS as an Intra-Formation Positioning System (IFPS) on our KC-135s.

Language addressing GATM is in the Quadrennial Defense Review (QDR), Chairman's Program Review and DPG documents. The modification of our fleet is critical to our continued unrestricted support of the warfighting CINCs as a vital element of the DTN. Without unrestricted access to international airspace, Air Mobility Forces will need to fly at less than optimal altitudes or routes. This will require additional fuel at the expense of payload. As such, the closure of forces <u>will</u> be increased to an unacceptable, high-risk level.

Objective 1c3
Maximize successful mission performance in degraded operating environments. DOK, FY06

AMC's mission requires unrestricted global access (global engagement). This directly supports the DPG in the US defense mission area. The U.S. defense strategy calls for military forces capable of meeting a wide range of challenges to include providing overseas presence in critical regions and conducting other operations, including smaller-scale combat and peacekeeping operations, humanitarian assistance, and disaster relief to further U.S. interests and objectives. This is met by a rapid projection capability of substantial combat-ready forces and cargo to any location worldwide and provides intertheater air transportation operations. A subset of this involves the ability to operate at austere locations regardless of airfield infrastructure or weather. Operation JOINT ENDEAVOR highlighted the need for this capability. The Chief of Staff of the Air Force (AF) stressed the importance of this capability with the announcement of the core competencies for the AF. At the heart of these are "global attack and rapid global mobility." As the DoD draws down its overseas presence, it is ever more important to provide a solid CONUS-based rapidly deployable force.

AMC's ultimate goal is to have unrestricted global access by providing a core number of airlift aircraft with an autonomous precision landing capability under zero visibility conditions.

Due to current limitations in technology, AMC has adopted a phased approach to work toward this ultimate goal. This phased approach begins with a rapidly deployable, precision approach capability that allows operations into austere airfields in weather conditions down to 200 feet ceilings and one-half statute mile visibility. Phase two will provide a core number of airlift aircraft with a capability to operate into austere airfields with visibility as low as one-eighth statute mile. Eventually as technology matures, AMC plans to pursue a capability to operate under any weather conditions.

AMC maintains an active role in the Joint Precision Approach and Landing System (JPALS) program. The JPALS program is researching options to replace the aging ILS and PAR systems with more state-of-the-art technology, part of which addresses austere airfield operations.

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. Key to the survival of mobility aircraft is the ability to avoid detection and to recognize, avoid, and degrade the threat. Currently, very few strategic mobility aircraft are adequately equipped to detect and defend against these threats. Planned improvements such as Defensive Systems (DS), accurate threat assessment provided by Real-Time Information in the Cockpit (RTIC), and mission planning systems like the Air Force Mission Support System (AFMSS) will increase AMC’s survivability in our ever more threatening operating environments.

STANDARDIZATION OF NAVIGATION AND SAFETY EQUIPMENT CAPABILITIES

Changes in the global political environment dictate the need for DoD and CRAF aircraft to fly into austere airfields under all weather conditions in support of humanitarian and other noncombat operations. A concern exists that DoD and CRAF 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 AF, 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 AF Chief of Staff 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 the GATM environment. Therefore, wherever possible, the group recommended installing equipment which meets or has the upgradability to meet emerging GATM requirements.

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/nonprecision 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 AF, 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 weapon system 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 weapon 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 a simple process for aircrew members to select and filter data for their use.

Modification Summaries

The following paragraphs give a brief synopsis of the major modifications that are applicable to multiple aircraft.

- 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): Multi-band radio replaces one ARC-186 VHF radio on C-5B, and C-17 aircraft. Provides interoperability with U.S. Army.

- HF Automatic Comm Processor (ACP): Frequency scanning capability for HF radios, greatly improving long distance communication connectivity. Provides limited antijam 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.

- Selective 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 defensive systems by providing a state-of-the-art infrared missile warning receiver and more effective 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 low probability of detection/intercept, 360 degree intraformation positioning system with night and adverse weather capability.

FUTURE OF AIR MOBILITY FORCES

Improving the health of the 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. The IPT chair resides in HQ AMC/XPX. Toward this goal, the IPT objectives improve reliability and maintainability, maintain structural and system integrity, and increase operational capability while reducing costs of ownership.

Objective 1c1
Foster innovative new mobility concepts and aggressively promote and exploit new technological opportunities. XPX, Continuous

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 airlift forces mix displayed in Figure 5-2 on page 5-16 reflects the scheduled C-141 retirement.

Since the middle 1960s, the C-141 has served as the workhorse of the intertheater fleet. The All Weather Landing System (AWLS) and autopilot system are being replaced on a portion of the fleet to increase supportability until retirement and update the cockpit with current technology. Additionally, transferring aircraft to the UE Guard and Reserve will decrease the flying hours and reduce aircraft stress. These actions will help the C-141 remain viable until its forecast retirement in FY06. The C-141 retirement and the slow-paced C-17 delivery rate will require reevaluation of options to meet the JCS validated strategic airdrop requirement. These options include use of C-5s or augmentation by C-130s. In any event, the UE Guard and Reserve may become an integral part of this critical mission. We are attacking the impact of the loss of 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 C-17 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 brigade airdrop mission. The C-17 is capable of operating in an austere environment under a variety of threat conditions, utilizing roll on and roll off capability. It can 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 at a moderate risk for the warfighter.

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 for modernization. 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 U.S. 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.

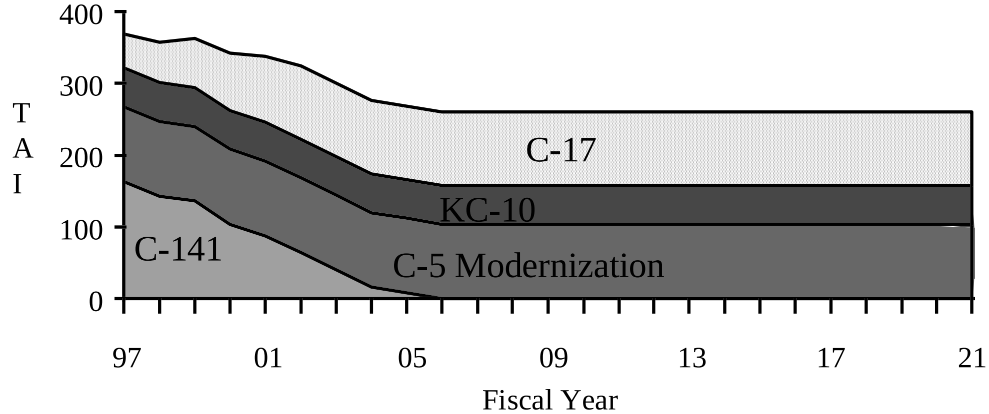

Figure 5-2. Strategic Airlift Forces (Notional past FYDP)

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 Tunner (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 tanker fleet and to provide support to carrier based aircraft, wing mounted drogue refueling pods were installed on 20 KC-10s and will be installed on 33 KC-135s to provide an extra margin of safety for receivers necessary for over water operations. Additional improvements to the KC-135's radar system, compass system, aircraft brakes, and air refueling boom will increase its availability by 10 percent.

KC-135 modernization efforts center around PACER CRAG (Compass, Radar, and GPS). This program modifies the entire KC-135 fleet replacing aging and unsupportable cockpit avionics with state of the art equipment and displays paving the way for a three person cockpit for most missions. In addition, Traffic Alert and Collision Avoidance System (TCAS), a standby ADI, and a reduced vertical separation minimum (RVSM) compliant central air data computer (CADC) will be installed. To round out the cockpit modernization, AMC is pursuing a replacement for the interphone system. The current system lacks individual radio volume controls which hampers effective cockpit communications. Also, the interphone doesn't have the capability to support future radios needed for GATM.

The KC-10, our newest tanker is beginning to show signs of age and requires modernization to continue its outstanding performance and maintain FAA certification. Cockpit modernization includes installation of GPS with FMS 800. An electronic Horizontal Situation Indicator (HSI) will replace the current HSI.

Tankers play a major role in today's regional contingencies providing an “air bridge” for short-notice contingencies such as Operation JOINT ENDEAVOR or theater combat support air refueling as employed during Operation DENY FLIGHT. 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, likewise, the expeditionary nature of the USAF will make air refueling the essential enabler of this operational concept. Our air refueling core will make us less dependent on overflight/landing rights when supporting politically sensitive areas. The contribution of the Guard and Reserve 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 treatment and prevention technologies. Until the effects of corrosion can be determined, an accurate economic service life will not be known. AMC’s goal is to accurately define the KC-135’s economic service life with the effect of corrosion by FY00. The possibility exists that studies will show an economic service life beyond that of other air mobility aircraft, but a tentative replacement is scheduled for FY13 pending analysis results.

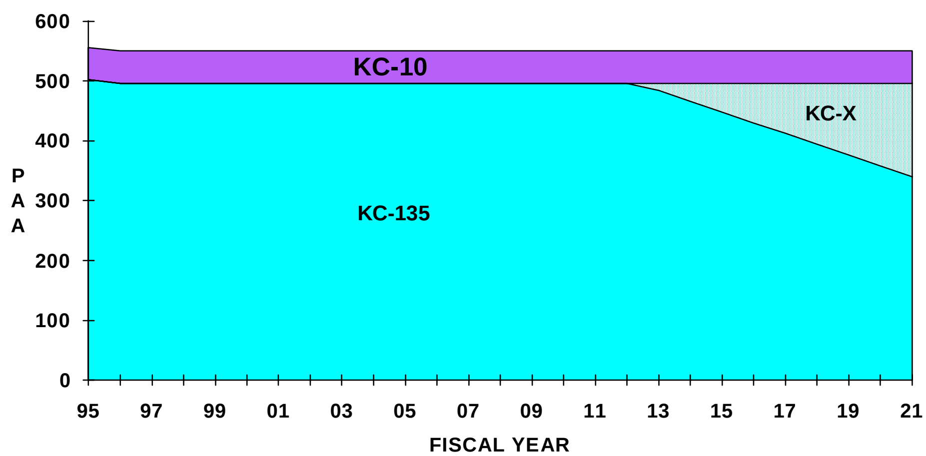

Figure 5-3. Notional Tanker Force Structure

Ongoing changes in the international political arena and in global threat scenarios have all but eliminated the likelihood of massive U.S. 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 required. 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.

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 restrictions and is required to stop for fuel on a standard transAtlantic 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 underway. The C-32A is programmed to begin delivery 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 is undergoing modernization. All C-20Bs and C-20Hs will receive communications and avionics upgrades. A portion of the C-20B fleet will be replaced with the C-37A. A Statement of Need has also been validated to replace the UH-1N helicopters. Selection of the UH-1N successor 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 5-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. Active duty units no longer have to perform an acceptance ISO inspection on an aircraft returning from PDM. This increases aircraft availability by 1 percent and returns aircraft to service immediately upon arrival at home station. A process action team is being formed to evaluate the feasibility of incorporating the Guard and Reserve aircraft into this process as well.

Reliability

Objective 4b2
Increase aircraft availability and reliability to meet command goals and requirements. LGA, 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 retiring aircraft until they reach 45,000 damage hours, when economically feasible. Damage hours or equivalent flying hours are calculated to account for the unique stresses encountered during specific missions. This initiative 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.

Modifications

C-141 modifications aim to preserve the remaining force by reliability and maintainability improvements and capability improvements necessary for effective use through 2006. Thirteen aircraft will receive additional SOLL II upgrades under the Special Operations Forces

Improvement program. 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 a Defensive Systems (DS), Fuel Quantity Indicating System, and GPS modifications. 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.

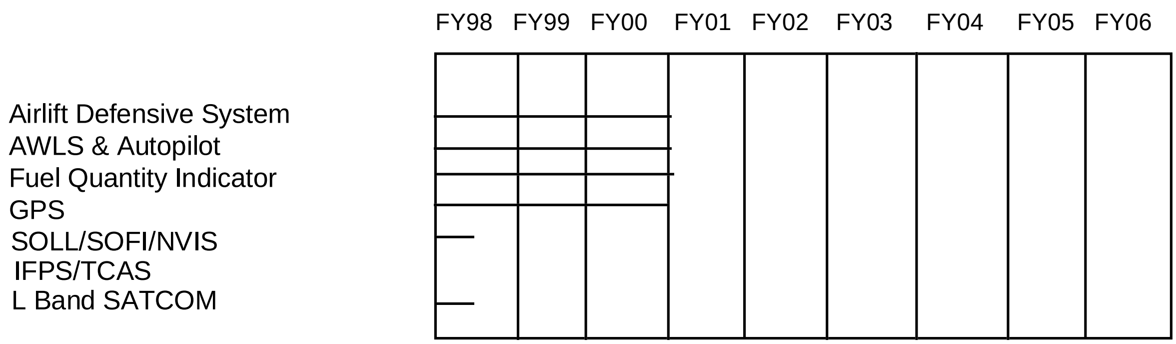

Figure 5-4. C-141 Modifications
(Timelines not shown for unfunded programs)

<u>Modification Summaries</u>

The following paragraphs give a brief synopsis of the major modifications currently programmed for the aircraft.

Defensive System (DS): C-141 aircraft configuration limits operations in even low threat environments. The DS 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 capable 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 5000 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.

SATCOM (INMARSAT AERO-C): Commercially available, portable AERO-C SATCOM system will provide critical command and control communications.

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, missile warning system, countermeasures dispenser, radar warning receiver, and FLIR.

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. Even as the C-141 leaves the AMC inventory, AMC will retain sponsorship of the IPT to ensure continued integration of the Guard and Reserve C-141 in the Air Mobility system.

Sustaining Engineering

To sustain the baseline capabilities of the C-141 and associated nonaircraft systems, the command is funding 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.

TASKS
Aircraft Structural Integrity Program
Functional System Integrity Program
Systems Engineering
Autopilot Support
Mishap Investigation

Service Life

Recently, the C-141 went through a series of major repairs. Wing Station 405, windshield post crack repairs and center wing box repair/replacement are complete. 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 Guard and Reserve 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.

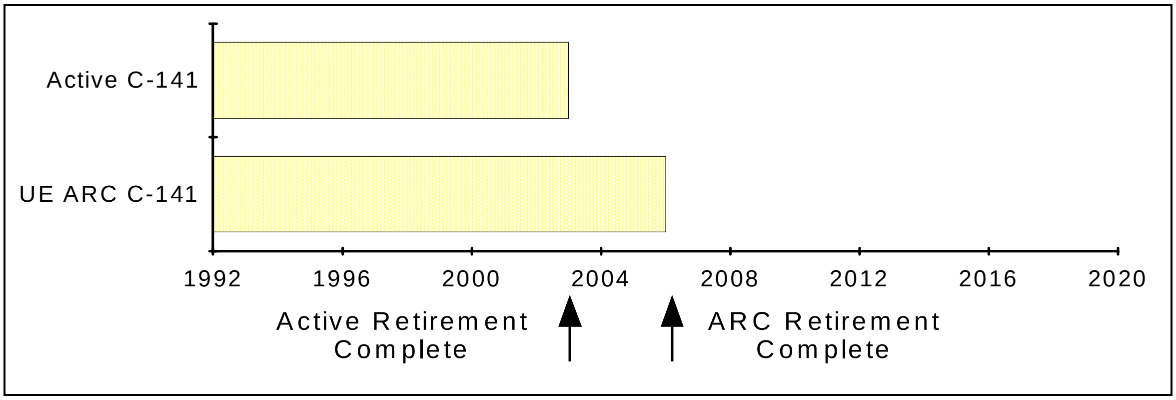

Figure 5-5. C-141 Service Life

C-17 WEAPON SYSTEM

Objective 2a4 *Achieve the strategic air mobility requirement established by MRS BURU and the Defense Planning Guidance* XPX, FY05
Objective 2a5 *Replace C-141 aircraft capabilities to meet the broad spectrum of customer airlift requirements.* XPR, 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, NVG 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, 36 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

C-17 reliability was proven during the 1995 Reliability, Maintainability, and Availability evaluation, achieving a 99.2 percent departure reliability record. The C-17's first operational test came during Operation JOINT ENDEAVOR. Twelve aircraft flew for 60 days in winter conditions to deployed locations and achieving an impressive 98.1 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 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.

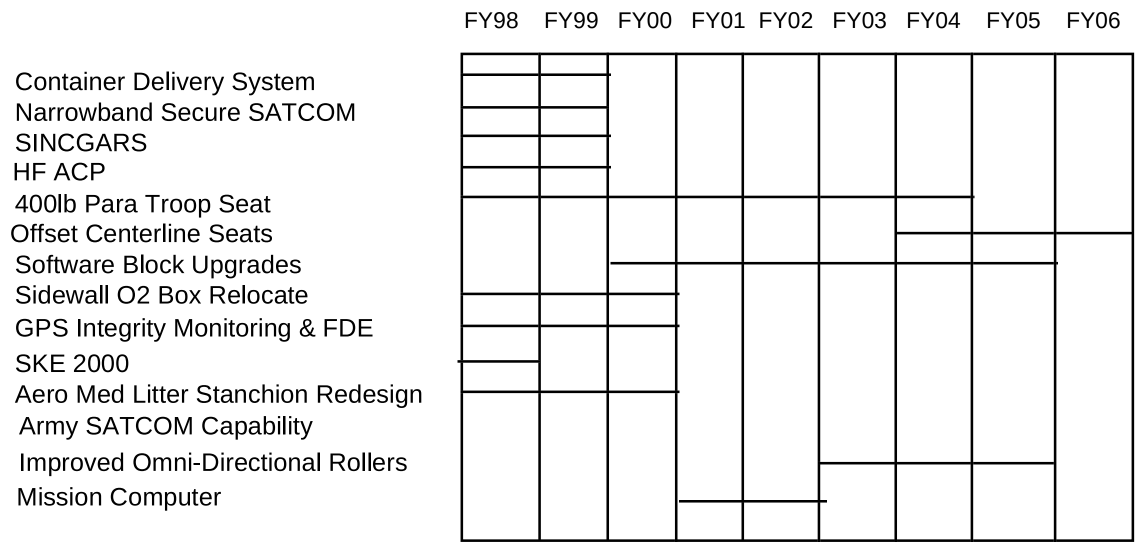

Figure 5-6. C-17 Modification Table

(Timelines not shown for unfunded programs)

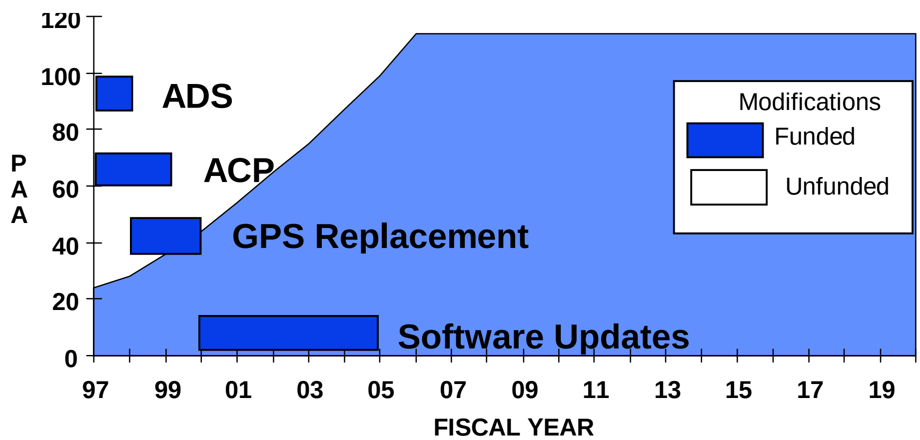

Figure 5-7. C-17 Modifications (Notionale Force Structure)

Modification Summaries

The following paragraphs give a brief synopsis of the major modifications currently programmed for the aircraft.

TCAS/Mode-S: Provides traffic alert and collision avoidance/surveillance by coordinating aircraft to aircraft maneuvering. Fulfills ICAO Mode-S data link requirements.

Precision Approach and Landing Capability (PLSR): Provides C-17 aircraft with unrestricted access into austere airfields with limited to no conventional approach aids. Uses MLS technology for precision approaches to CAT I minimums.

PLSR Differential GPS (DGPS): Follow on to PLSR system to provide near zero/zero precision approach capability.

Dual Row Airdrop Capability: Provides C-17 capability to airdrop cargo from logistics rails (dual row vs. single row airdrop). Decreases pass time associated with strategic brigade airdrop mission.

Defensive System (DS): Installs missile warning receiver and countermeasures dispensers. Entire fleet completed by CY04.

HF Automatic Communications Processor (ACP): Provides frequency scanning capability for HF radios, greatly improving global command and control. Provides aircrews with SELCAL capability.

Cargo Compartment Controls: The cargo compartment from the wing area aft becomes excessively cold at cruising altitudes, much colder at floor than at head height due to air stratification. Improved distribution/circulation system has been designed for production cut-in and retrofit.

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.

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 defensive systems by providing a state-of-the-art, infrared missile warning receiver and improved 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 coder/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 and significantly reduce life-cycle costs.

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.

400 Pound Paratrooper Seat: Procures and installs paratrooper seats on each aircraft. Supports U.S. Army requirements.

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 (nonwaiverable) 21 inches minimum spacing to support new AE doctrine.

Semi-prepared Airfield Performance: Study underway to determine semiprepared runway frictional characteristics to provide aircrews with accurate takeoff and landing planning factors. Results will be published (checklist tab data) for contingency use followed by integration into mission computer software.

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): Capability will be added to the communications suite on the C-5B, C-141B, and C-17 aircraft. Provides interoperability with U.S. Army ground units.

8.33kHz VHF -Radio Frequency Spacing: Required for operation in European airspace to ensure optimum aircraft routing. Project funded and scheduled to complete retrofit by end of CY98.

FM-Immune Nav Receivers (Protected ILS): Required for unrestricted operation in European airspace due to absence of appropriate FM immune navigation receivers.

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 designed missions (direct delivery to austere airfields).

Enhanced Ground Proximity Warning System (EGPWS): Installation of a fourth-generation GPWS with a digital terrain database will satisfy requirements outlined in the 12 Feb 97 White House Commission on Aviation Safety and Security.

Sustaining Engineering

To sustain the baseline capabilities of the C-17 and associated nonaircraft systems, the command is funding 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 begin in FY99 and covers the future-years defense program (FYDP) period.

TASKS
Mishap Investigation
Aircraft Structural Integrity Program
Systems Engineering
Reliability, Maintainability, and Availability Analysis

Service Life

Based on a buy of 120 aircraft, the last C-17 delivery will be in November, 2004. 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 will determine if any major updates or modifications should be carried out (Figure 5-8).

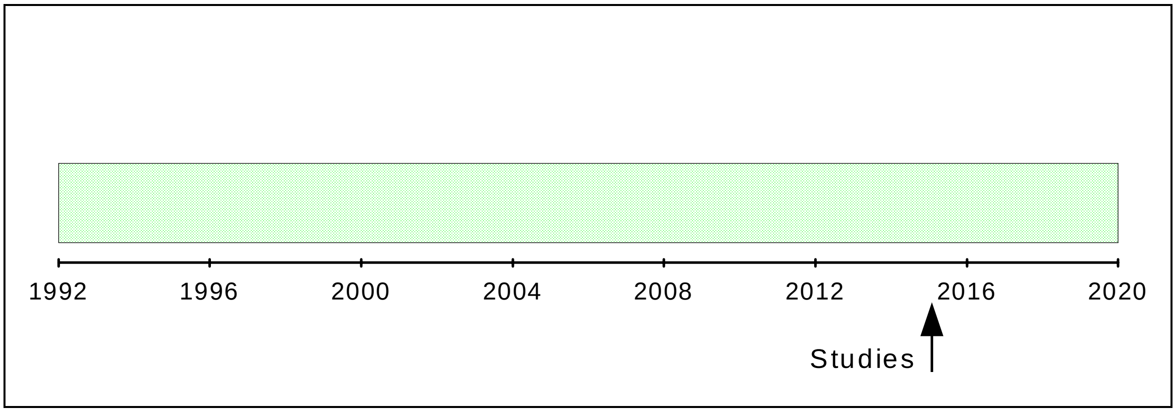

Figure 5-8. C-17 Service Life

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 AF inventory.

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 of the 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 61.0 percent (CY96), 10.7 percent below the B-model. Although departure reliability improved slightly, it remains on average 2 to 11 percent behind other weapon systems (CY96). Major aircraft indicators will continue to improve towards command standards 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 will lead to decreasing TNMCM and TNMCS rates of 8 and 3 percent respectively by FY15, with aircraft availability improving by 20 percent as well. 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. C-5 modernization is a cost-effective means of exploiting the 25 to 30 years of structural service life that remains on the C-5 force. Without comprehensive modernization or replacement, 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. This poor reliability and high operating costs will become an increasing burden to AMC's customers.

Modifications

Objective 4b2
Increase aircraft availability and reliability to meet command goals and requirements. LGA, 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.

A three-phase C-5 Modernization study was initiated 9 Jan 96 by AMC/XP requesting preliminary studies to determine economic service life and potential replacement options for the C-5. Phase I conducted an investigative engineering study to evaluate C-5 sustainment practices in the near term to effect improved departure reliability. Phase II determined the impact of implementation of the Capital Improvement [Investment] Plan (CIP) on C-5 Departure Reliability and Mission Capable Rate. Phase III looked to incorporate selected improvements from Phases I and II, and to provide a one-time upgrade of the C-5 fleet, justified by departure reliability, mission capable rates, cost benefit analyses/cost of ownership analyses, or safety/structural criteria. Subsequently, the Institute for Defense Analysis (IDA) will independently assess the C-5 study data, methods and conclusions, and the improved supportability, effectiveness, and cost benefits projected by study.

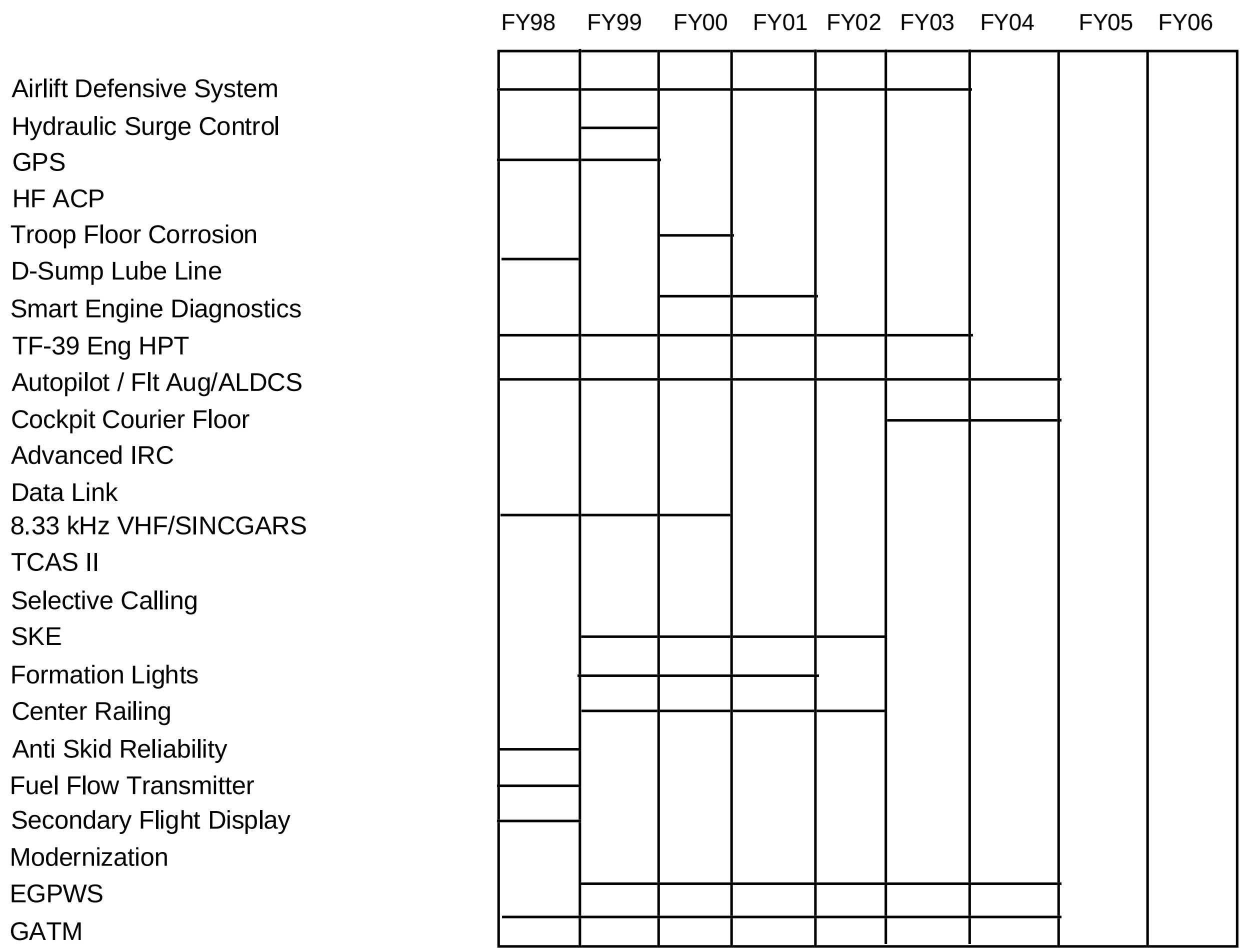

Figure 5-9. C-5 Modifications
(Timelines not shown for unfunded programs)

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 percent.

Autopilot/Flight Augmentation/ALDCS/GATM: Replaces unreliable autopilot, and flight augmentation systems with highly reliable digital technology. Upgrades communication, navigation, and surveillance equipment to meet future FAA/ICAO airspace requirements for reduced airspace separation. Includes VHF/HF/SATCOM datalink, TCAS II, communication management, and a multi mode receiver.

Engine High Pressure Turbine: Replaces a high failure rate turbine with a more durable turbine which also allows rated thrust takeoffs at higher temperatures.

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.

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.

Defensive System (DS): Provides a missile warning system with a flare dispenser to counter surface-to-air missiles, allowing operations in a threat environment.

Selective Calling: 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.

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 DS system by providing a state-of-the-art, infrared missile warning receiver and improved countermeasures.

TF39 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.

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 the future primary navigation aid. Allows mobility operations without ground-based navaids. A Flight Management System (FMS) is required for GPS installation. FMS-800 will be included with the GPS modification.

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.

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): A multi-band VHF radio will be added to the communications suite on the C-5 and C-17 aircraft. Provides interoperability with U.S. Army.

Stage 2 Fan Blade Retainer: Prevents relative motion between the blades and disk. This will eliminate the wear on the midspan platform surfaces and reduces maintenance costs.

Intra Formation Position System/Station Keeping Equipment 2000 (SKE 2000): Provides an 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.

Enhanced Ground Proximity Warning System (EGPWS): Upgrades current second generation GPWS with windshear and bank angle warning. Upgrade also incorporates a forward looking, GPS based, terrain data system to increase warning of impending controlled flight into terrain.

C-5 Modernization: Comprehensive upgrade to improve reliability, maintainability, and availability of the C-5 fleet. Upgrades include re-engining, APU replacement, structural improvements/repairs, and adoption of a commercial-type letter check to replace current PDM process.

Sustaining Engineering

To sustain the baseline capabilities of the C-5 and associated nonaircraft 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 FYDP period.

TASKS

Mishap Investigation
Aircraft Structural Integrity Program
Functional System Integrity Program
Airframe/Electrical Systems/Mechanical Systems Support
Engineering Configuration Control
EPA Directives

Service Life

The AF 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 over 50,000 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 consumed 46.0 maintenance man hours per flying hour, 16.7 for the B model (CY96 data). 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. Our depot levels have decreased for the second consecutive year in FY96 to 18 percent of our total aircraft. However, this is still above the planned 15.4 percent BAI level. The daily mission capable rate over the past years continues to improve. However, A-model MC rates average about 10.1 percent below the B-model. These problems raise concern for the economic life of the C-5A-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-Martin 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.

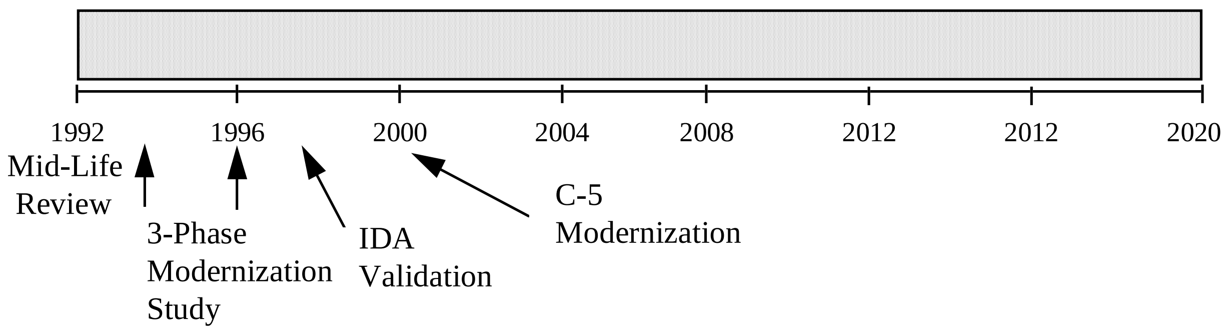

Figure 5-10. C-5 Modernization

C-130 WEAPON SYSTEM

As of 1 Apr 97, the C-130 Hercules transports are once again in AMC, and AMC has accepted lead command responsibilities for this venerable weapon system. Originally flown in 1954, the C-130 has been under continuous production since, and remains one of the most widely used and versatile aircraft of all time. The AF has nearly 700 C-130s of all types, with about 400 of them configured for airlift, and variants are operated by nearly every MAJCOM. In its airlift configuration, the C-130 can carry up to 92 combat troops with equipment, 64 paratroopers, 74 litter patients, or 6 standard 463-L pallets. It can transport various configurations of rolling stock, including some oversize vehicles.

The mission of the C-130 is to provide rapid transportation of personnel or cargo for delivery by parachute to a designated drop zone, or by landing at austere locations within the theater of operations. The C-130 provides long range, day or night capability that is degraded in most threat environments. Adverse Weather Aerial Delivery System (AWADS)-equipped C-130s have the additional capability of performing airdrops without external assistance in inclement weather. It can be used as a tactical transport and can be readily converted for aeromedical evacuation or aerial delivery missions, and remains the primary tactical aeromedical evacuation platform. The C-130 can land and take off on short runways, and it can be used on landing strips such as those usually found in advance base operations. It is a highly versatile weapons system with many specialized variations.

Integrated Product Team

AMC has established a C-130 IPT to maximize fleet effectiveness throughout the AF. This IPT is the focal point for all common R&M and capabilities issues fleet-wide. Special-mission-specific issues are managed within the commands operating those special-mission aircraft.

C-130 Master Plan

The primary focus of the IPT is development of an integrated C-130 Master Plan to properly guide fleet modification and modernization throughout MAF commands. Over four decades of continuous production has necessitated a logistics support system for 2 different engines, 3 different radars, 2 different auxiliary power systems, major differences in pneumatic system components, and several cockpit designs and avionics packages. The C-130 Master Plan will include: an integrated plan for retiring our oldest airframes; a modification plan to improve R & M, update capabilities, and produce greater commonality; and a fresh look at force structure and basing to improve fleet efficiency and responsiveness to airlift customers.

The average age of the active duty C-130 fleet is over 25 years old, while the average age of Guard and Reserve C-130s is 15 years old. The average age of the C-130E model is over 28 years and average flying time is approximately 19,800 hours; the newest E-model being produced in 1972. Based on projected operations tempo and overall mission severity, C-130E aircraft have an average remaining service life of 15 years. Material solutions such as selective repair, a service life extension program (SLEP), or procurement of new aircraft are several ways to influence and resolve aging of the C-130 fleet. Modernization of the C-130 fleet is critical to maintaining reliability and reducing cost of ownership. This modification plan insures a weapon system specifically designed to perform the theater airlift mission well into the twenty-first century.

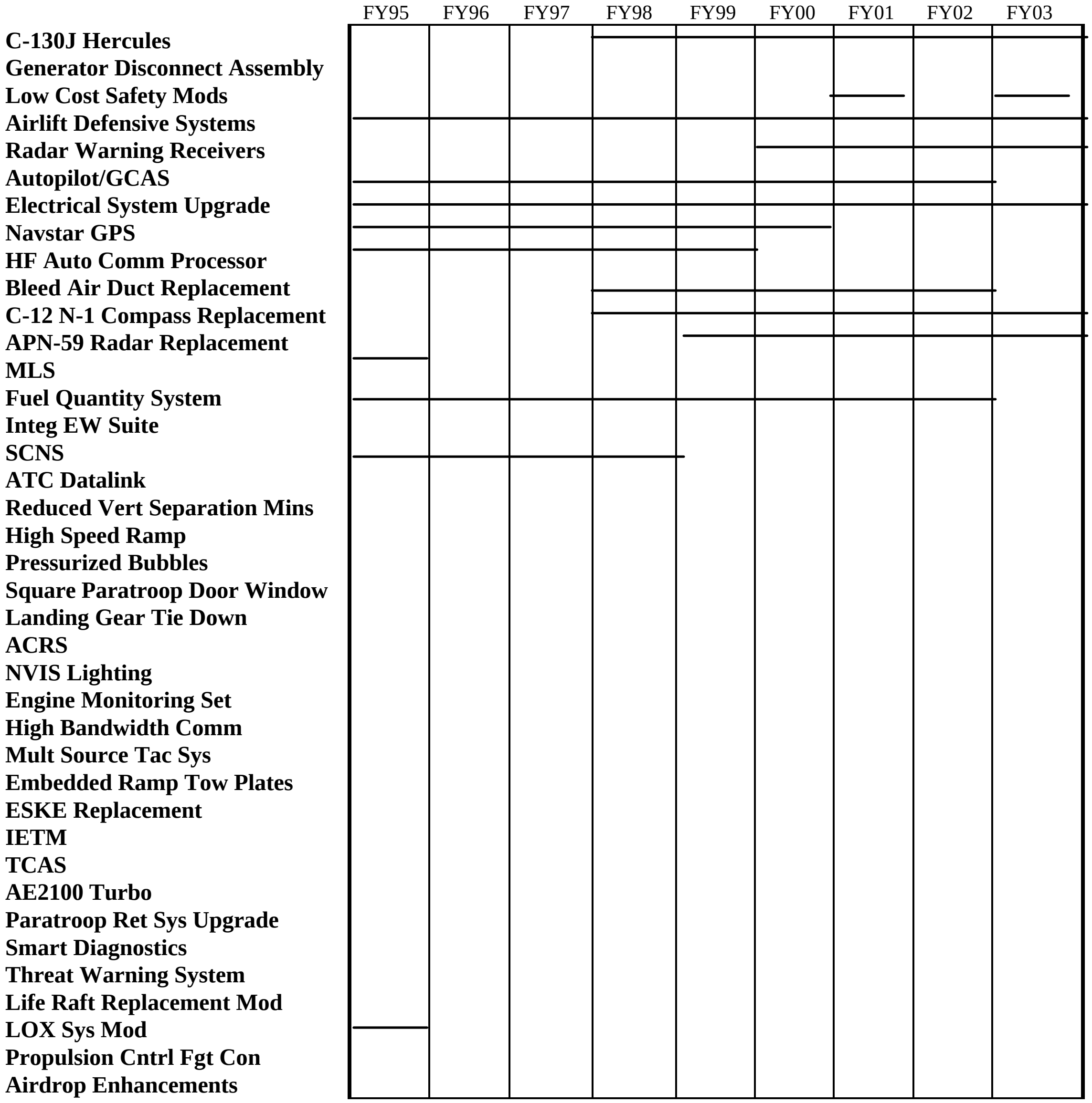

Figure 5-11. C-130 Modification Table
(Timelines not shown for unfunded programs)

Modification Summaries

The following paragraphs provide a brief synopsis of programmed/planned near term modifications for the aircraft.

C-130J Hercules: The majority of C-130s were built using 1960s technology. C-130 force structure numbers drop significantly by 2007 and procurement of the C-130J will ensure total force structure numbers are maintained, while reducing costs of ownership as C-130Es near the end of their useable service life. The C-130J will perform airland, aerial delivery, low level, weather recon, and formation operations at night and in adverse weather conditions.

Fleet-wide Defensive System**:** Installs AN/ALE-47 countermeasures dispenser system and AN/AAR-47 Missile Warning System on all remaining C-130s that can be tasked for operations in potentially hostile environments.

Integrated Fleet-wide Electronic Warfare Suite: EW-equipped portion of the C-130 fleet should be modified with an integrated control for all C-130 EW systems, both IR and RF, to reduce crew workload and increase the automatic dispensing capability of countermeasures against threats.

Radar Warning Receivers: Initially installs up to 70 C-130s with receivers to detect radar threats. This effort will be expanded to a fleet-wide modification starting in FY00.

Night Vision Imaging System (NVIS) Lighting: C-130 aircraft require NVIS lighting conversions to enable aircrews to effectively operate at night. The interior and exterior will be modified with NVIS compatible lights that will not interfere with NVGs.

C-130H3 Aircrew Training Device (ATD) Acquisition: The C-130H3 Aircrew Training System is an integrated system of academic, simulator, and flight training, to include all initial, continuation, upgrade, tactical training, and crew resource management training required to maintain appropriate qualification for C-130 aircrews.

C-12/N-1 Compass Replacement: An R&M upgrade projected to save significant operating cost over the life cycle of the aircraft, while increasing combat capability. Replaces two high maintenance, delicate gyroscopes and obsolescent compass systems per aircraft with a lower maintenance, highly reliable inertial navigation unit.

Engine Monitoring Set: Permanently installs the necessary wiring and sensors to perform propeller balance and engine vibration analysis. This system will eliminate the current setup time and enable technicians to periodically monitor overall engine health.

High Bandwidth Communications: Key features include a fixed wide coverage phased array antenna (or antenna group, three for hemispherical coverage) providing a 20+ Mbps one- or two-way communication channel.

Multi-Source Tactical System (MSTS): MSTS is a TENCAP system developed for AMC to provide near real-time intelligence information to tactical and strategic airlift aircraft for en route situation awareness.

Commercial Microwave Landing System Avionics (CMLSA): Installs a commercial microwave landing system to allow precision approaches and landings

Single Channel Ground and Airborne Radio System (SINCGARS) Provides an AM/FM VHF communications capability and an antijam capability by utilizing frequency hopping. Provides a capability for C-130 FM communication with the Army and other ground forces during critical airdrop/rescue missions.

Embedded Ramp Tow Plates: A permanently installed embedded towplate system compatible with the A/A37A-11 towplate link or a linkless system. Permanent installation eliminates installation time and protects the system from damage often incurred by exposed components of the "scab on" system.

Fuel Quantity System Upgrade: Mounts external probes in tanks. Reduces required maintenance manhours from 90 to 2.

Fleet-Wide Enhanced Station Keeping Equipment (ESKE) Replacement: Airdrop capable portion of the C-130 fleet will be modified with a fully interoperable formation positioning system.

Electrical System Upgrade (ESU): Upgrades current 35-year-old electrical system which produces unstable voltage causing four-engine power loss and interface difficulties with newer digital avionics systems.

Interactive Electronic Technical Manuals (IETM): Converts existing paper technical orders into a digitized interactive electronic medium IAW CALS standards and type "C" integrated electronic technical manual format. System design will provide for an integrated aircraft onboard digital "G-File" to reduce the requirement for storage of paper copy TOs.

Life History Recorder: Replaces old tube type life history recorder with a modern state-of-the-system for tracking airframe stress.

Autopilot/Ground Collision Avoidance System (GCAS): Replaces existing E-4 autopilot system with a state-of-the-art digital system. New system provides current capabilities while providing improved reliability, maintainability, and supportability. Adds third generation GCAS to all C-130s.

APN-59 Radar Replacement: Replaces unreliable and unsupportable C-130 radar with one common system capable of supporting color weather detection, precision ground mapping, wind shear detection, and other mission-specific capabilities.

Mobile Microwave Landing System: Provides 37 deployable precision approach systems, primarily to combat control teams. Will afford CMLSA-equipped C-130s a worldwide precision approach and landing capability to remote, austere airfields.

Self Contained Navigation System (SCNS): An integrated navigation and radio management system providing the aircrew with three independent navigation solutions. SCNS enables C-130s to operate without external navigation aids, which could be jammed or otherwise not available during wartime or contingency operations.

Traffic Collision Avoidance System (TCAS): Installs a system providing collision avoidance for flight inside congested terminal areas. This is very important to C-130 Guard and Reserve forces assigned to civilian airports, some of which are major airline hubs.

Navstar Global Positioning System (C-130): Installs a space-based all-weather radio navigation system into all SCNS-equipped C-130s to allow autonomous navigation capabilities.

AE2100 Turboprop Engine: Potential replacement engine for C-130E/H aircraft. Requires a FADEC system which would have to be integrated with either a new digital avionics suite or the current analog cockpit. Still requires analysis of contractor claims of higher reliability and 15 percent improvement in SFC.

Smart Diagnostics: Key features include application of commercially available system to military airframes allowing improved speed and accuracy of diagnostic procedures. Assumes implementation in the form of a portable hand-held device. System also allows maintenance data collection and stores complete TOs.

Paratroop Retrieval System Upgrade: A unique method of retrieving towed paratroopers developed by the Canadian Air Force, tested by Air Force Operational Test and Evaluation Center (AFOTEC) and approved for use. This retrieval system is in the process of being type classified and should be available through the federal supply system.

Threat Warning Systems: Key features include radar warning, IR/UV missile warning, and coherent beam detection/classification. Assumes use of existing warning systems with development of coherent illumination detection system.

C-130 Life Raft Replacement Modification: Current life raft capacity is 80 persons total (four 20-man rafts), which limits the maximum number of passengers on overwater missions. C-130J baseline configuration includes three 46-man rafts, enough for all aircrew and passengers, which could translate into a fleetwide modification.

Bleed Air Duct Replacement (Phase II): This program will replace five additional bleed air ducts on a portion of the C-130 fleet. These ducts are located in the horse collar area and adjacent along the leading edge of the wing. The Inconel ducts have been incorporated into new production aircraft and will be compatible with the upcoming "J" model.

Generator Disconnect Assembly: Permits generator disconnect from the engine following in-flight generator failure in lieu of mandatory engine shutdown currently required.

C-130 Aircraft Liquid Oxygen System Modification: This modification would equip all C-130s with a coil tube type heat exchanger of 200 liters per minute flow capacity in place of current exchangers on all C-130 aircraft presently equipped with single LOX converters and dual flat plate type heat exchangers.

Propulsion Control Flight Control: Modification allows control of the flight path of a multi-engine aircraft by engine thrust modulation alone. By integrating this capability into a digital flight control system an additional redundancy can be achieved.

Airdrop Enhancements: Key features include self-guiding cargo delivery system coupled with onboard wind sensing, Computed Air Release Point (CARP) automated release, and autoflight to CARP. Should be integrated with onboard mission planning system.

Air Traffic Control (ATC) Datalink Capability: System allows automatic digital air-to-ground communication between aircraft and air traffic control.

Reduced Vertical Separation Minima (RVSM): Installs/modifies altimeters and encoding equipment to allow flight inside the new ICAO-designated corridors. RVSM also modifies the link between the pressure altimeter and the autopilot.

High Speed Ramp: New configuration of the ramp/door will provide capability to air drop cargo at airspeeds up to 250 knots indicated airspeed (KIAS) and personnel at airspeeds up to 150 KIAS. Configuration will allow for interface with existing materiel handling equipment for the purpose of loading/unloading platforms and pallets.

Digital Radar Landmass (DRLM) and Visual System WST Upgrade: New visual and landmass software database will enhance and improve training needed for defensive system, NVGs, and initial aircraft commander, copilot, and navigator training.

Pressurized Bubbles: Acquire pressurizable bubbles for all C-130E/H and HC-130P/N aircraft.

Square Paratroop Door Windows: New production C-130s, as well as some HC-130s, are equipped with paratroop doors with a large square window and an integral observer seat. This modification proposal recommends retrofit installation of the square window paratroop door on the C-130 airlift fleet to augment the airlift defensive system and to enhance survivability under threat conditions in which the fleet is currently being used.

Campaign Level Theater Model: Adds a theater airlift logistics module to Thunder, a widely accepted USAF campaign level model, to assess the impact of combat delivery on the airland battle outcome.

Landing Gear Tie Down Kits: Procures already available tie down devices that would allow manual tie down of the main landing gear without jettisoning cargo.

Advanced Cargo Restraint System (ACRS): An implementation of the short-term ACRS concept improves upon current cargo restraint (MB-1 and MB-2) systems by reducing restraint system weight and increasing the speed of cargo restraining actions. Already demonstrated are restraint system weight savings of 37 percent for the C-130 and a 40 percent improvement in time required to restrain rolling stock. These improvements are effected by replacing the steel chain based MB-x devices with composite webbing based restraint systems.

Aging Airframes: Supports two models of fatigue applicable to the C-130 airframe. MODGRO is a structural analysis tool which models fatigue crack growth in aging systems. PROF is a complementary risk calculation tool.

Contingency Theater Automated Planning System (CTAPS): Primary mission of CTAPS is to develop, integrate, field, and maintain a sequence of computer-based capability enhancements for management of airborne assets at the force level and unit level in peacetime, exercise, and wartime environments.

Command and Control Information Processing System (C2IPS): C2IPS is AMC's Command and Control (C2) Information Processing System that provides automated data and message handling and decision support aids.

Fuselage Durability Study: As C-130E/H aircraft near service life, a fuselage durability study is critical for determining investment strategy for a service life extension program (SLEP), a replacement aircraft acquisition program, or a combination of the two. Effort is estimated to take 4-5 years.

Low Cost Safety Mods: Covers various low cost safety modifications. Recent modifications include auxiliary pump relay replacement, nose landing gear bolt modification, and replacement of hydraulic boost pack brackets.

Service Bulletins (C-130): Contractor product improvements required to incorporate Lockheed and other outside organizations' service bulletins identified as items USAF should comply with (under $900K).

Low Cost Simulator Upgrades: Low cost mods under $900K, including solid state synchrophaser, dual ADI power source, interphone improvements, Enhanced SKE Repeater Flight Control Indicator (RFCI) lighting and communication/interphone panel.

HAVE QUICK Radio Control Heads: Installation provides support for C-130 simulators to align them with aircraft capabilities and provide realistic secure voice equipment.

Tactical Secure Voice Program: Installs HF and SATCOM secure voice equipment in C-130 simulators to provide realistic secure voice equipment training. This modification affects 11 simulators.

Modular Airborne Firefighting System (MAFFS) Replacement: Initiative will replace all eight MAFFS units with more reliable, air tanker compliant systems. All MAFFS missions are currently flown by Guard and Reserve units.

Prioritized Mid Term (FY03-10) Solution Summaries.

Integrated Cockpit Avionics: Allows improved reliability and maintainability and easy integration of new functions into the cockpit. Replaces all flight instrumentation with six general purpose active matrix liquid crystal displays and dual redundant drivers. Concept does not include a radar upgrade.

Threat Countermeasures: Because of the wide variety of possible implementations under this concept, the time frame of this concept can be anywhere from short to long term.

Improved Cargo Handling: Key features include incorporation of articulated ramps, cross rollers, roller tines, powered belts, and control hardware.

Aircrew Visualization Systems: Allows pilots to fly the aircraft in adverse conditions using a HUD which will project a radar or IR image of terrain.

Advanced Loadmaster Simulator: This mid to long term concept simulates the loading process of a transport.

Multifunction Radar: This mid-term concept entails a low cost, highly reliable replacement radar system for combat delivery aircraft. One potential implementation of this concept utilizes low-power FM technology.

Intraformation Positioning System (IFPS): Primary IFPS emphasis is on USAF applications which require an accurate and reliable aircraft positioning and situation awareness capability for day, night, and in-weather.

Prioritized Far Term (FY11-21) Solution Summaries.

Advanced Theater Transport: Long-term replacement aircraft for the C-130E/H. Includes enhanced reliability, maintainability, and availability; advanced cargo handling features; super short takeoff and landing capability; oversized/outsized cargo capability; high speed/low level airdrop capability; articulated cargo ramp; high lift systems with externally blown flaps; fly-by-wire capability; off-the-shelf derivative engines; cross-shafted propellers and rotors; off runway landing gear; advanced cockpit design with autonomous landing capability and onboard mission planning.

Sustaining Engineering

To sustain the baseline capabilities of the C-130 and associated nonaircraft 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 FYDP period.

TASKS
Mishap Investigation
Safety Deficiencies
Aircraft Structural Integrity Program
Fuselage Service Life Study

Corrosion Tracking
Functional System Integrity Program
Systems Engineering
Reliability and Maintainability Analysis
Airframe Deficiencies

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 U.S. 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, conventional taskings, and urgent intertheater AE patient airlift. Increasing dependency on the KC-135 to fill opportune strategic AE lift requirements indicate a need for development of integral AE capacity in the near future. Integral capability combined with the size of the KC-135 fleet would greatly enhance AMC’s strategic AE capacity.

Fleet Makeup

As of FY97, the KC-135 refueling fleet consists of 496 PAI. 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 Guard and Reserve 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 is 5 years and the current 9 months in PDM should be reduced to 7 months. These reductions will be achieved by the existing AFMC flowday reduction plan.

Reliability

Objective 2a3 *Modify the aging air mobility fleet to maintain the capability to meet future requirements.* XPR, Continuous
Objective 4b2 *Increase aircraft availability and reliability to meet command goals and requirements.* LGF, FY07

Mission capable rates are good (83.2 percent CY96) and will continue to be driven upward through careful analysis and application of reliability/maintainability processes. Mission Capable Rates for Dec 96 to May 97 are averaging 87.7 percent. 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.

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 reexamine 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 copilot’s 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

- KC-135 Compass Replacement
- 135 Radar Replacement
- GPS Installation

In addition, other systems (Traffic Alert and Collision Avoidance System (TCAS), standby ADI, and an RVSM compliant Central Air Data Computer (CADC)) will be installed to meet established requirements. 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 modification summaries

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 GPS: This mod provides worldwide three-dimensional positioning/navigation for military aircraft. GPS is designated as the future primary navigation aid. Allows mobility operations in an environment without ground-based navigational aids. Concurrent modification with replacement radar and compass system.

Compass Replacement System: Replaces unreliable, maintenance-intensive compasses with digital compass system. Increases MTBF. Concurrent modification with GPS and replacement radar.

Traffic Alert and Collision Avoidance System (TCAS): Alerts the crew to impending air traffic. Also used to monitor aircraft position during formation.

Stand-by ADI: New ADI with supportable logistical requirements. Replaces current hydraulically operated stand-by ADI.

Central Air Data Computer (CADC): Fulfills PACER CRAG processing requirements. CADC will be RVSM compliant to allow further future modification toward total RVSM certification.

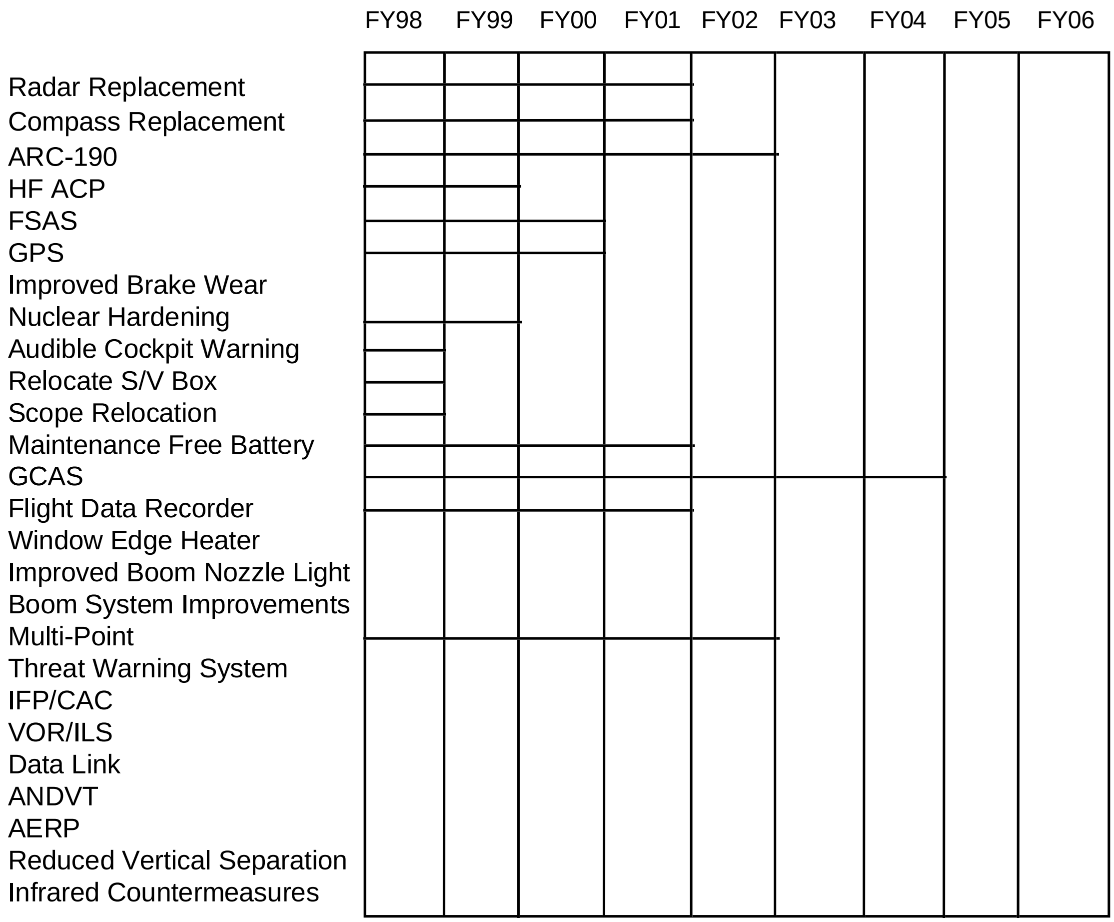

Figure 5-12. KC-135 Modifications
(Timelines not shown for unfunded programs)

Modification Summaries

The following paragraphs give a brief synopsis of the major modifications currently programmed for the aircraft:

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.

Improved Interphone: Replaces existing interphone system with a more reliable interphone with individual volume controls.

Reengine KC-135E: Replaces existing 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 reengined.

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. 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 of flight profiles that project ground impact. Congressionally mandated.

Intraformation Position/Traffic Collision Alert and Avoidance System (IFP/TCAS): Provides a 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 improves cargo only operations.

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. 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 two A/R drogues 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, AF 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 nonaircraft 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 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
Safety
System Engineering
Survivability/Vulnerability Analyses
Coral Reach
Structural Assessment
Corrosion Management
Aircraft Full Scale Testing
Aircraft Structural Integrity Program
Functional Systems Integrity Program
Electrical Wiring Replacement Program
Circuit Breaker Program

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 twenty-first 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. 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, the KC-135 aircraft structure should remain sound. The fleet is projected to be in the Air Force service well into the next century. In fact, calculations using a predicted structural service life of 70,000 hours (structural data only) and based on current annual flight hours reveal that the structural life could extend into the twenty-second century. However, these numbers taken alone are misleading as they do not include the effects of corrosion. While we do not know how much corrosion will affect the service life, we are certain there will be some affect. Therefore, the corrosion factor causes us to doubt whether the KC-135 can continue to operate economically over the next 25 years.

AMC thus places special emphasis on the development of technologies required for accurate economic service life predictions with the effects of corrosion included by FY00. Until corrosion studies can validate an accurate KC-135 economic service life, AMC will explore a potential retirement with studies starting in FY00 and with a notional replacement date in FY13.

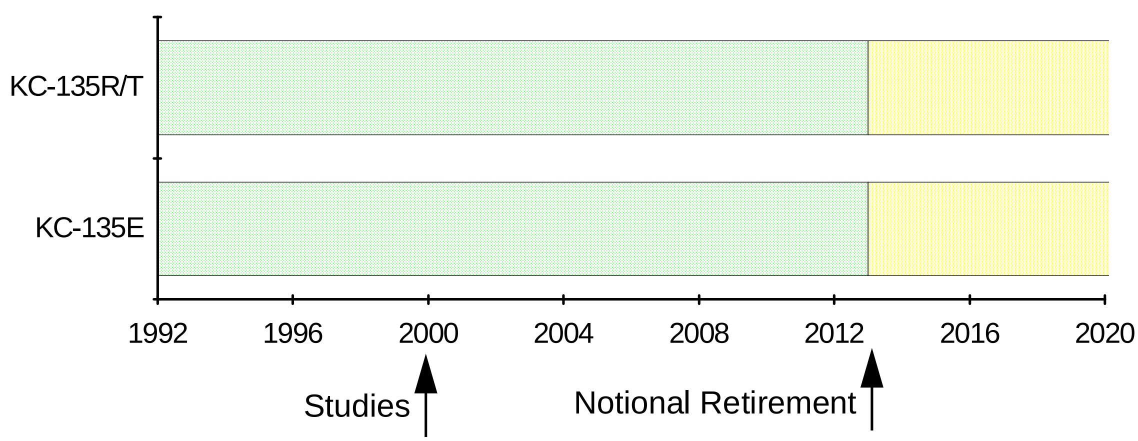

Figure 5-13. KC-135 Service Life

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 increases its capability to support navy and allied aircraft. The KC-10 will take on an even greater role in future transportation of cargo and with development of appropriate AE equipment, support the AE mission. 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 contractor logistics support (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 nine working days. Most depot-level time compliance technical orders are accomplished during "C" check maintenance. KC-10 aircraft are painted every 5 years requiring 45 days to accomplish. Contractor field team work is available through prime logistics support contractor and can be performed through subcontractors. Repairs or modifications are performed at the main operating base or at a deployed location.

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.

Modifications

As one of the newest aircraft in the AF 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.

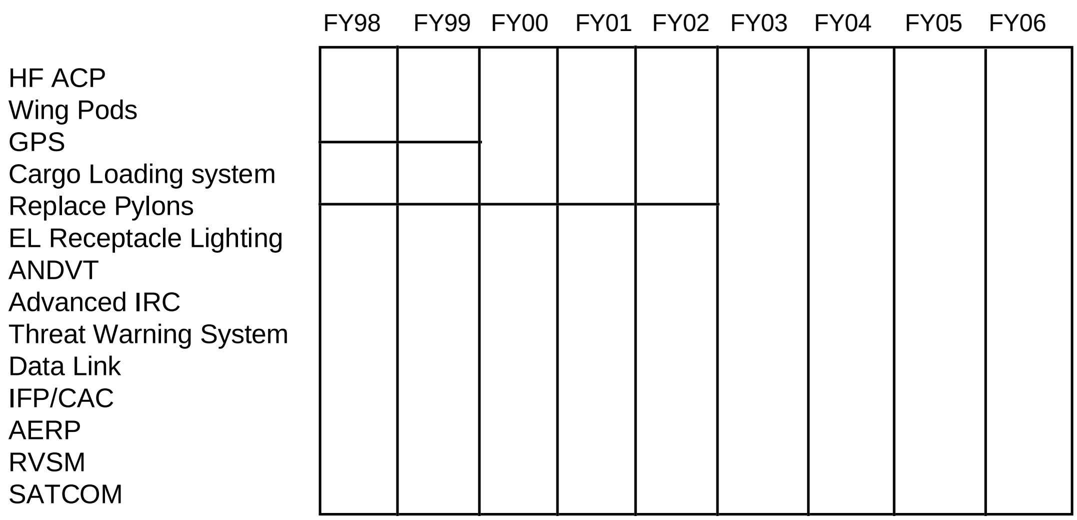

Figure 5-14. KC-10 Modifications
(Timelines not shown for unfunded programs)

Modification Summaries

The following paragraphs give a brief synopsis of the major modifications currently programmed for the aircraft:

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.

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 GPS: Provides worldwide three-dimensional positioning/navigation for military aircraft. Will be the future primary navigation aid. Allows mobility operations in an environment without ground-based navigational aids. GPS installation includes FMS 800 with electronic HSI.

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. 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 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 AMC 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 3 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).

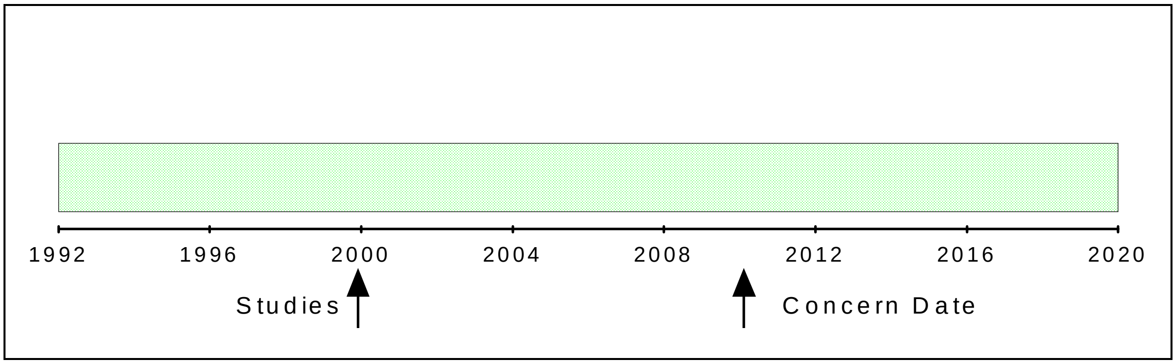

Figure 5-15. KC-10 Service Life

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 totals 687 aircraft for all segments in FY98. The long-range International Section represents 30.17 Million Ton Miles/Day (MTM/D) and 121.86 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 for FY98)

	STAGES		
LONG-RANGE CAPABILITY	**I**	**II**	**III**
Million Passenger Miles/Day	21.71	61.95	121.86
Million Ton Miles/Day	5.18	13.01	30.17

Although the CRAF Stage III on contract for FY98 is 30.17 MTM/D, AMC relies only on the amount of CRAF that closes the gap between organic airlift and 49.7 MTM/D, which is currently 20.5 MTM/D. Civil aircraft are very effective in moving bulk cargo to main operating bases where the threat is acceptable. They have limited oversize and no outsize cargo capability. Analyses of the current planning scenario shows that 20.5 MTM/D from CRAF is the optimum organic to CRAF mix. CRAF capacity can fluctuate significantly each year. The extra capacity is added insurance 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. 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 FY98 all passenger, cargo, and 90.3 percent of Aeromedical evacuation lift requirements will be met. Future efforts must focus on maintaining the necessary commitments through adequate incentives.

CRAF Modification

In order for CRAF carriers to accomplish their missions, their aircraft equipment must be compatible with military systems and they must have access to airspace world-wide. As carriers begin to modify their fleets to comply with global air traffic management initiatives, AMC must ensure the most capable aircraft are committed to the program. AMC is working with the NDTA Military Airlift Committee to address this issue in partnership with the industry. Similarly, as navigation warfare concepts develop, it is possible CRAF carriers will be unable to support AMC missions if they do not have P(Y)-code GPS capability. P(Y)-code GPS is an encrypted system which provides improved antijam performance and is less susceptible to spoofing. As AMC develops plans and equipment for organic theater navigation, approach, and communication we must simultaneously develop plans to ensure the CRAF has a compatible capability. As carriers modify their fleets for operations in future global airspace, there may be a window of opportunity to acquire these capabilities at reduced cost.

AE Role

CRAF aircraft will also provide the primary dedicated strategic AE capability in major regional contingencies. Forty-three Aeromedical Evacuation Shipsets (AESS) are available to convert CRAF B-767 aircraft for the AE 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 crew-members and support personnel are trained to facilitate integration into military AE operations during major theater wars. Under the FY98 CRAF contract, there are 28 B-767 aircraft committed to meet the anticipated new JCS CRAF Stage II and Stage III AE 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. The B-767 casualty transfer system has been evaluated and found to be insufficient. A replacement Patient Loading System (PLS) (the ramp) has been developed and approved for production projected to begin in Jan 98. Target is to have all 48 PLSs built within 120 days. This will improve the ability and efficiency to on/offload patients.

OPERATIONAL SUPPORT AIRLIFT (OSA)

OSA aircraft fly AF-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 AMC CONUS OSA fleet is made up of the C-21. These weapon systems provide support to a variety of customers. Fifty-one active duty aircraft are dispersed at 8 installations in units ranging from 4 to 8 aircraft each. The crew ratio averages 1.13. 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. Table 5-3 details AF OSA force structure as planned for FY97.

Table 5-3
CONUS OSA FORCE STRUCTURE

MDS	Component	PAI	Log Support	Crew Ratio
C-21A	Active/ANG	51/4	CLS	1.13 (active)

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

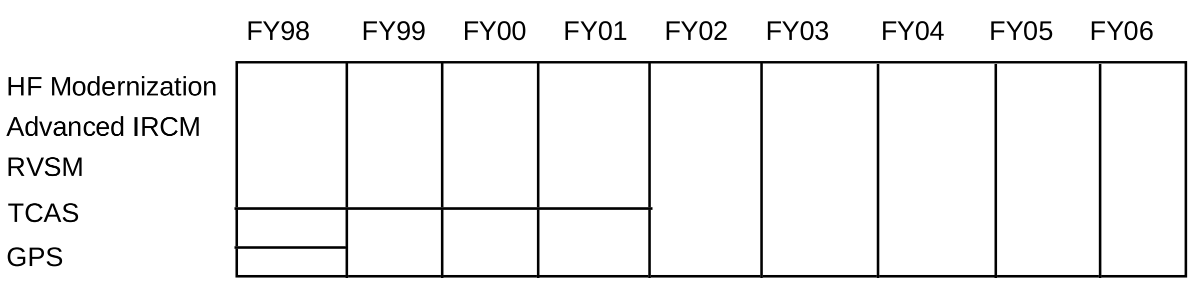

Figure 5-16. OSA Modifications
(Timelines not shown for unfunded programs)

Modification Summaries

The following paragraphs give a brief synopsis of the major modifications currently programmed for the aircraft:

Traffic Alert and Collision Avoidance System (IFP/TCAS): Provides a passive, low probability of detection/intercept, with night and adverse weather capability.

GPS: Provides worldwide three-dimensional positioning/navigation for military aircraft. Will be the future primary navigation aid. Allows mobility operations without ground-based navaids.

The wartime need for OSA came to light during Operations DESERT SHIELD/DESERT STORM, when the requirement out-weighed the availability. The C-21 is a vital link in the wartime movement of time-sensitive DV and medical personnel, information, spare parts, and critical medical supplies. As published in the Joint Wartime Requirements for Operational Support Airlift, dated Oct 1995, the C-21 is a key player in the 161 long-range OSA aircraft requirement.

C-9A

The C-9A aircraft is a commercial DC-9 aircraft configured as a flying hospital ward capable of carrying 40 patients in litters or seats.

Peacetime Mission

Primarily, the C-9A flying hour program exists to maintain wartime proficiency for assigned aircrew members of the 375 AW. Opportunities derive on a scheduled basis to optimize Defense Health Program funds by moving patients within CONUS to specialty care facilities.

Wartime Mission

The 10 PAI C-9A aircraft based at Scott AFB IL, deploy in support of the dual Major Theater War (MTW) scenarios. Primary purpose is to augment theater assets in the intratheater evacuation of combat casualties.

Aircraft

There are currently 19 PAI C-9A aircraft in the AF inventory, 10 of which are assigned to AMC. AMC-owned aircraft are projected for FY99 to be manned at a 3.2 crew ratio (1.1 active plus 2.1 Reserve Associate). For FY98, the ratio is 3.5 (1.6 active plus 1.9 Reserve Associate). These aircraft are the only dedicated AE aircraft and supported by CLS at the depot level. AF support consists of organizational and limited intermediate-level maintenance, restricted to a "remove and replace" concept. Supply support is provided by COMBS.

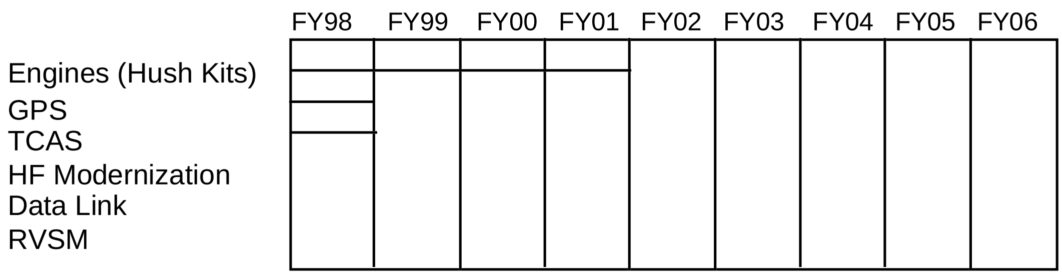

Figure 5-17. C-9A Modifications
(Timelines not shown for unfunded programs)

Modification Summaries

The following paragraphs give a brief synopsis of the major modifications currently programmed for the aircraft:

Intraformation Position/Traffic Alert and Collision Avoidance System (IFP/TCAS): Provides a passive, low probability of detection/intercept, 360 degree intraformation positioning system with night and adverse weather capability.

GPS: Provides worldwide three-dimensional positioning/navigation for military aircraft. Will be the future primary navigation aid. Allows mobility operations without ground-based navaids.

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 reengineering 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.

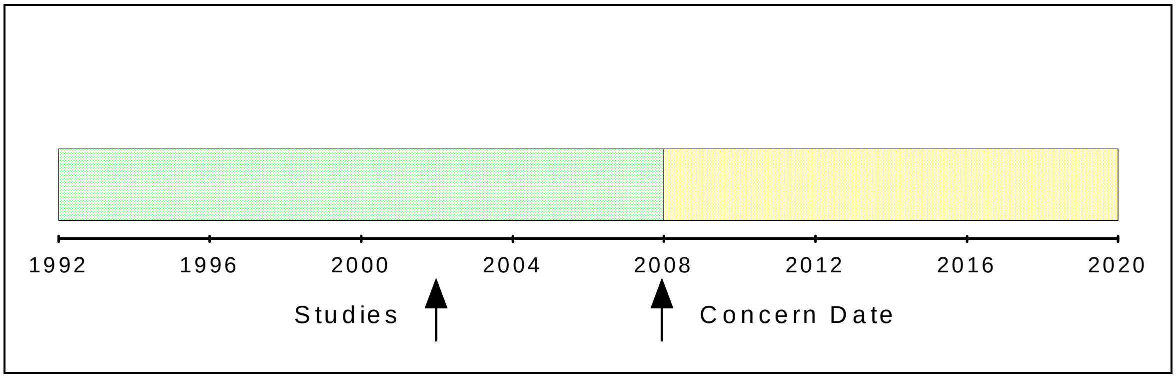

Figure 5-18. C-9 Service Life

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 17 aircraft dedicated to the SAM and 15 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-9, C-20, C-32, and C-37. 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-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
C-32	*4	TBD	45	
C-37	**2	TBD	12	12

*Two aircraft delivered in FY98, and two aircraft in FY99
**Option exists to buy 4 more

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 U.S. 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 U.S.

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 24 months for depot maintenance including aging aircraft maintenance.

Modifications

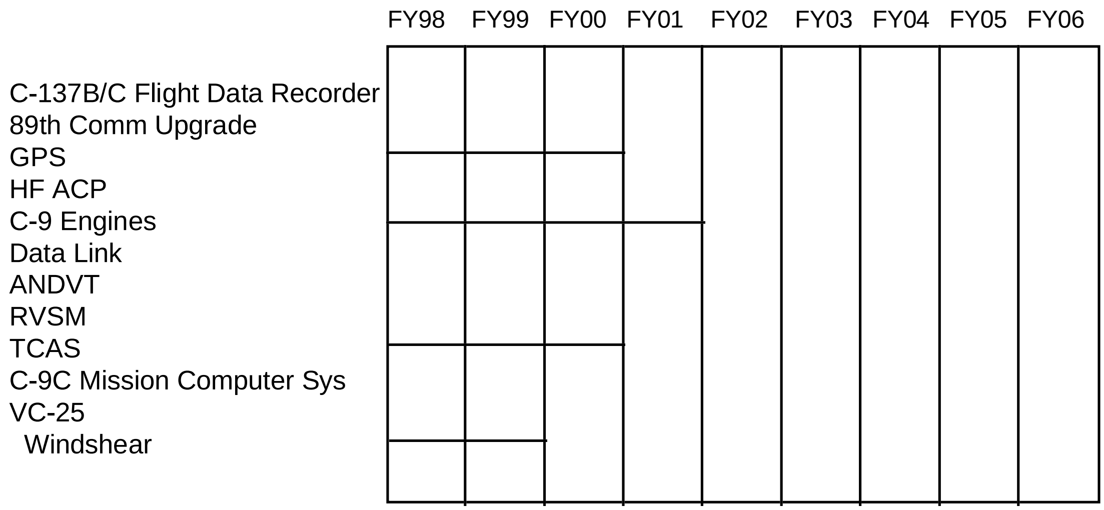

Figure 5-19. SAM Aircraft Modifications
(Timelines not shown for unfunded programs)

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-9/C-20).

Hushkit (C-9C): Place hush kits on current C-9C engines in order for aircraft to meet FAA Stage 3 noise restrictions beginning in the year 2000.

Traffic Alert and Collision Avoidance System (IFP/TCAS): Provides a passive, low probability of detection/intercept, with night and adverse weather capability.

GPS (VC-25/C-9C/C-20/C137): Provides worldwide three-dimensional positioning/navigation for military aircraft. Will be the future primary navigation aid. Allows mobility operations without ground-based navaids.

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. The C-32A and C-37A are a step forward in meeting the future needs of SAM.

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 U.S. 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 3 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 757-200 aircraft in 1998 to be designated C-32As and two Gulfstream V aircraft to be designated C-37A.

C-20B 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 is not Stage 3 compliant, the C-20H (G-IV) does meet future FAA noise requirements. A Statement of Need and Operational Requirements Document has been validated for a small VC-X aircraft. The 89th Airlift Wing will receive two Gulfstream V aircraft in FY98 to be designated C-37As. AMC has conducted a SAM modernization study, approved by the CSAF, which recommends replacing C-20Bs with additional C-37As.

The C-9 fleet is flown at less than half the C-9 aeromedical evacuation fleet utilization rate. An engine hush-kit program is underway to allow the aircraft to meet FAA Stage 3 noise compliance requirements. 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 U.S. 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

LOGISTICS VISION

Future contingencies and humanitarian operations will require AMC 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 AMC cannot choose its 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 innovative 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 multipurpose, jointly developed and operated shops will be capable of repairing all deployed vehicles. 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: Global Combat Support System (GCCS) will be the overall corporate database, and will receive Transportation

MHE data through the New Modernization OLVIMS. Until maturation of GCCS, Real time Vehicle Information Systems (ReVIS) and Mobile Real Time Information System (MOReVIS) will be an integral part of OLVIMS modernization. Overall global visibility and management of MHE will be possible under the fully funded and functional AF ReVIS. ReVIS will allow up-to-the-minute real-time vehicle status updates to MAJCOM functional managers. Status will be available to all CONUS and OCONUS sites, to assist in day-to-day vehicle management and deployment decisions and will be incorporated into the modernized OLVIMS. This system will allow transfer of assets electronically from losing to gaining bases, and virtually eliminate the need for paper to pass between various agencies on vehicle shipments. An offshoot of ReVIS for contingencies will be Mobility Real-time Vehicle Information System (MOReVIS). This will allow for deploying units to transmit vehicle related information via ReVIS while operating in austere environments utilizing laptops with SATCOM technology. Automated Fleet Information System (AFIS), MAJCOM Automated Fleet Information System (MAFSI), and On Line, Vehicle Interactive Management System (OLVIMS). 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.

SUPPLY

Mobility Bags

AMC standard is to maintain 100 percent fill rates for mobility bags. Presently we are maintaining 89 percent for A bags, 87 percent for B bags, 100 percent for C bags, and 81 percent for AMC unique E bags. These figures include newly assigned units from Pope, Little Rock, and Dyess Air Force bases. Our biggest challenge is obtaining funds to purchase additional mobility bag assets and replace consumable items used to support present worldwide contingencies and operations. No money was provided in FY97 to replace consumable assets or for the purchase of additional assets needed to satisfy Global Assets Listing mobility increases. Presently, no funding has been allocated to the units gained to meet AMC standards. We intend to cover shortages, as much as possible, through redistribution of reported excess assets through our own units and other MAJCOMs. Another strategy to fill these shortages is to rework AMC standards and the current tariff sizes. However, without badly needed funding, we are risking our ability to continuously support present or future worldwide mobility commitments.

While CRAF aircraft will not be intentionally operated into contaminated areas, CRAF aircrews have a need for emergency, ground chemical defense ensembles should they encounter an unexpected threat while on the ground. Currently there are suits in storage for CRAF activation. HQ AMC/DOF is researching shortfalls and training required for civil crews to use them in an emergency situation.

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 AF. This shift should provide the flexibility needed to optimize AMC's operational capabilities.

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 AF 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 Line Replaceable Unit (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 MATERIEL (WRM)

There is presently no funding (PEC 28031) to inspect, purchase, store, transport, or maintain WRM.

WRM is the materiel 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.

The AMC War Plans Additive Requirements Report shows our WRM equipment requirements. This equipment, particularly materiels handling equipment (MHE), pallets, nets and maintenance equipment, is used to provide immediate support during contingencies and other specified periods of increased operational requirements.

The AMC war consumables distribution objective (WCDO) details expendable item requirements (i.e., petroleum, lubricants, munitions and rations) that directly support military and Civil Reserve Air Fleet aircraft. Consumable requirements are determined by extracting planned sortie data directly from the Wartime Aircraft Activity Report, and multiplying the sorties by historical use factors to obtain projected wartime requirements for each type of consumable and aircraft.

Program Element Code (PEC) 28031 provides funding for WRM equipment, spares, rations, operation, storage, maintenance, parts, corrosion control, reconstitution, transportation, inspections, and manpower. 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 consumed assets cannot be charged to a using organization. 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.

The AMC WRM program is totally unfunded. Management actions are funded from normal operations and maintenance (O&M) funds, while all base level maintenance of WRM has come from base level O&M funds. As a result, WRM maintenance at base level consumes resources from other programs.

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.

Impact If Not Supported

Increased aircraft activity during wartime requires additional equipment and consumables for loading, unloading, and turning aircraft as quickly as possible. Nonavailability 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 adversely impacts closure of combat forces. If funding for WRM is not approved, it will force us to use decreasing O&M funds to support WRM or allow our present assets to continue deteriorating. Continued lack of program funds will eventually degrade our wartime support capability and require expending scarce aircraft sorties during the initial days of a contingency, thus delaying the arrival of combat forces.

DEPOT MAINTENANCE

Objective 4b3
Increase aircraft availability and reliability to meet command goals and requirements. LGA, 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 nonsupportable 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 commonality 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 through distributed mission training.

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, the C-17 will undergo FOT&E to ensure it can provide the needed capability required.

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 without reliance on ground-based 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

Objective 1c3
Maximize successful mission performance in degraded operating environments. DOK, FY06

Night Vision Goggles (NVG)

NVG use is essential to complement the full spectrum of air mobility nighttime missions. Air Force Doctrine Document 30 (AFDD30) (Airlift operations) states, "U.S. 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 10-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.

Defensive Systems

The Defensive Systems (DS) program began in 1989 to protect airlift aircraft from the increasing threats. DS 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 Guard and Reserve C-5, C-17, C-130, and C-141 aircraft. Installation should be complete on C-141s in FY99 and C-5 aircraft in FY03; the C-17 portion of the program should finish in FY04. The C-130 installations are scheduled to complete in FY06.

Mobility Aircraft Small Arms Protection

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)

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, Multi Source Tactical System (MSTS), is large, difficult to set up, and cannot receive feeds from CIS.

AMC is designing the Real Time Information in the Cockpit (RTIC) follow-on to the MSTS. Designated the Airborne Broadcast Intelligence (ABI) system, it will capitalize on many of the operational features of MSTS. Like its predecessor, ABI will receive and process the various intelligence broadcasts (TDDS, TIBS, and TADIXS-B) and the air picture via TADIL-A. The processed information will appear on a moving map display showing a GPS referenced aircraft position relative to the known threats. Aircrew members can change the flat panel display to overlay threat information on navigation charts, 2D or 3D digital terrain charts, or multi-spectral imagery. The production system will exploit commercial off-the shelf technology to reduce its size and weight compared to the prototype MSTS. The first 13 of 65 units are slated for delivery to AMC in 1998.

Air Force Mission Support System (AFMSS)

Air Force Mission Support system (AFMSS) is an AF 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, air refueling planning, combat mission folder preparation, aircraft/weapon system avionics initialization, and down-loading of post-mission maintenance and operational data. The AFMSS software is migrating toward a single software baseline that is independent of hardware and operating system. As the "common" Air Force mission planner, it will replace most unit/wing nonintegrated systems in existence today. Deployment of ground systems started in FY95 with programmed deliveries each FY through 2000. Initial operational capability was obtained in 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.

AFMSS is comprised of a “family” of mission planning software tools that can be used individually or together to tailor their capabilities to meet mission requirements. These options include the UNIX-based Mission Planning System (MPS)/ Portable Mission Planning System (PMPS) and the Window™-based Portable Flight Planning Software (PFPS).

The MPS tool is installed on commercially available workstations in a server-client configuration. This provides the capability of planning many different types of aircraft or "flights" of aircraft in two different AORs. It provides route deconfliction, flight plans, maps/charts, multi-spectral images, radar predictions, threat analysis, pilot perspective views, communications data, Takeoff and Landing Data (TOLD), 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 disk drive, Personal Computer Memory Card Inter-national Association (PCMCIA) data transfer capability, tape backup, six removable hard drives, and elector-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 PMPS provides the features of the MPS in a smaller, portable, lightweight configuration while maintaining the full printing and data transfer services of MPS. The PMPS is a one-person portable, single user system . It consists of a "laptop" style keyboard and screen, a text printer, 1553 interface bus, Data Transfer Device (DTD) loader/reader device (if required), and a capability of interfacing with the MPS directly by modem or by 3.5 floppy disk. The PMPS also incorporates PCMCIA data transfer capability.

Newly incorporated in the AFMSS family, PFPS has many of the capabilities of the Unix-based flight planning systems and the advantage of installation on inexpensive, commercially available desktop/portable computer systems. It’s disadvantage is that it cannot meet multi-level security requirements needed during wartime/contingency operations. PFPS provides route planning, airdrop planning, TOLD, maps/charts, data transfer loading capability, and interface with the MPS/PMPS. The majority of AMC’s peace time mission can be accomplished using PFPS.

AMC's plan to tailor the AFMSS mission planning tools is to incorporate the MPS/PMPS at the wing and squadron level and have the PFPS available to the squadron and aircrews. This blend provides the maximum mission planning capability for peace time and wartime/ contingency operations at an affordable cost. AMC's acquisition program for mission planning meets today's requirements while remaining on the path towards the Joint Mission Planning Segment (JMPS)--the joint service, DII/COI GCCS compliant mission planning system for the twenty-first century.

Communication to the Cockpit

Objective 1a7
Provide global voice/data connectivity to aircraft and worldwide locations. DOU, FY02

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 AF 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 and not require frequent, man-hour intensive inspections.

Objective 4b3
Modify/sustain support equipment to improve reliability and availability. LGB, FY07

To improve refueling capabilities, hydrant servicing vehicles (HSVs) are being procured as the vehicle of choice for hydrant refueling. 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 and highlift capability to support requirements identified by individual bases.

MATERIEL HANDLING EQUIPMENT (MHE)

Objective 2a1
Acquire/modernize the MHE fleet to meet user requirements across the spectrum of conflict
XPR, FY01

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. 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 (Tunner, 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 2003. These programs will ensure adequate coverage until the new Tunner (60K) loader and new small loader are on board.

The Tunner (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 Tunner (60K) loader was originally awarded to Southwest Mobile Systems Corporation, currently known as Systems and Electronics Incorporated (SEI). Requirements for the Tunner (60K) loader were reviewed and validated after the May 1994 conference and again revalidated in 1996 at the Worldwide 463L MHE Conference and are projected at 318 loaders. The Tunner (60K) delivery profile runs from 1997 to 2003.

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 loader (NGSL), 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 NGSL was approved by CSAF in July 1994. The acquisition plan is being finalized and recommends procurement funding and deliveries to begin in FY00 AMC is currently exploring a Non-developmental Item (NDI) loader as the NGSL.

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 FORCES 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 Forces to more accurately assess potential military and terrorist threats to mobility operations and employ effective defenses against them. Today's Security Forces at home station and contingency forces require the following equipment modernization:

AMC SF will advocate procurement of tactical vehicles for deployment during initial stages of high risk contingency operations. SF 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/SF goal is to have SF 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 are 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 relocatable 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 antipersonnel and antiarmor rounds, as well as possess refire capability. AMC will continue to advocate acquiring the multi-role weapon system.

Identify and acquire commercial off-the-shelf body armor for law enforcement 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 SFs 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 SF 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 but also a deployable (laptop) CIS. In addition, AMC developed SIPRNET Quick Dial-Up Communication (QDUC), used through existing DSN lines, for all in-garrison and deployed intelligence operations at locations where a SIPRNET node is not available. For deployed units without a DSN line, our

Deployable Intelligence Support Kit (DISK) delivers SIPRNET connectivity. DISK is a compact, high-bandwidth SATCOM capability providing a reliable connection to theater and CONUS intelligence agencies. The laptop CIS, modem, high-speed encryption device, and SATCOM are key DISK elements and are used at mature, austere, and bare-base locations. While the standard CIS at each unit allows intelligence personnel to “Reach Into” theater databases in support of air mobility operations, these deployable systems allow deployed personnel to “Reachback” to CONUS for support from and interface with the AMC staff. This global connectivity for intelligence databases and systems ensures 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 hazardous by accidents/incidents or terrorist bombs. 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-1097 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 FY97 and FY98.

FIRE PROTECTION EQUIPMENT

Fire fighters will deploy with vehicles and equipment kits to support a rapid force deployment. They currently deploy with aircraft rescue fire fighting (ARFF) vehicles that are limited to 1minute of fire fighting. This capability does not include rescue or application of agent on fires in hard to reach areas of large frame aircraft. Current capability only provides agent to cover the exits of burning aircraft while passenger and crews escape on their own. At a minimum, fire fighters require vehicles (C-130 deployable) that contain 1,500 gallons of water, 200 gallons of AFFF, 500 pounds of dry chemical fire fighting agents and have an elevated agent delivery system (EADS) that discharges all fire fighting chemicals. A HMMMV dual agent vehicle with compartments and roof mounted agent discharge capability will provide fire fighters the ability to respond and apply fire fighting agent on a small fire before major damage occurs. Combined, the 1,500 gallon ARFF vehicle and HMMMV dual agent vehicle will provide fire fighters the equipment needed to improve the survivability of passengers and crews and the salvage of aircraft.

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. The AMC/SG staff 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.

To increase flexibility in AE lift, options are being reviewed which could provide integral AE capability for the KC-135.

Our AE programs are at varying stages in the acquisition and procurement processes: Advanced Hybrid Oxygen System-Medical (AHOS-M), expected to replace the existing liquid oxygen system and significantly reduce maintenance and logistic support requirements, is pre-milestone zero; Spinal Cord Injury Transport System (SCITS) is in Phase II ; AE certified portable ventilators, currently in Phase II, will enhance our current inventory and offer new technology for our infant and adult ventilator dependent patients; Continuous Intermittent Suction Unit (CISU) is awaiting a milestone III decision, procurement and fielding will immediately follow;. An AE portable electrical power source providing increased flexibility in patient support has been procured and is being fielded. 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.

Objective 1a6
Develop CONOPS, acquire equipment/storage facilities, develop an automated tracking system, and outline program management for Patient Movement Items. SGA FY04

Patient movement items (PMI) are the supplies and equipment necessary to support a patient during aeromedical evacuation (AE). Born out of lessons learned from ODS/S, deficiencies were noted in the availability of certain PMI. The AE system uses the PMI sent by the “losing” medical treatment facility (MTF). The “gaining” MTF or enroute facility usually retains the PMI until they can send it back (equipment) or keep it for their own use (expendable items). During peacetime, the process is well defined; however, during contingencies or wartime as demand multiplies, the volume of goods will dramatically increase and transportation flow patterns will be disrupted. There must be a system in place to retain and recycle PMI by the military medical services, otherwise there will be a one-way flow of goods out of the respective theaters depleting capabilities for both the MTFs treating the casualties and the AE system that transports the patients, giving in-flight care.

The PMI program will manage assets sufficient to provide in-kind exchange when PMI must accompany a patient while in the AE system to his/her destination. The Defense Medical Standardization Board (DMSB) has identified certain core PMI.

Being the Lead Command for AE, AMC/SG will compute the quantity required for each item in the PMI program based on current planning guidance. The requirements are then roughly divided between theaters based on patient projections. PMI quantities, by Center, will be spelled out in a table of allowance based on requirements and storage capability. When added together, the PMI Center authorizations will equal the PMI requirement. Supplementary items, such as batteries, shipping containers, and disposable components, will also be stocked by the PMI Centers.

The PMI tracking system must be easy to use and have a degree of portability. Equipment data will be updated by AE personnel where PMI would be exchanged, quantities changed (increase or decrease), or at destination MTF. Updates can be processed daily, and the global picture will be available to all Centers. The processes used in the tracking system will be the same in peacetime as in a contingency/wartime.

MEDICAL WAR RESERVE MATERIEL

HQ USAF/SG in coordination with the MAJCOM/SGs are developing and revising medical modules to support theater medical requirements. These modules are designed to allow medical planners to deliberately plan to deliver the appropriate medical equipment to the theater at the time that it is needed. These modules will reduce the medical airlift requirements by phasing modules into the theater as the population at risk increases. Thus, providing the right equipment to the right place at the right time.

AMC SG received only 58 percent of the required funds needed for medical and AE War Reserve Materiel in FY97. This was due in part to the numerous changes required to revise or create table of allowances to meet the new lighter and modular concept for equipment assemblages. To ensure the warfighting CINC's requirements are met, first deploying assemblages and force protection items (ie: Biological/Chemical Warefare Antidotes) received the majority of the funds. The AF Medical Logistics Office forecasts that the funding percentages for FY98 will be higher.

AIRFIELD OPERATIONS EQUIPMENT

Air Traffic Control and Landing Systems (ATCALS) Equipment

This section encompasses both fixed based air traffic control equipment as well as deployable ATCALS and aircraft avionics. The air traffic control functions apply to both fixed based as well as deployed operations supporting both terminal and en route services. AMC air traffic controller's provide Radar Approach Control (RAPCON) and tower service at CONUS bases. These air traffic control/airfield management functions provide a solid foundation for aircrew local training sorties and the critical bridge between conventional air traffic control services and wartime readiness. AMC controllers, in most cases, provide 24 hour per day operations to enable AMC "Global Reach." To date, the mobility requirement for AMC air traffic control has been limited only to personnel resources. During major contingencies, AMC airfield management/air traffic control personnel were tasked by Unit Type Code (UTC) to augment various deployments. The home based training and local flying training sorties also provide critical proficiency training to prepare our controllers for combat. 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 also provide expertise for airfield assessment and survey. 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 (ATCALS) equipment. They depend heavily on communications links, HF, SATCOM, and land lines to coordinate the transit of missions through adjacent airspace. To date, AMC has relied on ACC and AOR air traffic control assets to conduct deployed, contingency operations. AMC's vision is two-fold: provide AMC an organic first-in, rapidly deployable architecture that encompasses ground-based NAVAIDS (mobile VORTACs, Mobile MLS) and a limited number of state-of-the-art, rapidly deployable ASR/PAR systems to enable first-in airlift support to the warfighting CINC.

Fixed Based ATCALS

Today, ATCALS are beginning to require equipment modernization to meet mission requirements. USAF involvement in 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 is studying the feasibility of Global Positioning Systems becoming the standard for navigation systems under the Future Air Navigation System. AMC will continue to develop upgrade initiatives to keep pace with technology and FAA modernization efforts. The Standard Terminal Automated Radar Systems (STARS), Mode S, Digital Mappers, and DBRITE Radar upgrades are just a few examples.

Deployable ATCALS

AMC has adopted a multifaceted approach to provide a first-in landing capability to austere airfield locations. Organic ground-based deployable assets are one key phase of achieving this first-in capability.

Since AMC currently owns no mobile assets, the command relies on ACC to supply mobile ATCALS equipment. 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 funded a program 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.

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. Improvement of mobile radars and towers and AMC ownership of mobile ATCALS, our Global Reach requirements will best be met.

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.

As state-of-the-art automated observing methods become more efficient than the manual methods now in use, they 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 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 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 location is being replaced by relatively 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 have access to WSR-88D Next Generation Weather Radar (NEXRAD) data. NEXRAD uses Doppler technology to enhance thunderstorm 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. The Meteorological Information Standard Terminal (MIST), currently in the conceptual phase, is intended to replace AWDS. MIST will be a standard AF workstation that will host a selected variety of software applications to meet the needs of the user. Fielding of MIST in limited capacities is expected beginning in FY98.

Deployable Weather Systems

Deployable weather observing systems currently include semiautomated 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.

Satisfying requirements for an improved deployable observing system is the recently-fielded Manual Observing System (MOS). The lightweight MOS features substantial state-of-the-art improvements over the older handheld systems for providing basic weather measurements (temperature, wind, pressure). While the MOS provides a needed improvement in deployed weather observing capability, a deployed lightning detection capability is still lacking in AMC.

The Tactical Meteorological Modification (TACMET MOD) Program will replace existing deployable weather sensors. Capabilities will include measurement of wind, temperature, relative humidity, atmospheric pressure, cloud height, lightning location, surface visibility, present weather, precipitation, soil moisture, and light illumination.

As a first-in capability, AMC weather personnel may also deploy with a laptop/notebook microcomputer equipped with a modem and LAN card to access textual and graphical analysis and forecast products and data from CONUS Naval and AF regional weather centers. Access is made either via dial-in over existing phone lines or via NIPRNET/SINPRNET over deployed, robust communications. 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. Fielding will continue through FY98.

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. 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 FY98 and continue through FY01.

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.

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 the quality of life support systems.

Passenger Life Support Equipment

Emergency Passenger Oxygen System (EPOS):

A C-141 Class A mishap highlighted deficiencies in passenger emergency eye/respiratory equipment. AMC needed to provide an all-encompassing breathing/protective system for passengers protection from the effects of smoke/fume and oxygen deprivation. The EPOS is an aircraft subsystem capable of meeting this requirement and can replace the yellow “Dixie Cup” mask found on most of AMC’s aircraft. The EPOS provides smoke/fume protection as well as an oxygen source for rapid decompressions. We began purchasing this equipment for AMC airlift fleet in FY96. Funding is programmed for the tanker fleet starting in FY98 and the OSA fleet FY99. This remarkable leap forward in passenger safety highlights AMC’s continuous effort to protect passengers as well as aircrew personnel. There is a continuous effort to fund the C-130 fleet.

Vacuum Packed Multi-Place Life Raft (VPLR):

The AMC fleet is experiencing an extremely high condemnation rate of multi-place life rafts because of the frequency of inspections and wear and tear associated with inflating and repacking each raft during these inspections. Additionally, the roller system on the KC-135 requires moving the raft to the rear of the aircraft in order to permit cargo pallets to pass freely through the fuselage. There is a demonstrated capability to vacuum pack the 20-person life raft system. This procedure will down-size the current life raft which is "loose rolled/packed" and replaced on the aircraft approximately every 200 days. Vacuum sealing the raft will allow a 5 years inspection cycle and will enhance the cargo roller capability for the KC-135 by reducing the size. Vacuum packaging will also reduce wear and tear caused by repetitious inspections and damage caused by frequent installation/removal and delivery/reconfiguration. This technology is transferable to all multi-place life raft systems. Flight testing and initial purchase the VPLR for the AMC strategic airlift fleet began in FY97 with funding programmed for the AMC tanker fleet starting in FY98. There is an on-going effort to fund the VPLR for OSA and the C-130 fleet.

Passive Passenger Flotation Device:

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. Noninflatable 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. 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

Flash Blindness Protection

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. Repair parts will be required in the near future. Initiatives are underway in seeking a contractor to replace the current system or provide replacement parts for its sustainment.

Integrated Aircrew Body Armor/Survival Vest (BASV):

OPERATIONS DESERT SHIELD/STORM, plus contingencies in Somalia, and Bosnia have highlighted the need for aircrew body armor protection. Currently, aircrew life support equipment and body armor/flak protection are incompatible except for the kevlar T-shirt. Aircrews are issued the standard ground "flak" vest which will not integrate with LSE and is designed for protection against fragmentation from mines, mortars, artillery shells, and not against small arms fire. Some AMC aircrew have level 2A Kevlar T-shirts which provide the lowest form of ballistic protection. The lack of integration capability and the need for increased protection (level 3A) leads to mission degradation and reduced individual performance. The capability to provide AMC aircrews with state-of-the-art integrated low-profile body armor and survival vest unit exists. This system affords increased protection for aircrews and allows integration with critical life support equipment (LSE), i.e. aircrew chemical defense, life preservers, parachutes. AMC is actively pursuing funding for this valuable "Force Protection" equipment. The need for increased protection to integrate with existing equipment is a must to ensure the safety of aircrews when flying into harms way.

Combat Survivor Evader Locator (C-SEL)

The Combat Search and Rescue (CSAR)/Assisted Evasion and Recovery community called for a capability to ensure isolation of downed aircrews to allow rescue personnel to quickly and efficiently rescue the crew members and return them to friendly hands. The CSEL communication system provides the survivor/evader in the field (typically downed aircrew) with: precision GPS based geoposition and navigation data, two-way over-the-horizon (OTH) secure data communication to Joint Search and Rescue Centers (JSRCs), OTH beacon operation, and Line-of-Sight (LOS) voice communication, and beacon capabilities. Current aircrew survival radios are susceptible to hostile air, ground, and ocean surveillance. ACC was tasked with lead command authority for the AF. Funding was sought and received to purchase 11,000 radios to be distributed between using commands. AMC's share of this buy was 3,300 radios leaving a shortfall of 5,826 to meet command requirements. AMC will to pursue funding to eliminate the shortfall of 5,826 C-SEL Radios.

Chemical Warfare (CW) Defense Equipment

Aircrew Chemical Defense Equipment

Aircrew chemical defense equipment shortages for sustained operations is an AF-wide problem. Component shortages for the first generation Aircrew Chemical Defense Ensemble (ACDE) and second generation Aircrew Eye-Respiratory Protection System (AERPS) continue to be a shortfall within AMC. First generation shortages include 26,414 HGU-41/P Hood assemblies and 512 CRU-80/P Filter Pack assemblies. AERPS shortages include 1876 MBU-19/P Mask/Hood assemblies, 3416 CQU-7/P Blower Units and 4140 MXU-835/P Intercom Units. AMC has identified these shortfalls to Air Staff for resolution.

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) for vapor detection. 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. The CAM is 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. AMC's aircraft operators, maintainers, cargo handlers, and Dugway Proving Ground conducted a validation of near-term cargo aircraft contamination control procedures. Based upon this test, procedures for aircraft operating in a chemically contaminated environment are being revised. 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, inturn, 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 participating in a Joint Service initiative for development of a CW decontamination capability for aircraft interiors, cargo and other equipment, called Joint Service Sensitive Equipment Decontamination (JSSED). This effort to develop an aircraft interior decontamination system is paramount in our chemical defense effort.

Collective Protection (CP)

CP is required to permit continuous operations on a chemical/biological (CB) contaminated air base. Personnel must have toxic free areas (TFAs) in which to change clothing, rest, eat, sleep, implement personal hygiene, maintain equipment, perform bodily functions, and treat casualties to allow sustained airlift operations. The amount and level of CP required is consistent with other logistics and survivability support factors, and based primarily on the projected threat of use of CB area weapons.

AMC's primary concern for CP is for transportable collective protection systems (TCPS) to support the en route mission of AMC's global reach mission. HQ AMC is developing plans to provide TCPS for mission support forces in threat areas in the en route system.

A validated need for a toxic free environment exists inside large aircraft used for troop movements and aeromedical evacuation flights transiting high threat areas. Protection systems for large aircraft must 1) Be compatible with existing aircraft environmental systems, requiring little or no aircraft modification, 2) Operate on normal aircraft power and automatically switch to its own backup power if normal aircraft power is lost. Efforts are on going to develop a mission needs statement and joint operational requirements document for collective protection or large aircraft.

Integrated Life Support System Tester (ILSST)

The Life Support community is dependent upon a multitude of testers to test flying helmets and oxygen systems. Some of these testers are bulky and require an external source of oxygen. Furthermore, external oxygen sources are hazardous material making transport difficult. There exists a single aircrew helmet/oxygen mask/communications tester to test all oxygen masks, flying helmets, and helmet mounted devices. Current test procedures require four different testers. Furthermore, nonstandard communications and oxygen systems for the C-17, C-21, and C-9 require additional test equipment. Backorders in excess of 2-1/2 years coupled with limited or no repair of testers at unit or depot level, severely impact operational capability. Existing testers do not support foreign electrical currents and can not be used safely in a NBC environment. The ILSST incorporates all functions, tests all equipment, eliminates the need for an oxygen source, and fully supports deployed operations. The ILSST will replace the: 1) MQ-1/A, Oxygen Mask Regulator Altitude Tester, 2) DMH-1, Communications Continuity Tester, 3) MH-2, Oxygen Connector Leakage Tester, and 4) C-17 David Clark Communications Tester. AMC is actively pursuing funding to purchase the ILSST which would modernize current life support test equipment and eliminate shortfalls of existing test equipment.

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 (including virtual reality and interactive video devices), computer networks, part task trainers, and simulators. Training syllabi can be tailor-made to meet students needs and provide flexibility in scheduling individual training.

Media

Computer based training (CBT) is the technology of choice for ground based media. CBT is replacing slide-tape and video presentations which are cumbersome and expensive to update. Slide-tape programs lack versatility and, coupled with the loss of the AF Media Center capability, require expensive contracts for upgrade. CD ROM and Laser Disks are readily available today however they have limitations. AMC, working with ASC and the AF labs, can exploit emerging technologies to build the "electronic classroom" based on interactive video and CD-ROM flexibility and efficiency.

Training Plan

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 in the C-130, KC-10 and KC-135 trainers includes equipment required to achieve FAA Level-C standards. All weapons systems trainers need mission rehearsal capabilities to provide high fidelity training that is readily transferred to the weapons system.

AIRCREW TRAINING

Simulators

Simulators include operational flight trainers (OFT) and weapon system trainers (WST) 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 wide-screen visual displays, motion, and the capability to network with other simulators. Collectively, this capability provides excellent full mission training for AMC crews.

Virtual reality and interactive video technology CBT offers potential to fully integrate all crew positions in realistic scenarios, reduce training costs, and provide the opportunity to shift part-task training events from simulators, which free them up for more complex training tasks.

AMC requires organic capability to build mission data bases for mission rehearsal in all ground-based training devices. Networking of these devices to form a distributive mission training system will allow all AMC aircrews to interact with combat air forces and other AMC aircrews for large scale operations, as well as interact as a complete crew (various crew position training devices networked to form the respective virtual aircraft, from end to end).

Current initiatives to improve weapons systems trainers must remain on track. Increasing simulation capability through motion and enhanced visual devices accommodates 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-130 and C-141 simulators are deficient for training mission aircrews in night vision goggle (NVG) procedures. General deficiencies noted are cockpit lighting is not NVG compatible, simulator visual systems do not replicate NVG scene content, and limited capability for navigator training (C-141). Solutions are required to practice night operations (e.g., airdrops, approaches, landings, and low-level operations).

AMC/DOT has designed an extensive simulator upgrade program exploiting new technological capabilities for upgrading the entire fleet of simulators to meet FAA 120-40B, Level C+ equivalent. Simulator modifications include improved visual systems, motion, computers, digital control loading, aerodynamic data, and integration of new aircraft systems. The program, which began in FY94, is funded at $321M through FY03. The C-141 upgrades were completed in FY96 and the C-5 upgrade will be complete by FY98. Upgrades to both tankers are currently underway. The KC-10 will be completed by FY01 and the KC-135 by FY04.

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 Trainer: Refurbished cockpit familiarization trainer for initial qualification of pilots and copilots. Devices are only located at the formal school.

Mission Computer Trainer: All aircraft (C-5, C-17, C-130, C-141, KC-10 and KC-135) need a realistic, aircraft/cockpit specific, PTT to conduct cost effective initial training on complex mission computers, as cockpits are upgraded with GPS and other navigation systems. Proficiency in system "key stroke" cause and effect is an essential prerequisite to aircraft flight training, since mission computers interface with aircraft auto-pilot systems. Conducting this training in an aircraft or high-end simulator is cost prohibitive.

KC-135 Boom Operator Part-Task Trainer (BOPTT): The KC-135 BOPTT is old, and becoming logistically unsupportable. Need two new boom operator system simulators (BOSS) at the formal school. Networking the new BOSS with the weapon system cockpit trainer is also planned.

KC-10 Boom Operator Trainer (BOT)**:** The KC-10 BOT is old and logistically unsupportable. A modernization and upgrade effort was started in FY97 and is scheduled for completion in early FY98. The BOPTT will be modified to add the Wing Air Refueling Pod System.

C-141 Air Refueling PTT (ARPTT): The C-141 Air Refueling PTT (ARPTT) supports formal school and continuation training Air Refueling 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 currently underway. Upgrade will be complete in FY98. **Note:** C-5 training is also conducted in the ARPTT until the C-5 WST upgrade is completed. At this time, C-5 air refueling training will be transferred to the WST.

C-5 Loadmaster Training Device (LMTD): C-5 loadmasters do not have a realistic, preflightable training device on par with the C-141 loadmaster trainer to implement second loadmaster training at Altus.

Maintenance Training

Maintenance Instructional Systems

Maintenance training devices were fielded between 1987 and 1992. They are designed to provide training to the "fully qualified level". They are used for initial and follow-on weapon system specific training, task certification, and troubleshooting.

The C-17 maintenance program emphasizes task orientated training and effective training devices to produce the required C-17 personnel skills. 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) uses the Instructional System Development (ISD) process.

FY98 ACQUISITION PRIORITY LIST

1. C-17 Acquisition
   a. Follow-On Test
   b. Maturing Line

2. Materials Handling Equipment:
   a. 60K Loader
   b. Next Gen Loader

3. Global Air Traffic Management:
   a. GPS
   b. RVSM (I)
   c. TCAS (I)
   d. Diff GPS (I)

4. Air Mobility C2/ITV Systems:
   a. C2 IPS
   b. C4 Sys Integration
   c. GATES
   d. GDSS
   e. ACFP
   f. ADANS
   g. CMARPS
   h. GCCS
   j. CIS
   k. RTIC

5. KC-135 Modernization
   a. PACER CRAG
   b. FSAS
   c. Interphone (I)
   d. DV C-135s Nav/Safety
   e. GCAS
   f. Maint Free Battery

6. C-5 Modernization

7. KC-10 Pylon Mount Truss

8. Airlift Defensive Systems:
   a. C-17
   b. C-130
   c. C-141
   d. C-5
   e. C-130 ALR-69
   f. Large Acft IRCM (I)

9. AMC-Precision Approach Capability (AMPAC)

10. Force Protection (I)

11. AMC Aircraft C2 / Mission Planning Systems:
    a. HF Mod
    b. L-Band SATCOM
    c. AFMSS
    d. SINCGARS
    e. SAMCOMS

12. AMC C2 Infrastructure:
    a. Scope Command
    b. Theater Dep Comm
    c. Global Reach Laydown
    d. Base C4I
    e. Wing LAN
    f. Obj Wing Com Post

13. C-5 Airdrop:
    a. Station Keeping Equip
    b. Airdrop Sys Equip
    c. Formation Lighting

14. C-5 Interim Upgrades
    a. AWFCS
    b. TF39 HPT-90
    c. Anti-Skid Reliability
    d. Fuel Flow Trans
    e. Hyd Surge Control
    f. Troop Floor Corr
    g. D-Sump Lube Tube
    h. Cockpit/Courier Floor
    i. Smart Eng Diagnostics

15. C-130 Modernization
    a. Electrical Sys Upgrade
    b. Autopilot/GCAS
    c. APN-59 Radar
    d. C12/N1 Compass
    e. Bleed Air Duct II
    f. Fuel Qty Sys Upgrade
    g. Night Vision Imaging Upgrade
    h. Noise Reduction

16. C-141 AWFCS/GCAS

17. Simulator Upgrade

18. KC-135 R&M Upgrades
    a. Refuel Boom (I)
    b. Life History Rec
    c. Latrine (I)
    d. Engine Stall Warning

19. C-32 / C-37 Acquisition

20. C-130J Acquisition
    a. Infrastructure
    b. Training
    c. Support Equipment
    d. Spares
    e. Tech Orders
    f. Other Logistical Beddown Requirements

21. Service Bulletins/ADs

22. Misc Low Cost Mods

23. KC-10 Engine Vibration Monitor Systems

24. Night Vision Imaging (I)

25. 89th Stage-3 Noise

26. KC-135 Stage-3 Noise (Reengine)

27. C-130 Para Retrieval Systems (I)

28. Extract Para Jet Device (I)

29. Improved Mobility Cockpits (I)

30. Precision Airdrop (I)

31. C-130 Observation Wing (I)

32. C-130 On-Board Liquid Oxygen (I)

NOTE: (I) = INITIATIVE

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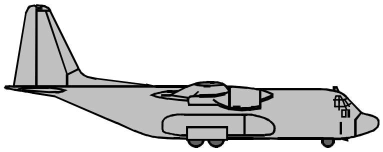
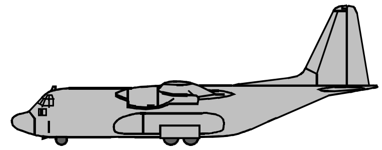


C-130 Roadmap



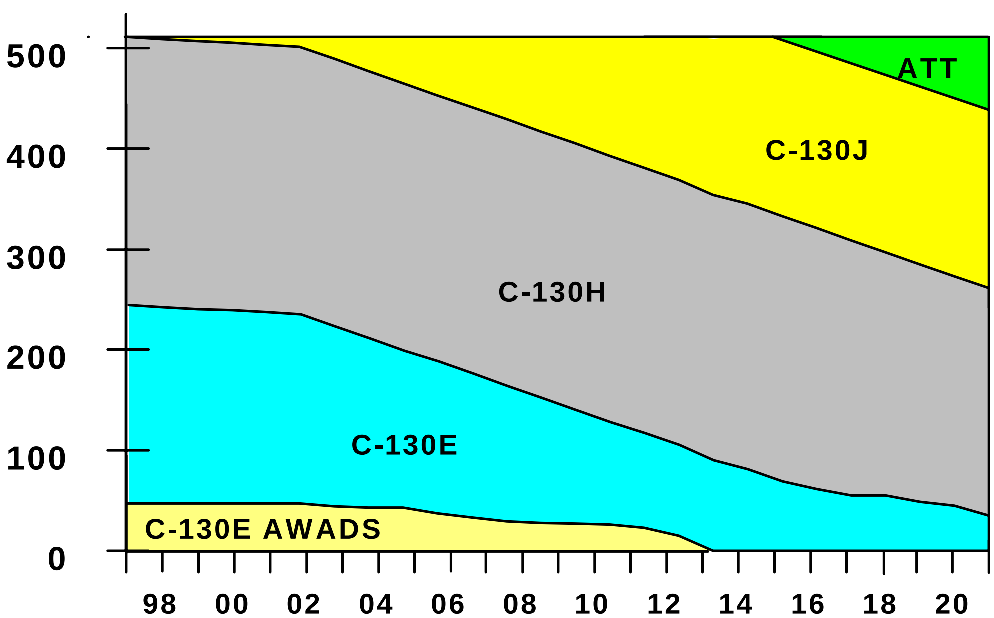
STRATEGY: Rapid intratheater employment of forces during conflict/crisis response.

MISSION: Transportation of personnel or cargo for delivery by parachute to a designated drop zone, or by landing at austere locations within the theater of operations.

DESCRIPTION:

- The C-130 is the primary combat delivery aircraft for the U.S. military
- First flight 7 Apr 1955. First operational C-130A delivered to 463 TAW Ardmore AFB OK, 9 Dec 1956
- Average age: Over 25 years for active duty units
- Payload/Range: 25,000 lbs @ 2,500 miles; max ferry range 5,200 miles
- Special Mission C-130s include; NC-130A/E/H; EC-130E/H; MC-130E/H/P; AC-130H/U; LC-130H, WC-130H; and HC-130N/P
- Crew Ratio: Active 2.0, ANG and AFRC 1.75

Force Modernization Schedule (Notional)



DEFICIENCIES:

- Limited in their ability to perform precision airdrop
- Aircraft are dependent on reduced en route/theater support, limiting mission flexibility
- Limited in their ability to operate in an NBC environment
- Lack sufficient capability to operate in a low light, low visibility environment
- Manning shortfalls in key areas limit mission accomplishments
- Mission planning systems and databases lack flexibility, efficiency, user friendliness, and DoD interoperability
- Combat control teams (CCTs) lack sufficient equipment for mission accomplishment
- Lack commonality/interoperability in configuration and maintenance
- Training and simulation capabilities for aircrew and maintainers are inadequate
- Lack adequate threat detection and defensive systems

OPR: HQ AMC/XPX
As of: Oct 97

- Subsystem sustainability is becoming cost prohibitive
    - Electrical system
    - Fuel quantity indicator system
    - Bleed Air Ducts
    - APN-59 radar
    - Station-keeping equipment
    - N1/C12 Compass
- C-130 Self-Contained Navigation System (SCNS) does not have the processing capability nor the ability to integrate additional equipment or software
- Aircraft lack systems to comply with planned ICAO/FAA air traffic control modernization
    - Flight management system
    - Autonomous precision approach capability
    - Collision avoidance systems
    - Datalink capability
- Cargo restraint devices are bulky/heavy and time-consuming to use
- Theater airlift aircraft lack combat identification capability
- Lacks electronic technical orders; adds cost for paper manuals, man-hours wasted updating manuals
- Aircraft lack access to real time and threat order of battle information to aid in avoidance
- The economic service life of combat delivery aircraft, including effects of structural corrosion, is unknown
- Aircraft do not offer adequate passenger emergency life support protection
    - Life Raft capacity is 80 persons total - limits number of passengers on overwater missions
    - Lack of adequate passenger oxygen support, beyond portable kits, limits the effective cruise altitude
- Communication systems require modernization to communicate with ground forces, ATC, and C2
- Theater aeromedical evacuation (AE) support equipment is not fully compatible with combat delivery aircraft
- Combat delivery forces are limited in their ability to deploy and sustain themselves
- Combat delivery aerial firefighting equipment is nearly unsupportable

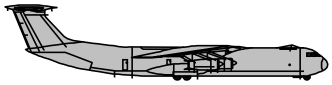
PLAN:
- Near Term (FY98-02): Begin acquisition of C-130J; modify older C-130Es and C-130Hs to maintain reliability and maintainability, provide limited self-defense, and increase night capability
- Mid Term (FY03-10): Acquire C-130Js to replace C-130Es as they retire; modify C-130E/Hs to increase capability
- Long Term (FY11-21): Begin acquisition process for advanced theater transport

MODIFICATIONS (As of 98 PB): "X" indicates full or partial funding

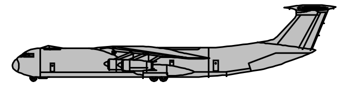
Name/Description	MOD Class	FY97 $M	FY98 $M	FY99 $M	FY00 $M	FY01 $M	FY02 $M	FY03	Program Total $M
Low cost safety modifications	R&M					X		X	X
Autopilot/GCAS	R&M	X	X	X	X	X	X		X
Electrical System Upgrade	R&M	X	X	X	X	X	X	X	X
Fuel Quantity System Upgrade	R&M	X	X	X	X	X	X		X
GPS	Capability	X	X	X	X				X
SCNS	Capability	X	X						X
HF Autocomm Processor	Capability	X	X	X					X
Defensive Systems	Capability	X	X	X	X	X	X	X	X
Microwave Landing System	Capability								X
Life History Recorder	R&M								X
Radar Warning Receivers (ALR-69)	Capability	X		X	X	X	X	X	X
Misc Simulator Updates	R&M	X	X	X					X
Service Bulletins	R&M					X			X
Low Cost Modifications	R&M					X			X
Bleed Air Duct Replacement	R&M		X	X	X	X	X		X
C12/N1 Compass Replacement	R&M		X	X	X	X	X	X	X
APN-59 Radar Replacement	R&M			X	X	X	X	X	X

BOTTOM LINE IMPACT:

- The C-130 continues to be the nation's core combat delivery platform
- Modernization of 1940s and 1950s technology critical to maintaining reliability and reducing cost of ownership
- Defensive systems must be added and upgraded to support operations in threat environments
- C-130 configuration control must be maintained to better support the CINCs
- The C-130J is an essential acquisition to replace aircraft reaching their service life
- The C-130J provides greater combat capability, while reducing cost of ownership



C-141 Roadmap



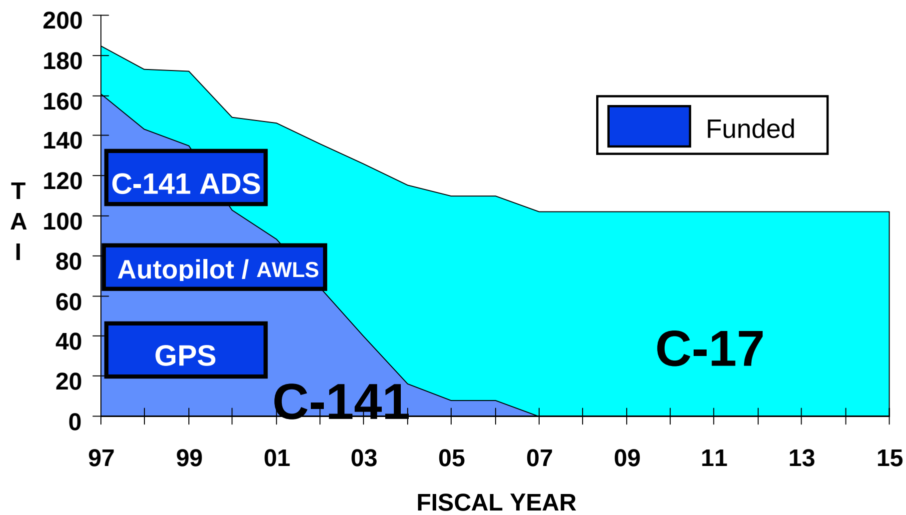
STRATEGY: Rapid deployment of forces during conflict, crisis response and Operations Other Than War (OOTW).

MISSION: Strategic delivery of cargo, passengers, and patients via airland and/or airdrop. Primary strategic special operations and airdrop platform.

DESCRIPTION:

- C-141 represents 23% of total military organic airlift capability (FY98: 5.93 MTM/D of 25.9 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: 31 years; Average actual hours: 37,552 (38,191 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 Guard and Reserve 2.0.

C-141 Force Structure (FY99-03 APOM) with top modifications



	97	98	99	00	01	02	03	04	05	06
Active PAA	105	87	79	47	32	8	0	0	0	0
Reserve/Guard PAA	56	56	56	56	56	56	40	16	8	8
PAA Total	**161**	**143**	**135**	**103**	**88**	**64**	**40**	**16**	**8**	**8**

(The numbers above indicate 4th quarter numbers as established in 99-03 APOM, and do not include AETC assigned aircraft)

DEFICIENCIES:

- Avionics and autopilot increasingly difficult to support as mean time between failure decreases.

PLAN: Recover as much operational capability as economically feasible to meet airlift requirements.

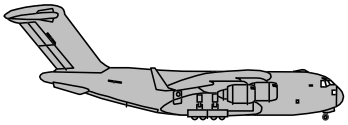
- Near term objective (FY98-03): Manage fleet drawdown and modification program.
  - •• Inspect, repair, and selectively modify aircraft to achieve return on investment and comply with 5 year rule.
  - •• Restore and ensure continued capability through modification of 63 aircraft.
- Long term objective (FY01-06): Complete C-141 active force retirement in FY03 and unit-equipped Guard and Reserve by the end of FY06.

MODIFICATIONS (As of FY99-03 APOM)

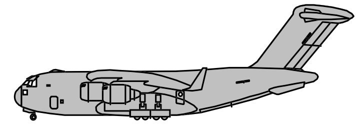
Name / Description	Source Document	MOD Class	FY97 $ M	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	FY02 $ M	Program Total $M
Airlift Defensive Systems	SON MAC 002-81	Capability	Fully Funded, Installations not Complete						
All Weather Landing System/Autopilot/Ground Collision Avoidance System/Reduced Vertical Separation Minima	1067 MAC 87-90 Draft ORD 004-94	R&M	Fully Funded, Installations not Complete						
Fuel Quantity Indicator System digital upgrade	1067 MAC 86-211	R&M	Fully Funded, Installations not Complete						
Global Positioning System	FM 48 AFLC AUG 90	Capability	Fully Funded, Installations not Complete						
SATCOM (INMARSAT AERO-C) L-Band	1067 AMC 94-058	Capability	Fully Funded, Installations not Complete						
Special Forces Improvement Modification/NVIS	SON MAC 07-81	Capability	Fully Funded, Installations not Complete						
Low Cost Safety Mods	As Directed	Safety							
IFPS/TCAS	MNS AMC 004-93	Capability	Initiative						TBD

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 ANG and AFRC 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/XPXPL).



C-17 Roadmap

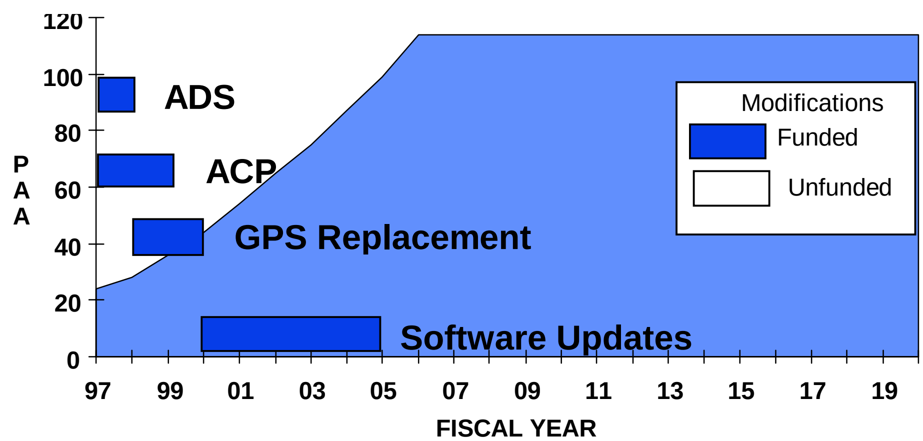


STRATEGY: Rapid response to conflict, crisis, and disasters.

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 SC, 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%.
- Represents 15 percent of total military organic airlift capability (FY 98; 3.9 of 25.9 MTM/D).
- 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 Notional Force Structure with top modifications



C-17 TAI	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15
(Notional)	33	41	49	59	72	87	102	117	135	135	135	135	135	135	135	135	135	135	135

DEFICIENCIES:
- Technological advances have increased demand on electrical power for aircraft operations. Current backup electrical system only provides 30 minutes emergency power—modification programmed to upgrade APU to provide emergency inflight power source.
- C-17 fleet not fully equipped with airlift defensive systems to detect/avoid/defeat threats.
- Requires Data Link or will be restricted from global operations under future Global Air Traffic Management (GATM) 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.

OPR: HQ AMC/XPX
As of: Oct 97

PLAN:

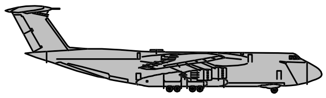
- Focus on fielding of the C-17 as a viable employment system:
  - •• Continue to assess developmental effectiveness and suitability to perform the mission.
  - •• Further develop and refine maintenance and aircrew training programs.
  - •• Integrate aircraft and aircrews into Brigade Airdrop requirement.
- Long-term objective (FY00-15); focus on establishment of C-17 as AMC's core airlifter:
  - •• Airdrop-primary portion of Brigade Airdrop mission-fulfill entire requirement by FY06.
  - •• Additional squadron needed to simultaneously support special operations low level (SOLL II) mission and 2 Major Theater War requirement.
  - •• Complete acquisition of 135 TAI (FY 05).

MODIFICATIONS (As of FY99-03 POM): "X" indicates full or partial funding

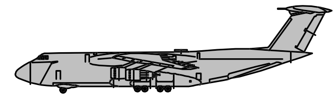
Name / Description	Source Document	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	FY02 $ M	FY03 $ M	FY04 $ M	FY05 $ M	Program Total
8.33 KHz VHF Radio Spacing		X								X
HF Auto Comm Processor		X								X
Comm Control Unit Open Architecture					X	X	X	X		X
Software Updates				X	X	X	X	X	X	X
Oxygen System Deficiencies		X	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				X
SKE 2000		X								X
Precision Approach & Landing Capability (PLSR)		X								X
Electronic Flight Control System Upgrade		X	X	X		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
Aeromedical Litter Stanchion Redesign		X	X	X						X
UHF Narrow Band/DAMA SATCOM		X	X							X
Data Link Capability	MNS MAC 001-92	Initiative								TBD
FM Immune Nav Receivers (Protected ILS)		X								X
TCAS II/Mode S		Initiative								TBD
Enhanced Ground Prox Warn System (EGPWS)		Initiative								TBD
Dual Row Airdrop Capability			X	X	X					X
SBA Station Keeping Follow-on (Intraformation Positioning System)		Initiative								TBD
Reactive Windshear System				X						X
Airborne Single Channel Ground and Air Radios (SINCGARS)	SON MAC/AFCC 203-80	X								X
Windshear Prediction System							X	X	X	X
Armor Plating System						X	X	X	X	X
Offset Center-line Seats	ACSN 89-0020							X	X	X
Mission Computer					X	X				X
GPS Integrity		X	X	X						X
Cabin Pressurization/Crew Door System		Initiative								TBD

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 and SOLL II missions.



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 aircraft modifications are complete. Capable of outsize cargo delivery.

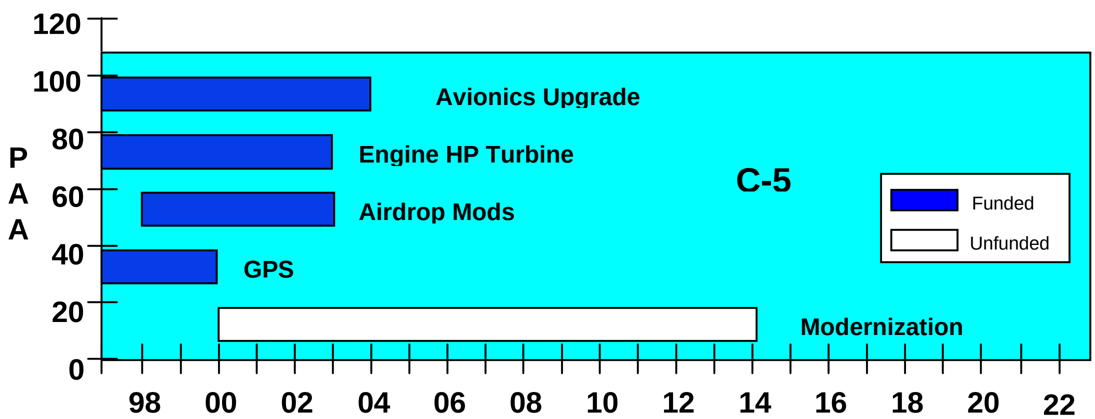
DESCRIPTION:

- Represents 50 percent of AMC FY98 organic capability (13.0 of 25.9 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-28 years/15,600 hours; B model-10 years/8,800 hours. Scientific Advisory Board estimates approximately 80 percent of airframe service life remaining.
- 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, Guard and Reserve 2.0.

DEFICIENCIES:

- Size and lack of ground agility restrict normal use to main operating bases.
- C-5 fleet mission capable rate is 61 percent for C-5A and 71.7 percent for C-5B (CY96 avg), below the 75 percent standard; unreliable means of providing outsize strategic capability to warfighting CINCs.
- Depot flow rates are significantly high; A model - 263 days, B model - 163 days (CY96 avg). These flow rates are improved over the last year, closing the gap toward the contracted 230 and 146 days respectively.
- Fleet does not meet Stage III noise standards and navigation requirements for Global Air Traffic Management (GATM) standards.

C-5 Force Structure (FY99-03 APOM) with top 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	123	113	101	89	77	65	53	41	29	17	5		
Modernized C-5							3	13	25	37	49	61	73	85	97	109	121	126	126

PLAN:

- The C-5 capital investment plan (CIP) has four objectives
  1. Restore aircraft reliability and maintainability.
  2. Maintain structural and system integrity.
  3. Reduce costs of ownership.
  4. Increase operational capability.

OPR: HQ AMC/XPX
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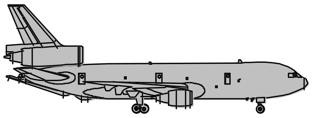
- The CIP includes three categories--upgrades (modifications), repairs, and preferred spares. Items in each category are prioritized based on meeting the four objectives listed above.
- AMC is currently conducting studies for a one-time comprehensive upgrade designed to improve aircraft reliability and availability. If the results of the studies are favorable, AMC will pursue comprehensive modernization of the C-5. This program will encompass selected upgrades in the CIP plus additional upgrades to correct the poorest performing aircraft systems. Upgrades include:
  - Re-engining from the pylon down with off-the-shelf commercial engines.
  - Improvements in environmental section to increase departure reliability.
  - More reliable auxiliary power units.
  - Adoption of a commercial-type letter check (C-check) to replace current PDM process.

MODIFICATIONS (As of FY99-03 POM): "X" indicates full or partial funding

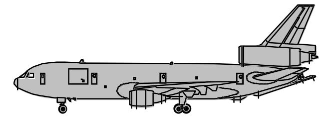
Name / Description	Source Document	MOD Class	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	FY02 $ M	FY03 $ M	FY04 $ M	Total
Autopilot / Augmentation / ALDCS R&M Solutions	1067 AMC94 052 MNS AMC011-93 ORD AMC 011-93-I/II-B	R&M	X	X	X	X	X	X	X	X
TF 39 Engine Reliability, Maintainability, and Availability, Capability	1067 AMC 93-051 MNS AMC 003-94 ORD AMC 003-94-I/II/III	R&M	X	X	X	X	X	X		X
Install Airlift Defensive Systems	SON MAC 007-81	Capability	X	X	X	X	X	X		X
Install HF ACP/Exclusive Call	MNS AMC 014-93	Capability	Multiple System Mod							--
Hydraulic Surge Control Easy Open Valves	1067 AMC 95-008	R&M		X						X
Fuel Flow Transmitter	1067 AMC 96-032	R&M	X							X
Tire Deflation/Hub Redesign/Anti-skid Detector	1067 AMC 95-129		X							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
Troop Floor Corrosion Prevention	1067 AMC 94-034	R&M			X					X
Cockpit / Courier Floor Stress Panel	MNS AMC 005-94	R&M								X
RTIC		Capability	Initiative							
Misc Safety Mods	As Required	Safety	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
Data Link Capability	MNS AMC 001-92	Capability	Multiple System Mod							--
D sump Lube Tube MOD	1067 AMC 94-037	R&M	X							X
UHF SATCOM/ANDVT/DAMA	SON ESC 03-83	Capability	Multiple System Mod							--
8.33 kHz VHF/SINCGARS	SON MAC/AFCC 03-80, 1067 AMC 97-014	Capability	X	X	X					
Station Keeping Equipment	1067 AMC 95-128	Capability		X	X	X	X	X		X
Formation Lights	1067 AMC 95-127	Capability		X	X	X	X			
TCAS II	MNS AMC 004-93 1067 AMC 96-134	Capability	Initiative							TBD
Smart Engine Diagnostics	1067 AMC 94-038	R&M			X	X				X
Enhanced Ground Proximity Warning System	1067 AMC 97-012	Capability	Initiative							TBD
C-5 Global Air Traffic Management	Draft CRD USAF 003-97, Draft ORD AMC 007-97	Capability	Initiative							TBD
C-5 Modernization	Draft MNS AMC 006-97	R&M	Initiative							TBD

BOTTOM LINE IMPACT:

- If poor reliability is not corrected through comprehensive modernization, C-5 economic and operational performance will become an increasing burden to AMC and its customers.
- 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 be fully realized until after full modernization of the C-5A/B fleet.
- Incorporating technological advances in communications, navigation, surveillance, and situational awareness enhance mission success and reduce system supportability problems.
- Failure to upgrade cockpit avionics will restrict global access under future GATM standards. Impacts include reduced wartime cargo airlift capacity and increased closure times.



KC-10 Roadmap

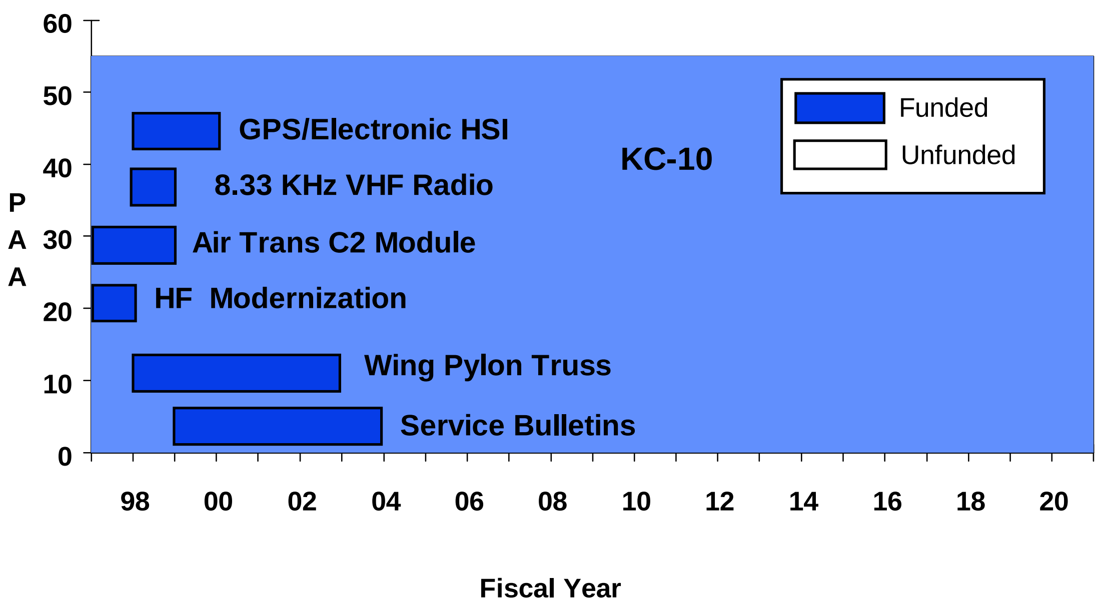


STRATEGY: Rapid deployment and employment of forces during conflict/crisis response.

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 12 percent of total military organic airlift capability (FY 98; 3.1 of 25.9 MTM/D).
- Crew ratio is 2.0 active and 1.5 Associate Reserve.
- 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 U.S. and allied forces.

KC-10 Force Structure (FY 99-03 APOM) with top modifications



DEFICIENCIES:
- KC-10 requires Data Link and Mode-S or will be restricted from global operations under future Global Air Traffic Management (GATM) 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/XPX
As of: Oct 97

MODIFICATIONS (As of FY99-03 APOM): "X" indicates full or partial funding

Name / Description	Source Document	MOD Class	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	FY02 $ M	FY03 $ M	FY04 $ M
Replace Wing Engine Pylon Truss	AMC 96-003	R&M	X	X	X	X	X		
Global Positioning System	DOD PMD4075 28	Capability	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						
8.33 KHz VHF Radio		Capability	X						
Air Transportable C2 Module	AMC 96-148	Capability	X						
HF Modernization with ACP & Exclusive Call	MNS AMC 014-93	Capability							
Service Bulletins	As Required	R&M	X	X	X	X	X	X	X
Miscellaneous Low Cost Modifications	As Required	R&M	X		X	X			

PLAN:

- Maintain commonality with commercial DC-10 fleet; maintain FAA certification.
- Continue R&M modifications to minimize ownership costs.
- Upgrade communications gear and navigation equipment to ensure global command and control, and be prepared to utilize optimum airspace.
- Add capability to detect/avoid threats. Real Time Information in the Cockpit (RTIC) will enhance aircrew situational awareness in a threat environment.
- Develop integral airevac capability.

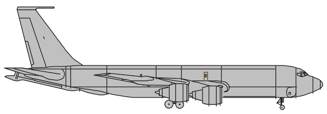
BOTTOM LINE IMPACT:

- Maintaining FAA certification ensures commonality with large commercial fleet and less expensive logistics network.
- Any delays in replacing wing pylon trusses will result in aircraft groundings.
- Continued R&M modifications will ensure the lowest possible ownership costs.
- Failure to upgrade communications and navigation equipment will restrict global access under future GATM standards, resulting in higher fuel costs and longer closure times.
- KC-10 must be able to detect/avoid/defeat threats to maximize employment flexibility.

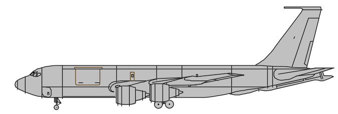
KC-10 FLYING HOURS

Programmed Flying Hours	FY98	FY99	FY00	FY01	FY02	FY03
AMC*	36,141	36,270	36,270	35,328	36,270	36,270
Reserve Associate	13,958	15,300	15,300	15,300	15,300	15,300

* Includes O&M funded, TWCF reimbursed, and contingency reimbursed flying hours.



KC-135 Roadmap

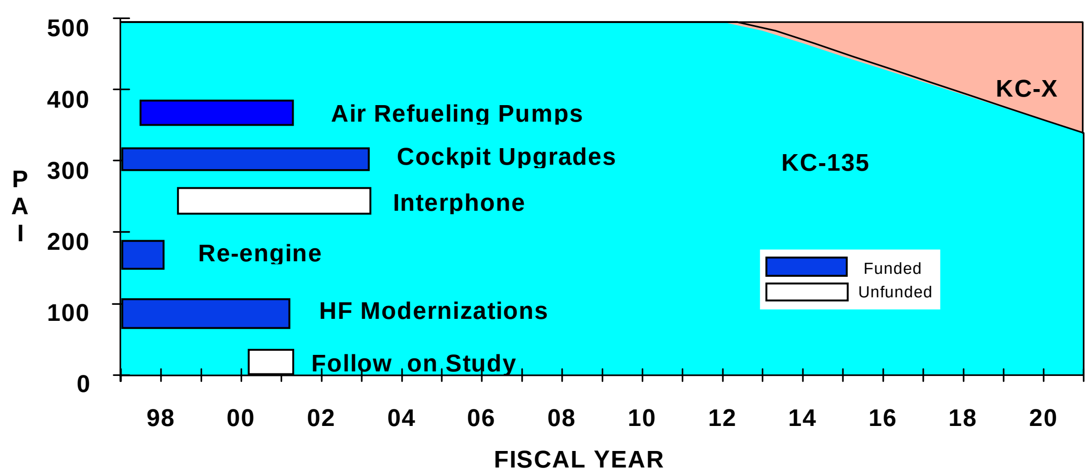


STRATEGY: Rapid deployment and employment of forces during conflict/crisis response; strategic nuclear deterrence.

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. (FY97/4: AMC-174; ACC-6; AETC 24, PACOM-15; EUCOM-9; ANG-204; AFRC-64)
- Crew ratio is 1.36 active and 1.27 Guard and Reserve.
- 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.

KC-135 Force Structure (FY99-03 APOM) with top modifications



NOTIONAL FORCE STRUCTURE

	TAI											
Program Name	FY97	To	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
KC-135	552		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.
- Repair and maintainability on obsolete and unreliable avionics incur additional costs.
- Shortfall identified in tanker crew ratio to meet DPG requirements.
- Current interphone lacks expansion capability to accommodate future Global Air Traffic Management (GATM) requirements.
- Communications deficiencies limit interoperability with receivers in electronic emission controlled environment.
- KC-135 requires Data Link and RVSM or will be restricted from global operations under future GATM standards.

OPR: HQ AMC/XPX
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- 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 Infrared Countermeasures to counter increasingly capable threats.
- Lack of VHF monitoring capability at the boom station in the cockpit as well as in boom pod.

MODIFICATIONS (As of FY99-03 APOM): "X" indicates full or partial funding

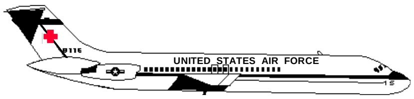
Name / Description	Source Document	MOD Class	FY97 $ M	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	FY02 $ M	FY03 $M
Pacer CRAG - Radar- MTBF from 439 to 1,000 hours	MNS AMC/ACC 402-92	R&M	X	X	X	X	X	X	X
Pacer CRAG - Global Positioning System	DOD PMD 4075-28	Capability	X	X	X	X	X	X	X
Pacer CRAG - Compass Replacement	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	Fully Funded						
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	X	X				
Scope Relocation		Capability	X	X	X				
Relocate SV Box		Capability	X	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 - MTBF 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	X	X	X	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				
Audible Cockpit Warning to warn of engine stall	ECP	Capability	X	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:

- Continue PACER CRAG cockpit upgrade to allow operations without a navigator.
- Continue R&M modifications and replace unreliable avionics to minimize ownership costs.
- Upgrade communications with equipment 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.
- Develop integral airevac capability.

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.
- Failure to upgrade avionics modernization will restrict global access under future GATM standards.
- Corrosion must be understood and controlled to ensure continued structural integrity and limit ownership costs.



C-9A Roadmap

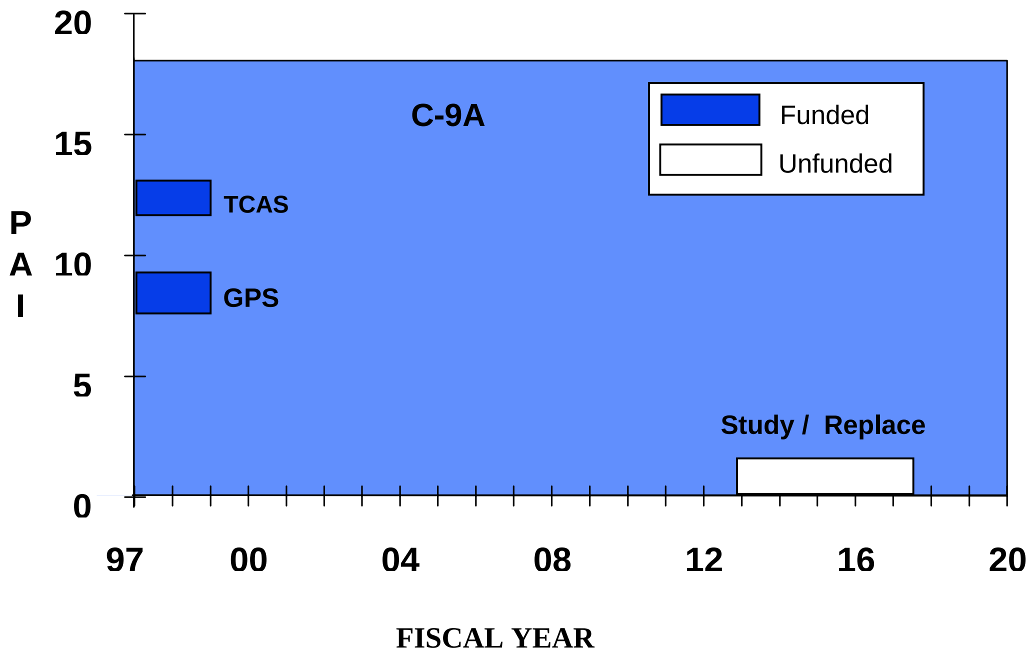
STRATEGY: Rapid deployment of forces during conflict and crisis response.

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.
- C-9A fleet consists of 19 PAA (10 AMC, 5 USAFE, 4 PACAF).

C-9 Force Structure (FY99-03 APOM) with top modifications



DEFICIENCIES:

- Avionics will not meet future FAA/ICAO navigation and separation standards.
- Aircraft do not meet FAA/ICAO Stage 3 noise standards--two C-9As in USAFE will receive hush kits by FY01
- Availability of logistics support will shrink when civil carriers retire DC-9s.

MODIFICATIONS (As of FY99-03 APOM): "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							
Engine Hush Kits (2 aircraft)		Capability			X	X	X	X		

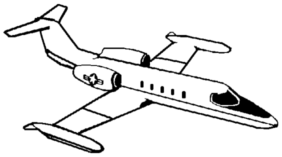
OPR: HQ AMC/XPX
As of: Oct 97

PLAN:

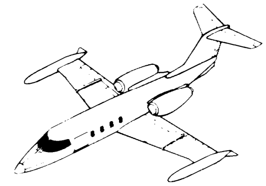
- Continue capability enhancements such as GPS and TCAS to ensure ability to operate in the optimum airspace under future FAA/ICAO system.
- Modify 2 C-9As with hush kits by FY01
- Define requirement for Data Link and Reduced Vertical Separation Minima (RVSM) and install as necessary.
- Initiate studies 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



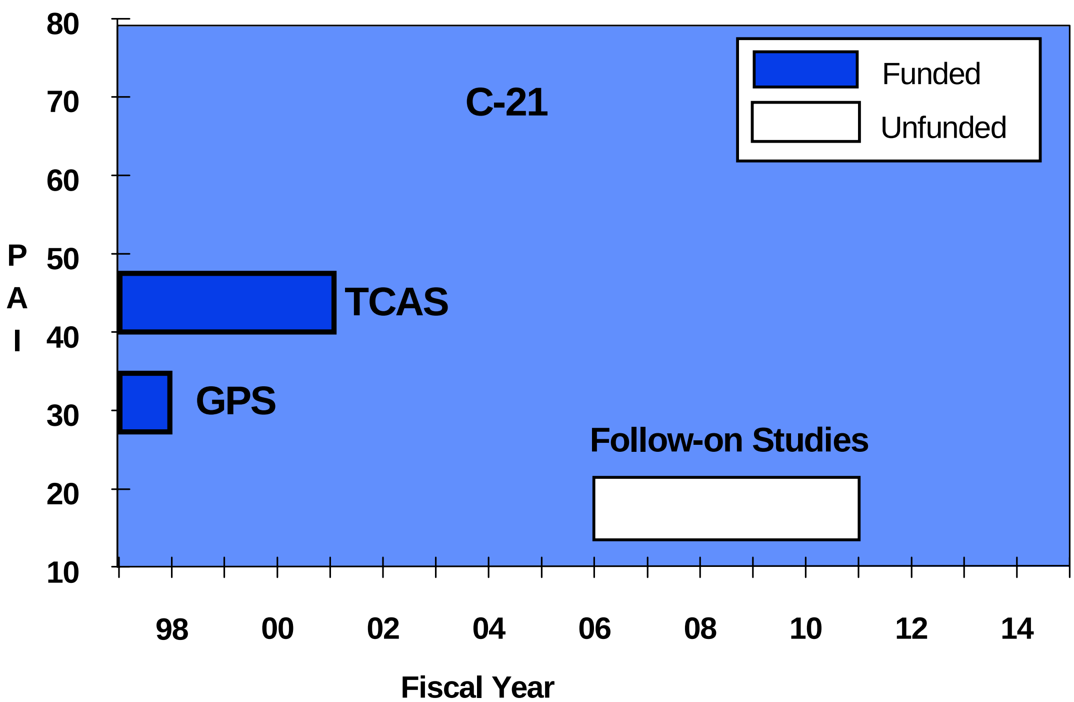
STRATEGY: Rapid deployment of forces during conflict and crisis response.

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. USTRANSCOM Joint Operational Support Airlift Center (JOSAC) centrally schedules all CONUS AF C-21s.
  - •• AMC, AETC (Keesler AFB MS only), ANG, PACAF, and USAFE own C-21s.

C-21 Force Structure (FY99-03 APOM) with top modifications



DEFICIENCIES:

- C-21 aircraft are excluded from operating in the optimum airspace under current FAA/ICAO Reduced Vertical Separation Minima (RVSM) standards without avionics upgrades.
- C-21 aircraft do not meet DoD requirements for Traffic Collision Alert and Avoidance System (TCAS) equipment.
- C-21 aircraft may be prohibited from operating in Europe in the near term future due to lack of 8.33 MHz radios and inability to meet RVSM standards.
- Requires worldwide three-dimensional positioning/navigation accuracy.

OPR: HQ AMC/XPX
As of: Oct 97

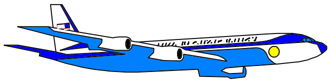
- Requires 4th generation Enhanced Ground Proximity Warning Systems (EGPWS) with GPS interfaced terrain avoidance database (IAW 26 Mar 97 HQ/USAF directive)

MODIFICATIONS (As of FY99-03 APOM): "X" indicates full or partial funding

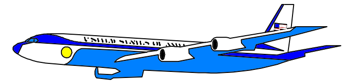
Name / Description	Source Document	MOD Class	FY97 $ M	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	FY02 $ M	Total
Service Bulletins	As Required	R&M	X	X	X	X	X		X
NAVIGATION	USAF CRD 003-97								
- GPS (Global Positioning System)	DOD PMD 4075-28	Capability	X	X					X
- RVSM (Reduced Vertical Separation Minimums)	USAF CRD 003-97	Capability							
- RNP/GPS/FMS	USAF CRD 003-97	Capability							
- Multi-Mode Receiver	USAF CRD 003-97	Capability							
COMMUNICATIONS	USAF CRD 003-97								
- LOS Data Link	USAF CRD 003-97	Capability							
- BLOS Data Link	USAF CRD 003-97	Capability							
- VHF 8.33 Radio	USAF CRD 003-97	Capability							
- VHF TDMA	USAF CRD 003-97	Capability							
- Comm Mgt System	USAF CRD 003-97	Capability							
- SATCOM	USAF CRD 003-97	Capability							
- CP Data Link Comm	USAF CRD 003-97	Capability							
SURVEILLANCE	USAF CRD 003-97								
- TCAS (Traffic Collision Alert and Avoidance System)	USAF CRD 003-97	Capability	X	X	X	X			X
- MODE S	USAF CRD 003-97	Capability							
- ADS	USAF CRD 003-97	Capability							
SAFETY	USAF CRD 003-97								
- E-GPWS (Enhanced Ground Proximity Warning System)	USAF CRD 003-97	Capability							

PLAN:
- Complete installation of GPS on all C-21s to ensure global employment capability.
- Define requirement for Data Link and (RSVM) and install as necessary.
- Begin studies in 2006 to determine feasibility of C-21's continued service.

BOTTOM LINE IMPACT:
- 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 current FAA/ICAO rules.
- Without TCAS C-21 does not comply with DoD requirements.



Special Air Mission (SAM) Roadmap



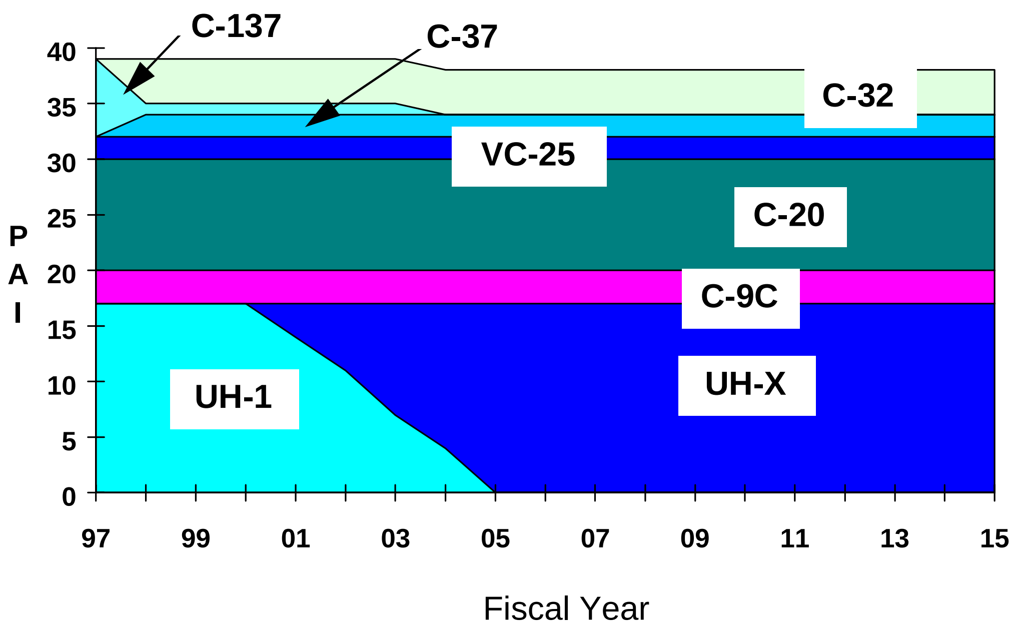
STRATEGY: Responsive and flexible airlift of U.S. and foreign leaders, while performing their duties of protecting U.S. global interests.

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 3 noise standards. C-9Cs will receive hush kits to comply with Stage 3 noise standards NLT FY99.
- 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.

MODIFICATIONS (As of FY99-03 POM): "X" indicates full or partial funding

Name / Description	Source Document	MOD Class	FY97 $ M	FY98 $ M	FY99 $ M	FY00 $ M	FY01 $ M	Total
Re-engine/Hush Kit C-9C		Capability		X	X	X	X	X
Traffic Collision Avoidance System (TCAS)		Capability	X	X	X			X
Service Bulletins - (All)	As Required	R&M	X	X	X	X	X	X
Miscellaneous Low Cost Mods -(All)	As Required	R&M	X	X	X	X	X	X
Global Positioning System - VC-25	DOD PMD 4075-28	Capability	X	X				X
Global Positioning System - C-9A/C	DOD PMD 4075-28	Capability	X	X				X
Global Positioning System - C-20	DOD PMD 4075-28	Capability	X	X				X

PLAN:

- USAF will add 4 C-32s (Boeing 757-200s) to replace the aging C-137 fleet. Aircraft delivery FY98 & FY99.
- 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-9Cs will receive hush kits to meet FAA/ICAO Stage 3 noise standards by FY99.
- USAF procured 2 C-37s (Gulfstream Vs), with additional procurement to replace C-20Bs.
- Mission Need Statement (AMC 003-93) validated to modernize communications systems and ensure security.

BOTTOM LINE IMPACT:

- C-32 replacement of C-137 on track.
- Without replacement or significant update, mission capability of UH-1 is uncertain.
- Lack of capable and secure communications equipment jeopardizes national security and subjects our senior officials to communications monitoring by unauthorized parties.

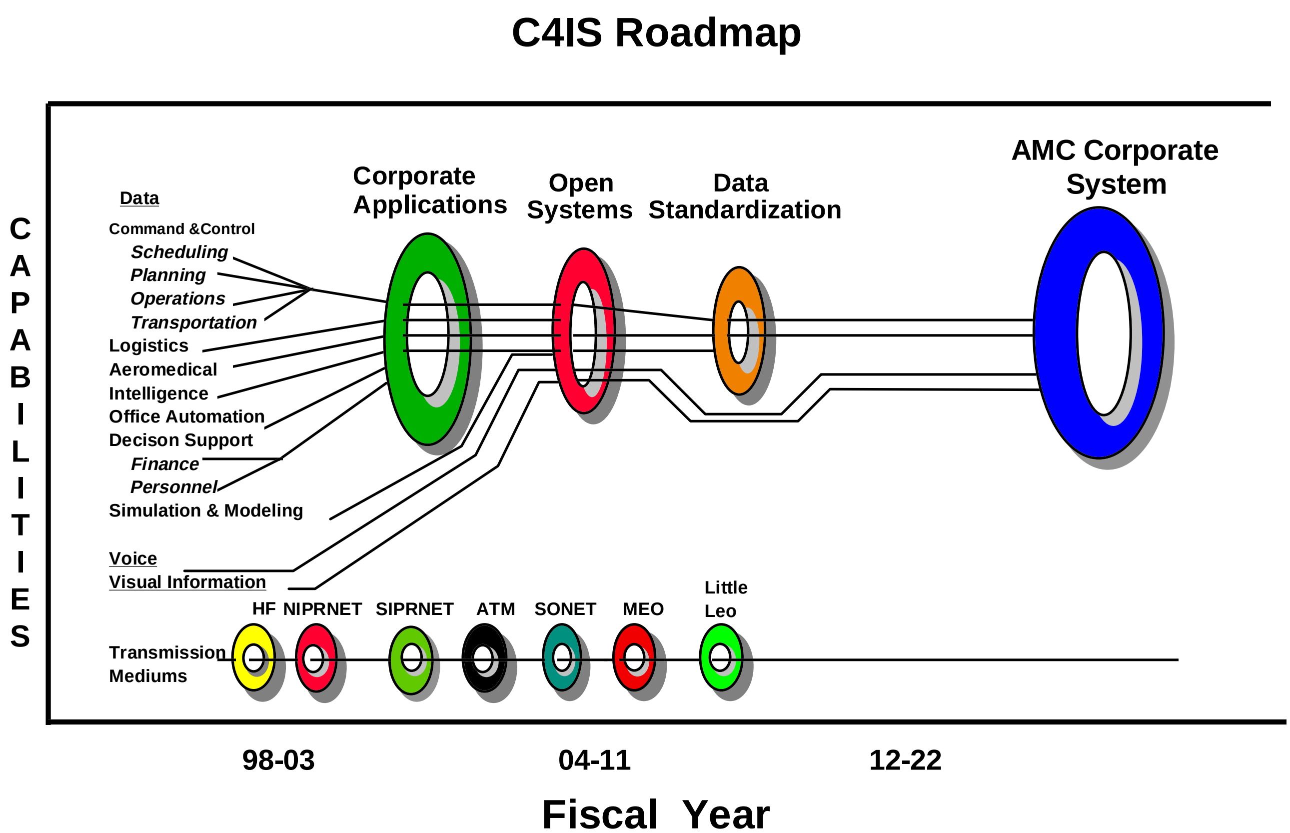
C4I Systems Architecture Roadmap

STRATEGY: Rapid global deployment and sustainment of forces supporting U.S. security interests.

MISSION: Provide instant access, air and ground, to all information; worldwide.

DESCRIPTION:

- C4I Systems provide global: C2, in transit visibility (ITV); Voice ; and Visual Information (VI) for mobility operations and our customers.
- 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 (fixed, deployed, and airborne).
- C4I systems cover the full spectrum of conflict between and within theaters.



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 97

Program Description	Function	FY 98 $ M	FY 99 $ M	FY 00 $ M	FY 01 $ M	FY 02 $ M	FY 03 $ 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 (Includes Intra-Theater Communications (ITC))	Deployed C2, Cargo, & Pax Handling Comm	X	X	X	X	X	X	X
Global Decision Support System (GDSS) - Headquarters and NAF C2	C2	X	X	X	X	X	X	X
AMC Deployment Analysis System (ADANS)-Airlift Scheduling	Planning & Scheduling	X						X
Contingency Mating And Ranging Planning System (CMARPS)-Tanker scheduling	Planning & Scheduling	X	X	X	X	X	X	X
Consolidated Air Mobility Planning System (CAMPS)	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 Standardi-zation, Data Repository, C4 Program Integration)	Command Data Dictionary	X	X	X	X	X	X	X
Global Air Traffic Management (GATM)	ATC							
Global Air Transportation Execution System (GATES)	C2 (Trans) & Aerial Port	X	X	X	X	X	X	X
Downsized Deployable Comm (DDC)	Deployed Common User Net							
L-Band SATCOM	C2	X	X	X	X	X	X	X

PLAN:
- Maintain a comprehensive C4I 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.

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.).
- 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).
- GATM, L-Band SATCOM, & HF with Automatic Link Establishment for air and ground assets.
- Maintainable, robust, interoperable, multi-level secure system in an open systems environment.

SUMMARY OF NEAR TERM ACTIONS:
- 12-18 months: Meet day 1 ITV needs; provide low bandwidth, digital connectivity to aircraft; begin construction of corporate database; and migrate to commercial network protocols.
- 2-3 years: Upgrade DV comm; field high bandwidth deployable comm; deploy base wireless; develop shared corp applications.
- 5 years: Use commercial SATCOM as global backbone (HF backup) & enforce common corporate database.

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.
- Lack of flexibility in transmission connectivity, limited mediums to move info - fixed, deployed, & airborne.
- 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: Assess dormitory conditions for compliance with AMC standards and provide future-year programming to ensure new dormitory construction complies with the SECDEF 1+1 construction memorandum.

MISSION: Provide quality housing for unaccompanied airmen to enhance morale, productivity, and promote retention.

DESCRIPTION:
- AMC owns and maintains over 9,300 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 over 10,000 rooms.

DEFICIENCIES:
- Over 4,400 dormitory rooms do not meet standards.
- At the close of FY96 MILCON program 4% of our dorms will be 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. HQ USAF/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 1999, reducing the dormitory room deficit, and upgrading current dorms to the new 1+1 standard. The AFDMP Survey Team visited every base in the Air Force (during FY96 & 97) and evaluated each dormitory to determine condition and cost to renovate. All 875 dormitories in the Air Force have been rank ordered, providing a strategy for funding all future requirements. The estimated completion date for the AFDMP is summer 97.

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 97

Housing Upgrade Roadmap

STRATEGY: AMC must continue to upgrade or renovate on-base housing units to meet the AF whole house/whole neighborhood standards.

MISSION: Provide quality housing for accompanied enlisted and officers to enhance morale, productivity and readiness.

DESCRIPTION:

- AMC owns and maintains 17,313 family housing units at our twelve core bases. The majority of these units are over 35 years old and have never been upgraded to meet the contemporary standards of off-base housing units.
- Housing market analyses (HMA) performed at each base confirm that at eight of our bases there is insufficient off-base housing to satisfy the housing needs of the military members assigned to those locations. Therefore, because the local community is unable to provide housing units that meet our standards, it is important that we continue to provide quality on-base housing units.
- 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 26% 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: We've identified and published guidelines for housing standards. In 1994 we developed the AMC Consolidated Family Housing Construction and Renovation Plan, called FOCUS HOMES. This investment strategy plan listed all the O&M and MILCON projects required to upgrade all the family housing units in AMC and housing areas. We are developing an update to FOCUS HOMES to include MacDill and Pope. Additionally, 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 97

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 AFRC 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 AFRC 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 AFRC) 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.

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" Air Force Environmental Restoration Account (ERA). This program was formerly funded by the Defense Environmental Restoration Account (DERA).
  - •• The Air Force is not able to fund all validated legal requirements at the same time it funds high relative risk sites, so it directed the MAJCOMs to renegotiate agreements at medium and low 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)
  - •• FY97 still has $4.3M in unfunded level 1 and 2 requirements that are ready to advertise. These requirements will rollover into FY98 without additional FY97 O&M funding.

OPR: HQ AMC/CEV
As of: Oct 97

- Pollution Prevention (P2)
  - •• FY97 still has $0.9M unfunded level 1 and 2 requirements. These will rollover into FY98 without additional FY97 O&M funding.

PLAN:

- FY98 Objective: Early execution of funded requirements to help secure additional dollars for unfunded requirements.
- Near term Objective: Seek additional ERA funding to finish IRP sites sooner.
- Mid and Long term Objective: Maintain adequate level of funding for Pollution Prevention, Compliance, and Conservation programs.

BOTTOM LINE IMPACT:

- Without adequate ERA funding, AMC will fall behind completion schedules.
  - •• Regulators who will not renegotiate agreements may levy fines, penalties, and/or issue notices of violation (NOVs).
  - •• Inadequate ERA funding will require the slippage of renegotiated schedules with cooperative regulators - eroding our credibility, leading to fines/penalties/NOVs.
  - •• Fines and penalties must be paid out of ERA funds, further delaying IRP projects.
  - •• MAJCOMs may NOT augment ERA 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 fines or penalties.

  - •• 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/toxic and solid waste products by specified/required milestones.

Global Reach Laydown (GRL)

STRATEGY: To provide rapid deployment of forces supporting U.S. security interests, humanitarian operations and disaster relief missions.

MISSION: Provide means to rapidly deploy and establish air mobility en route support structure for contingencies.

DESCRIPTION:
- The GRL concept consists of force modules/UTCs that provide AMC a rapidly deployable en route 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

DEFICIENCIES:
- For humanitarian-type contingencies identified shortfalls were:
  Personal equipment.

PLAN:
- Emphasize rapid, worldwide deployment in the management, equipment, and organization of GRL packages.
- Emphasize GRL package lay down of an en route mobility system in 3-5 days, with follow-on sustainment after 30 days.

OPR: HQ AMC/DOXOR
As of: Oct 97

- Emphasize equipment modernization efforts in areas such as Base Operating Support, MHE, C4I, and Air Traffic Control Airfield Landing Systems with design towards achieving a rapid mobility capability.
- Emphasize orientation on developing equipment that is lightweight, modular, easily palletized, interoperable, reliable, and capable of being quickly set up in austere environments.

NOTIONAL CONTINGENCY
MOBILITY SYSTEM

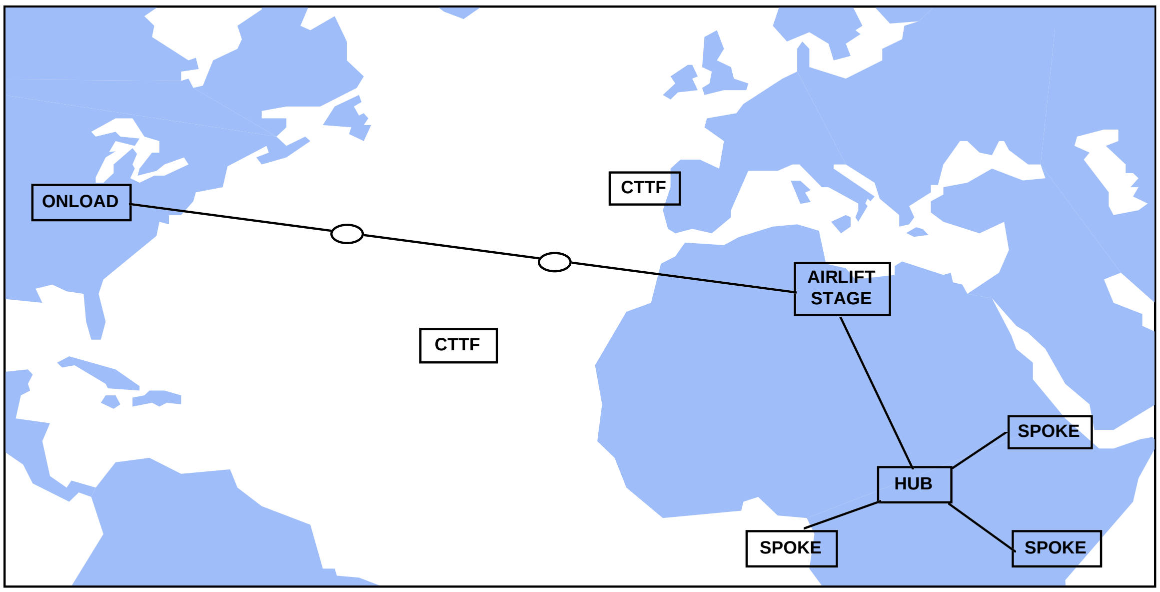
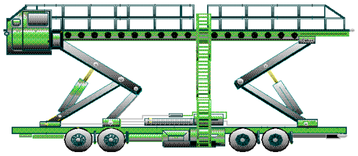
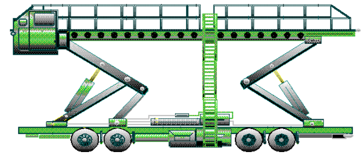


Figure 2

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 en route 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 can 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 U.S. 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 25 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. The table below depicts MHE assigned vs. required.

Air Force MHE

	ASSIGNED	REQUIREMENTS	ASGN VS REQ'D PERCENT
40K Loader	283	376	75
25K Loader	656	685	96
WBEL	125	206	61
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 KC-10 and wide-body commercial aircraft 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.
- 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 (FY98-02): Maintain current K-loader fleet while procuring Tunner (60K) loader; develop wide-body capable, small loader replacement for 25K loader.
  - •• Continue depot overhaul of a limited number of 40K loaders and older 25K loaders.
  - •• Establish requirement and procurement strategy for 26 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 next generation small loader (NGSL) as a replacement for 25K loader. Begin delivery to meet validated requirement.
    - ••• Mission Need Statement for NGSL approved by CSAF in Jul 94. Procurement expected to begin in FY00; will replace remainder of WBELs and aging 25K loaders on an attrition basis.
- Long term objective (FY03-15): Retire 40K loaders by FY03 contingent on completion of full Tunner (60K) loader buy. Continue procurement of NGSL; retire 25K loaders as new small loaders enter the inventory.

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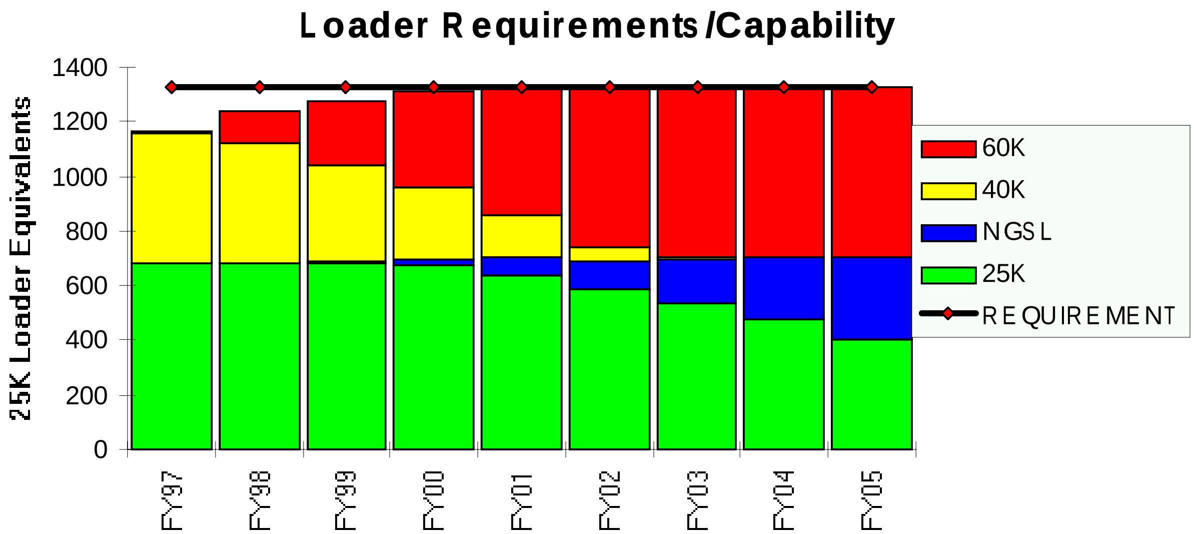
•• Continue purchasing Tunner (60k) loaders through completion in FY03.
•• Continue procurement of new small loader up through initial requirement of 264 loaders.

The chart below depicts contemplated composition of MHE fleet through FY05, assuming proposed procurement and managed loader retirement. In order to compare dissimilar assets the chart shows vehicles in 25K loader equivalents.



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 75 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 Tunner (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 U.S. security interests.

MISSION: Maximize use of simulation for initial, upgrade, and continuation training (both unilateral and composite) 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 calligraphic lights) compatible with WGS 84 geospecific worldwide data bases, and receiver air refueling capability. Network training devices for unilateral mobility aircraft end-to-end total crew training and composite force training and mission rehearsal.
- 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: (Addresses simulator unique upgrades vice aircraft concurrent modifications)
- All trainers posses early 1980's technology Most of the existing computer systems and visual systems have exceeded their projected life cycle of 7-10 years. C-5, C-130, 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 the existing airlift and tanker force.
- All air refueling receiver systems require additional aerodynamic handling data. The C-130, KC-10 and KC-135 require basic aircraft aerodynamic handling data, as well. Operational limitations of mobility aircraft further reduce availability of resources.
- Current fleet includes trainers with no 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/F37A-T93	C-17	WST	4
A/F37A-T92	C-17	CSS	1
A/F37A-T59/60	C-130E/H	WST	8
	C-130H2/H3	WST	2
A/F37A-T58	C-130E/H	CPT	2
A/F 37A-T24B	C-141B	WST	7
A/F 37A-T79	C-141B	CPT	7
A/F 37A/T81	C-5/C-141	ARPTT	6
	KC-10	WST	4
	KC-10	CPT	3
	KC-10	BOPTT	2
A/F 37A-T87/88	KC-135A/R	OFT	20
	KC-135	BOPTT	2
TOTAL TRAINING DEVICES			79

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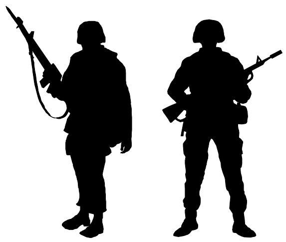
PLAN: Upgrade and modify the present simulator fleet to a modern core of training devices. Upgrade all AMC simulators to FAA Level C equivalent with 6-DOF motion systems, wide angle medium resolution day/dusk/night visual systems (with calligraphic lights) compatible with WGS 84 geospecific worldwide data bases, and receiver air refueling capability.

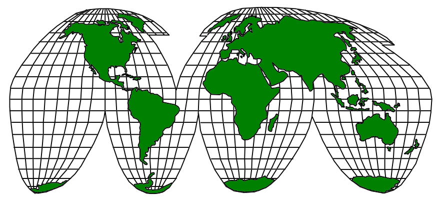
- To date:
  - The C-141 WST upgrades are complete.
  - The fourth KC-10 simulator has been procured and is in place at Travis AFB CA.
  - The aerodynamic data for all aircraft has been collected. Requires installation/integration.

- Near term objective (FY 98-99):
  - •• Complete C-5 visual systems upgrade and aerodynamic handling packages installation/integration for air refueling.
  - •• Complete upgrade all KC-135 trainers with new computer systems and improved aerodynamics handling packages.
  - •• Upgrade most KC-135 formal school trainers and two operational unit 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
  - •• Upgrade all C-17 trainers with improved aerodynamic handling packages for air refueling training.
- Mid range term objective (FY00-04)
  - •• Upgrade remaining KC-135 trainers with 6-DOF motion systems and new visual systems and upgrade cockpits to allow receiver air refueling training capability.
  - •• Complete visual systems upgrade on KC-10 WSTs..
  - •• Procure two additional C-5 simulators for the Guard and Reserve.
  - •• Complete C-130 host computer, radar simulation, and visual system upgrades.
  - •• Connect all mobility training devices via a local area/wide area network to conduct Air Force required distributive mission training.

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 six and fourteen 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 mobility aircraft.





Security Forces Roadmap

STRATEGY: Provide a strategy for modernizing Air Mobility Command (AMC) Security Force (SF) 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 operations

DESCRIPTION:

- Security Force responsibilities fall into four major areas:
  - <u>Contingency Support</u> provides highly trained and rapidly deployable SF force modules. These modules vary in size and capability, and are designed to support the worst case scenario at Onload, 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.
  - SFs play a critical role in detecting and effectively neutralizing unauthorized access to USAF resources through their aggressive <u>Weapons Systems Security</u> duties.
  - During <u>Air Base Defense</u> missions, SFs 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.
  - <u>Law Enforcement</u> 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 PHOENIX RAVEN Teams 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 en route locations lack a standardized closed circuit camera system for base entry and flightline surveillance.
- SFs lack a relocatable base defense sensor system that can be used in peacetime, but can also be deployed in wartime.
- SF contingency forces need a man-portable, multiple role weapon with anti-personnel and limited anti-armor capability.
- SF contingency forces receive insufficient training in convoy security procedures, military operations on urban terrain, and anti-sniper tactics.

- SF forces need a new All Terrain Vehicle, Nickname: CLAW (Carrier Light Auxiliary Weapon) to support SF requirements when deployed.

PLAN:

- Continue actions to acquire the necessary manpower to provide adequate PHOENIX RAVEN Teams for our strategic airlift aircraft.
- Acquire commercial off-the-shelf body armor to increase SF 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 SF 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 en route structure, and at contingency operating locations. Air operating locations must remain free of ground and surface-to-air threats to ensure uninterrupted flow of wartime logistics or peacekeeping forces and equipment. Failure to upgrade SF 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.

Air Mobility Warfare Center Roadmap

STRATEGY: Provide a single, comprehensive institution for Global Reach air mobility-specific training and joint doctrine development.

MISSION: Prepare and train AMC, DoD, and allied personnel to effectively plan lead, integrate, execute 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 survivability, 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 oriented training.
- A direct reporting unit to HQ AMC, there are five operational areas under AMWC:
  - ●● Support Division: Provides Instructional Systems Development (ISD) guidance, Instructional and Quality standards, Audio Visual presentation 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.
  - ●● USAF CADS: USAF Combat Aerial Delivery School is a direct reporting unit of AMWC and located at Little Rock AFB AR. CADS trains HC/C-130 follow-on testing and evaluation, and facilitates theater combat delivery training at the U.S. Army Joint Readiness Training Center (JRTC).
- 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 manpower, facilities, communications, equipment, and infrastructure:
  - ●● Building refurbishment necessary for instructional suitability.

- •• Follow-on project to construct visitor quarters (VQ) will replace existing unsatisfactory VQs
- •• Communications requirement shortfalls in phone and Local Area Network.
- •• Limited basic “business processes” in place.
- •• USAF CADS Joint Training Division manpower is insufficient in both number and functional expertise to support the AF ground activity portion of JRTC exercises.

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.
  - •• Follow-on Operational Test and Evaluation of existing procedures/systems will identify operational effectiveness.
  - •• JRTC provides some of the best across-the-board training opportunities available in the low to mid-intensity combat environment.
  - •• Weapons Instructor Course (WIC) provides the opportunity to expand the knowledge of employment officers across AMC MDSs.

PLAN:

- Near term objectives will develop AMWC into the USAF’s premier warfare center:
  - •• Rigorously train force support units for 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 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 and theater tactical airlift capabilities. Expand HC/C-130 WIC to an Airlift WIC to include other AMC MDSs.

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.

3d Field Investigations Region 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:
    - <u>Collection and Dissemination of Threat Information:</u> 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.
    - <u>Liaison:</u> Establish effective liaison with key U.S. Embassy personnel, host nation security services, allies, and counterpart counterintelligence agencies. FPAs use liaison as a force multiplier.
    - <u>Briefings:</u> Ensures all deployed personnel are aware of the local threat situation, unsafe areas, and requirements of counterintelligence awareness.
    - <u>Other:</u> Provide security training to personnel; support OPSEC, tactical deception, and HUMINT programs; interrogate Enemy Prisoners of War (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.

PLAN:

- Continue coordinating with AMC on the implementation of QFBE1 logistics detail.
- Advocate and support procurement of vehicles for deployment during the initial stages of contingency operations.
- Train personnel on use of AFOSI-procured Counterintelligence Deployment System (CIDS). This proven system meets 3 FIR's intrathreater 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 Operations (IO) Roadmap

STRATEGY: Acquire the IO awareness, training, and systems necessary to enhance and protect AMC's Global Reach mission.

MISSION: Direct, coordinate, evaluate, and participate in IO 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 IO is primarily defensive in nature. We must ensure mission success by protecting AMC assets worldwide from IO attack. Awareness, training, and secure information systems/networks will be at the heart of our AMC IO initiatives.
- The AMC IO branch will determine and implement the command's IO requirements.
  - Awareness: Ensure all AMC personnel receive the resources and training necessary to understand IO concepts and to implement basic defensive procedures in their workplaces.
  - Training: Develop effective command-wide IO 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), operations (DO), and inspector general (IG) personnel will likely receive more specialized training than other AMC personnel.
  - Systems: Acquire IO-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 IO environment.

DEFICIENCIES:

- AMC has a number of IO-related deficiencies. All are command-wide shortfalls that could increase our vulnerability to IO attack.
  - Development of a command-wide IO awareness and training program in infancy. The primary challenge is to implement a program quickly and ensure that it applies to command personnel. This is the first step in defending against the IO threat.
  - Our capability to assess and target IO 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 IO attack. Our C4I systems/networks are inadequate to support global in-transit visibility (tracking) and C2 requirements. Numerous AMC systems have yet to be Certified and Accredited by Designated Approval Authorities. 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 IO-based acquisition strategy for future systems. Planners and requirements personnel must consider IO issues as they relate to systems functions, operations, and vulnerabilities.

PLAN:

- The AMC IO branch will act as a focal point for the command's IO deficiencies. Once deficiencies are clearly understood, specific organizations and personnel will be tasked to correct them.
  - •• The IO branch will develop and implement command-wide IO awareness and training programs. These programs will give AMC personnel a clear understanding of the IO threat. Also, all AMC personnel from individual PC users to System Administrators must be trained to protect, detect, and react to system and network intrusions.
  - •• Individuals in organizations with significant vulnerabilities to IO 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 IO-robust C4I systems, and will ensure that IO issues are addressed in plans, requirements, and budgets.
- The IO branch will ensure AMC organizations consider future IO systems vulnerabilities and implement fixes.
- As chair of IO Working Group (IOWG), IO branch will:
  - •• Task IN to continue vulnerability assessments with particular emphasis on existing and future IO threats.
  - •• Task SC to identify C2 vulnerabilities and identify “road-map” to correct/nullify vulnerabilities.
- The IG will inspect AMC organizations to identify deficiencies and strengths while raising command-wide awareness.

BOTTOM LINE IMPACT:

- The AMC vulnerability to IO is significant and will increase without immediate action.
- Implementation of IO branch is a critical first step for the command IO program.
- IO awareness and training program will prepare command personnel for IO threat.
- Better information on threat and identified vulnerabilities will allow AMC to fix most important problems first.
- Systems initiatives will ensure command C4I capabilities are safe from IO attack.
- Without an IO program, AMC will remain vulnerable to IO attack.

Modeling and Simulation (M&S) Roadmap

STRATEGY: Apply innovative M&S technology to support AMC needs and processes.

MISSION: Modeling and simulation support for decision making, mission operations analysis, programming, deliberate planning, exercise support, test and evaluation, and training.

DESCRIPTION:

- The DoD M&S Vision states that the purpose of modeling and simulation is to provide readily available, operationally valid environments for:
  - Joint training
  - Technology assessment
  - Prototype development, system upgrades, and full scale developments
  - Force structuring
- To support this vision, the Air Force has established a strategy for the future:
  - Build a Joint Synthetic Battlespace that will support better decisions and build warfighting skills
  - Develop inter-operable simulation capability to provide the warfighters and decision makers the tools necessary to ensure readiness across the full spectrum of conflict
- AMC is engaged in M&S to assist decision makers in all aspects of air mobility in support of Air Force objectives and in concert with the Air Force strategy:
  - Planning and programming
  - Exercises
  - Training
  - Operations
  - Transportation feasibility
  - Test & Evaluation

- Models used at AMC:

Model	Users	Description and use of model
ADANS* AMC Deployment Analysis System	TACC and DOX	Airlift planning and scheduling model used as part of the information system to support AMC C2 activity and the OPlan deliberate planning process.
BRACE Base Resource and Capability Estimator	XPY	Simulation of ground operations for a strategic airlift flow at a single airfield.
CMARPS* Combined Mating and Ranging Planning System	TACC, XPY, DOX	Integrated set of programs used in air refueling planning and analysis for deployment and employment missions.
DISAMS Digital Infrared Seeker and Missile Simulation	TEP	A family of electronic combat models used to represent different missile threats. The models are used in conjunction with GTSIMS, MOSAIC, and SPIRITS.
GTSIMS Georgia Tech Synthetic Image Missile Simulation	TEP	Electronic combat model that simulates target images (generated from SPIRITS) and missile threats (generated from DISAMS) to evaluate "decoy effectiveness" and missile "miss" distances.
JFAST Joint Flow and Analysis System for Transportation	DOX	Transportation analysis and feasibility tool developed by USTRANSCOM. It performs air, land, and sea analysis from installation to the port of debarkation.
LCOM Logistics Composite Model	XPM	A series of computer programs used to determine manpower requirements by simulating aircraft operations and support functions for the KC-135, KC-10, C-141, C-5 C-130 and C-17.

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Model	Users	Description and use of model
MASS-AFM Mobility Analysis Support System - Airlift Flow Model	XPY	Simulation used to model the global air transportation system which includes: aircraft, airbases, cargo, passengers, airfield resources, policies, and procedures.
MOSAIC Modeling System for Advanced Investigation of Countermeasures	XPR TEP	Electronic combat model that simulates the end-to-end engagement between infrared-guided missiles and aircraft equipped with infrared countermeasures (IRCM).
QCOA Quick Course of Action	DOX	An extension of ADANS for small airlift operations to provide estimated closure times based on limited inputs.
SPIRITS Spectral Inband Radiance Imaging Target and Scenes	XPR TEP	Electronic combat model used to predict infrared signatures of aircraft under specified conditions. Used in conjunction with GTSIMS.
AFMC Models	TEP	Numerous models and simulations used to support T&E mission objectives. They are owned and operated by AFMC organizations for the DoD test community.

* ADANS and CMARPS will migrate into Consolidated Air Mobility Planning System (CAMPS)

DEFICIENCIES:

- Planning and Programming: Airlift and tanker models not integrated. Uncertainty in planning cost-effective fleet replacements and inability to model airfield activities realistically; no “what if” analysis tools for C4 system planning and limited tools for evaluating logistic trend, threat, attrition 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: DoD has insufficient capability to test large aircraft infrared countermeasures. Wing tip vortex models are maturing, but require further refinement.
- Standards: AMC-owned simulations (and others used by AMC) do not meet USD(A&T) directed High Level Architecture (HLA) standards required for continuance of funding.
- No overarching plan to align tools with Joint Vision 2010, Global Engagement, and future joint warfighting models.

PLAN:

- Selectively improve existing mission and system models in collaboration with USTC and Joint campaign model development.
- Continue to represent AMC needs in USTC-sponsored Transportation, Analysis, M&S (TAMS) initiatives.
- Work with USTC to integrate air mobility needs with Joint campaign model and Joint training system development.
- Remain engaged with AFMC TPIPTs to ensure engineering-level models support functional needs.
- Program for funds required for HLA compliance.
- Program for funds required for distributed mission training.
- Work with the National Air and Space Model Program Office to ensure air mobility is adequately represented.

BOTTOM LINE IMPACT:

- POM decisions in Joint/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, which do not model AMC operations realistically.
- It will become increasingly difficult for AMC to compete for resources without consistent, realistic representation in analysis and exercise M&S environments.

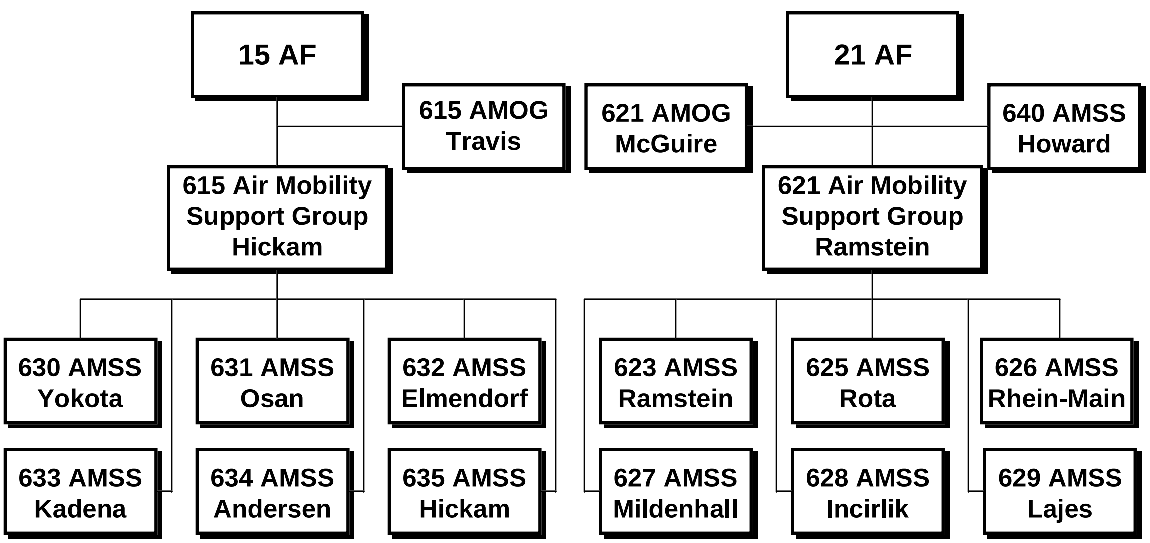
En Route Infrastructure Roadmap

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: Supports USTRANSCOM by delivering DoD, U.S. Government, and other non-U.S. 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



Major Fixed 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

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facilities) 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 MHE 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 $1.1 billion in infrastructure projects identified (of the total, over $800 million are fuels projects)

PLAN:

- AMC goal is to accomplish a global assessment of en route infrastructure
- Command team led by HQ AMC/CE completed survey of both European and Pacific infrastructures
- Focus to date has been on areas possessing greatest need; efforts have been evenly split between improving and assessing European and Pacific air base infrastructure
- Still intending to 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 and Office of Secretary of Defense it’s imperative to increase Defense Logistics Agency’s Total Obligation Authority to improve the en route system fuels infrastructure
- Obtain NATO or host nation payment in kind money to fix overseas 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 nation’s 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)

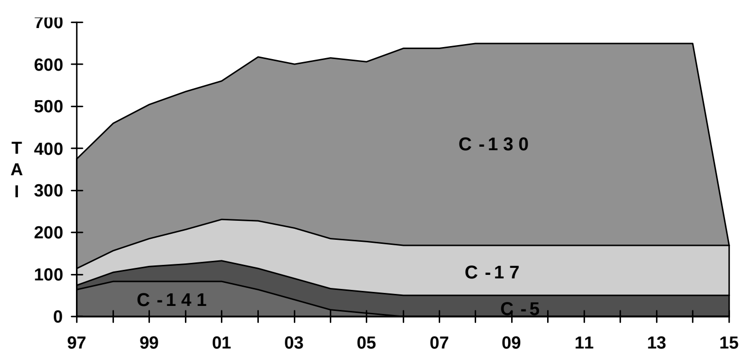
Defensive System (DS) Roadmap

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.
  - 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.
  - Reliance on on-board systems for aircraft self protection is a last resort. Current and planned defensive capabilities on combat delivery aircraft DO NOT provide the capability to deliberately penetrate a known hostile threat envelope.
- Current basic DS consists of AAR-47 missile warning system and either the ALE-40 or ALE-47 countermeasure dispensing system. Some aircraft are also modified with the ALR-69 Radar Warning Receiver
  - <u>C-17, C-5, C-141</u>
    ALE-47 system will be installed on all aircraft. Present ALE-40 system has been replaced on 4 C-5s; all C-141s in the Core 63 fleet will have ALE-47s; All 120 C-17 , 83 C-141, and 50 C-5B aircraft are scheduled to receive the basic DS installation.
  - <u>C-130</u>
    Active duty and ANG C-130 E/H1/H2 aircraft will be ALE-47 equipped. AFRC C-130E/H1/H2 aircraft are ALE-40 equipped. C-130H3 aircraft are ALE-47 equipped.
    480 AMC/PACAF/USAFE combat delivery aircraft will receive the basic DS installation.
    342 AMC/PACAF/USAFE aircraft will be modified with ALR-69.
- 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.
  - •• 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 97-01):
  - •• Retrofit 83 C-141, 50 C-5B, 120 C-17 and 480 AMC/CAF C-130 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.
    - AAR-47 Missile Warning System processor upgrade being funded; new processors scheduled to start delivering FY98. New processors will improve MWS performance.
    - Latest version of ALE-47 dispenser system Operational Flight Plan (OFP 1021) incorporates features to give airlift aircraft greater capability.
    - Continue ALR-69 installs.
  - •• 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 attrition rates unacceptable to theater CINCs.

Strategic Sourcing Roadmap

STRATEGY: Balance military effectiveness (the ability to fight and win) with the incorporation, where possible, of increased efficiencies from best business practices, resulting in improved performance, efficiency, quality, cost effectiveness and savings for modernization, quality of life or other Air Force priorities. When internal sources are required, strategic sourcing ensures that mission performance requirements are met or exceeded in the most cost-effective way. When an external source is available, strategic sourcing facilitates the identification of the best way to either compete with private or public sector suppliers to achieve performance and cost advantages, or to directly outsource or privatize the function under existing policies, procedures, and statutes.

MISSION: To institutionalize the Air Mobility Command's (AMC's) optimum use of public and private resources by selecting the best source, either internal or external, to meet AMC requirements.

DESCRIPTION:

- Ensure high levels of readiness and mission capability are sustained across Air Mobility Command by the most efficient and cost-effective services available, whether they are performed in-house or by the private sector, even if they are inherently governmental or military essential.
- Improve the performance, quality, efficiency, and cost effectiveness of AMC activities by expanding the network of available suppliers to increase AMC's access to services that are "best in class."
- Generate savings for modernization by pursuing cost-effective solutions to save the Air Force money and time while simultaneously ensuring adequate resources are allocated to maintain installations. The major “driver” for the overall program is the need to save substantial amounts of money by doing business more efficiently and cost effectively--regardless of whether activities are outsourced, privatized, or retained in-house.
- Facilitate increased AMC management focus on core activities while capitalizing on other public and private sector expertise, investment, and capability.

DEFICIENCIES:

- AMC lacks experienced personnel familiar with the A-76 process.
- Long A-76 process prohibits rapid accomplishment to meet AF directed bogeys.
- Lack of contractor support funding for performance work statements (PWS)/most efficient organization (MEO) development to minimize functional time away from primary function.
- Prohibition of "Vance AFB like" contracts generates increased administrative burden.

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PLAN:

- Develop, market, and institutionalize a consistent strategic sourcing approach to be implemented AMC-wide. Such an approach should facilitate the ability to aggressively pursue the savings that are available from O&P.
- AMC will promote a "business perspective" to execute O&P comprehensively. By exploiting industry involvement to the maximum extent possible, the program will increase its chances of success, credibility, and acceptance.
- AMC should to be flexible enough in its organizational setup to facilitate reengineering, reorganization, and outsourcing in order to accomplish strategic sourcing.
- AMC needs to develop a methodology to extract data hidden within current systems to track the cost of doing business, thereby promoting sound business decisions.
- Given the expected time and monetary savings linked to new approaches to service contracts, acquisition streamlining procedures or reform must be aggressively applied AMC-wide for optimum O&P. In addition, the importance of small and disadvantaged businesses must continue to be factored into an environment increasingly promoting contract consolidation when it makes good business sense.
- AMC must address the needs of personnel impacted by O&P decisions with foresight, fairness, and in the context of personnel procedures for implementing downsizing. Additionally, contracts, service agreements, etc., must contain appropriate language regarding Equal Employment Opportunity (EEO) Law, prescribed by Executive Order 11246, September 28, 1965 and ensure the Right of First Refusal, when appropriate.
- When Federal civilians will be impacted by a strategic sourcing initiative, AMC will consult with those employees during the cost comparison process in the manner prescribed by 10 U.S.C. Section 2467 and, for those employees represented by labor organizations, will consult with their representative labor organizations unions and complete all bargaining obligations.

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ACRONYMS

AAA	Anti-Aircraft Artillery
AAFES	Army and Air Force Exchange Service
AB	Air Base
ABI	Airborne Broadcast Intelligence
ABS	Airborne Single Channel Ground and Air Radios
ACC	Air Combat Command
ACDE	Aircrew Chemical Defense Equipment
ACFP	Advanced Computer Flight Plan
ACI	Analytical Condition Inspection
ACM	Air Cycle Machine
ACP	Automatic Communications Processor
ACP	Aviation Continuation Pay
ACRS	Advanced Cargo Restraint System
ADANS	AMC Deployment Analysis System
ADI	Attitude Directional Indicator
ADM	Acquisition Decision Memorandum
ADS	Automatic Dependent Surveillance
ADSC	Active Duty Service Commitment
ADSF	Aerial Delivery Support Flight
ADVON	Advanced Echelon
AE	Aeromedical Evacuation
AECC	Aeromedical Evacuation Coordination Center
AECM	Aeromedical Evacuation Crew Member
AECOT	Aeromedical Evacuation Contingency Operations Training
AEF	Air Expeditionary Force
AEMS	Aeromedical Evacuation Mission Support
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
AFCM	Air Force Commendation Medal
AFDIS	Air Force Dial-In System
AFDMP	Air Force Dormitory Master Plan
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
AFMIT	Air Force Meteorological Information Terminal

AFMS	Air Force Medal Service
AFMSS	Air Force Mission Support System
AFMWRSB	Air Force Morale, Welfare, Recreation and Services Board
AFNCC	Air Force Network Control Center
AFNET	Air Force Network
AFOSI	Air Force Office of Special Investigations
AFPC	Air Force Personnel Center
AFRC	Air Force Reserve Command
AFSC	Air Force Specialty Codes
AFSOC	Air Force Special Operations Command
AGE	Aerospace Ground Equipment
AGILES	Automated G Files
AGR	Active Guard Reserve
AHOS	Advanced Hybrid Oxygen System
AIA	Air Intelligence Agency
AIT	Automatic Identification Technology
ALC	Air Logistics Center
ALDCS	Active Lift Distribution Control System
ALE	Automatic Link Establishment
ALP	Advanced Logistics Program
ALS	Airman Leadership Schools
AMACS	Air Mobility Advanced Console System
AMC	Air Mobility Command
AMC/CC	Commander of AMC
AMCC	Air Mobility Control Centers
AMCF	Air Mobility Control Flight
AMCS	Air Mobility Communications Squadrons
AMDAC	Air Mobility Doctrine Awareness Course
AME	Air Mobility Element
AMMP	Air Mobility Master Plan
AMOG	Air Mobility Operations Group
AMOS	Air Mobility Operations Squadron
AMS	Air Mobility Squadron
AMSG	Air Mobility Support Group
AMSS	Air Mobility Support Squadron
AMU	Aircraft Maintenance Unit
AMW	Air Mobility Wing
AMWC	USAF Air Mobility Warfare Center
ANDVT	Advanced Digital Voice Terminal
ANG	Air National Guard
ANS	Automatic Notification System
AOC	Air Operations Center
AOR	Area of Responsibility
APDP	Acquisition Professional Development Program
APMF	Aerial Port Mobility Flight

APOD	Aerial Port of Debarkation
APOE	Aerial Port of Embarkation
APOM	Amended Program Objective Memorandum
APU	Auxillary Power Unit
ARB	Air Reserve Base
ARFF	Aircraft Rescue Fire Fighting
ARPTT	Air Refueling Part Task Trainer
ART	Air Reserve Technician
ASAT	Anti-satellite
ASN	Area Source Network
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
ATD	Advanced Technology Demonstration
ATD	Aircrew Training Device
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
BAI	Backup Aircraft Inventory
BAQ	Basic Allowance for Quarters
BASV	Body Armor/Survival Vest
BCR	Baseline Change Request
BIP	Base Information Protect
BOPTT	Boom Operator Part Task Trainer
BOS	Base Operating Support
BOT	Boom Operator Trainer
BRAC	Base Realignment and Closure Committee
BRACE	Base Resource and Capability Estimator
BSP	Base Support Plans
BW	Biological Weapons
BWB	Blended-wing-body
C2	Command and Control
C2IPS	Command and Control Information Processing System
C4I	Command, Control, Communications, Computers and Intelligence

C4S	Command, Control, Communications, and Computer Systems
CADC	Central Air Data Computer
CADRE	College of Aerospace Doctrine, Research and Education
CADS	Combat Aerial Delivery School
CAF	Combat Air Forces
CAFSC	Control Air Force Specialty Code
CAMPS	Consolidated Air Mobility Planning System
CAPS	Consolidated Aerial Port System
CAPS II	Phase II of CAPS
CAT	Crisis Action Team
CB	Chemical/Biological
CBT	Computer Based Training
CCATT	Critical Care Aeromedical Transport Team
CCB	Configuration Control Board
CCFV	Closed Circuit Flight Line Video
CCT	Combat Control Teams
CCTV	Closed Circuit Television Camera System
CD ROM	Compact Disc Read Only Memory
CDC	Career Development Course
CDP	Child Development Program
CDS	Container Delivery System
CDU	Control Display Unit
CE	Civil Engineering
CEFIP	Career Enlisted Flyer Incentive Pay
CHAMPUS	Civilian Health & Medical Program of the Uniformed Services
CHOP	Change Operational Control
CIDS	Counterintelligence Deployed System
CIE	Corporate Information Environment
CINC	Commanders in Chief
CIP	Capital Investment Plan
CIS	Combat Intelligence System
CISU	Continuous/Intermittent Suction Unit
CITS	Combat Information Transport System
CJCS	Chairman, Joint Chiefs of Staff
CLAW	Carrier, Light Auxiliary Weapon
CLS	Contractor Logistics Support
CMARPS	Combined Mating and Ranging Planning System
CMLSA	Commercial Microwave Landing System Avionics
CMOS	Complementary Metal Oxide Semiconductor
CMW	Compartmented Mode Workstation
CNS/ATM	Communication, Navigation, Surveillance/Air Traffic Management
COCOM	Combatant Command
COE	Common Operating Environment
COMBS	Contractor Operated and Maintained Base Supply
COMSEC	Communications Security

CONOPS	Concept of Operations
CONUS	Continental United States
COTS	Commercial Off-The-Shelf
CP	Command Post
CP	Collective Protection
CPT	Cockpit Procedure Trainer
CPU	Central Processing Unit
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
CSAR	Combat Search and Rescue
C-SEL	Combat Survivor Evader Locator
CSOC	Contingency Support Operations Course
CSS	Crisis Support Staff
CTAPS	Contingency Theater Automated Planning System
CTTF	Contingency Tanker Task Force
CUT	Cross Utilization Training
CVAM	USAF Vice Chief of Staff
CVR	Cockpit Voice Recorder
CW	Chemical Weapons
DAB	Defense Acquisition Board
DAMA	Demand Assigned Multiple Access
dAPE	Dynamic Assessment, Planning and Execution
DARPA	Defense Advanced Projects Agency
DAWIA	Defense Acquisition Workforce Improvement Act
DBOF	Defense Base Operating Fund
DCI	Defensive Counter Information
DCP	Directorate of Civilian Personnel
DDC	Downsized Deployable Communications
DDN	Defense Data Network
DE	Dissemination Element
DeCA	Defense Commissary Agency
DEROS	Date Estimated Return from Overseas
DGPS	Differential Global Positioning System
DII	Defense Information Infrastructure
DIRMOBFOR	Director of Mobility Forces
DISA	Defense Information Systems Agency
DISAMS	Digital Infrared Seeker and Missile Simulation
DISK	Deployable Intelligence Support Kit
DITOPS	Distributed Transportation Scheduling in Opis
DLA	Defense Logistics Agency
DME	Distance Measuring Equipment

DMS	Defense Message System
DMSB	Defense Medical Standardization Board
DMSP	Defense Meteorological Satellite Program
DNC	Doppler Navigation Computer
DOC	Designed Operational Capability
DoD	Department of Defense
DOF	Degrees of Freedom
DPG	Defense Planning Guidance
DRB	Division Ready Brigade
DRU	Direct Reporting Unit
DS	Defensive Systems
DS/DS	Operation DESERT SHIELD/STORM
DSN	Defense Switched Network
DTD	Data Transfer Device
DTS	Defense Transportation System
DV	Distinguished Visitor
DZ	Drop Zone
EADS	Elevated Agent Delivery System
EC	Environmental Compliance
ECAMP	Environmental Compliance Assessment and Management Program
ECI	Extension Course Institute
EDI	Electronic Data Interchange
EEI	Essential Elements of Information
EEO	Equal Employment Opportunity
EGPWS	Enhanced Ground Proximity Warning System
ELINT	Electronic Intelligence
ELT	Emergency Locator Transmitter
EMCON	Emission Control
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
EPOS	Emergency Passenger Oxygen System
EP2	Express Packaging Processing
EPR	Engine Pressure Ratio
EQUAL	Enlisted Quarterly Assignments Listing
ERA	Environmental Restoration Account
ERMS	Electronic Records Management System
ERS	En Route System
ESKE	Enhanced Station Keeping Equipment
ESU	Electronic Systems Update
EUCOM	European Command
EVAC	Evacuation
EW	Electronic Warfare
EWI	Education With Industry
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations

FAI	Federal Acquisition Institute
FANS	Future Air Navigation System
FDR	Flight Data Recorder
FE	Flight Engineer
FIPS	Federal Information Processing Standard
FIR	Field Investigation Region
FLEX	Force Level Execution System
FLIR	Forward Looking Infrared Radar
FMB	Functional Management Board
FMS	Flight Management System
FOA	Field Operating Agency
FOA	Forward Operating Area
FOL	Forward Operating Location
FPA	Force Protection Advisor
FP/AT	Force Protection/Antiterrorism
FQIS	Fuel Quantity Indicating System
FSA/CAS	Fuel Systems Advisory/Cockpit Avionics System
FSAS	Fuel Savings Advisory System
FSC	Family Support Center
FSL	Forward Supply Location
FSP	Forward Supply Points
FSS	Forward Supply 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
GCSS	Global Combat Supply System
GDSS	Global Decision Support System
GOSIP	Government Open Systems Interconnection Profile
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GRL	Global Reach Laydown
GRLP	Global Reach Laydown Package
GS	General Service
GSA	General Services Administration
GUI	Graphical User Interface
HAHO	High-altitude high-opening
HALO	High-altitude low-opening
HDIP	Hazardous Duty Incentive Pay
HDP	Human Dignity Program
HF	High Frequency

HLA	High Level Architecture
HMA	Housing Market Analysis
HMMWV	High Mobility Multi Wheeled Vehicles
HMO	Health Maintenance Organization
HORIS	Headquarters Operations Resource Information System
HQ	Headquarters
HQ USAF	Headquarters United States Air Force
HRD	Human Resources Development
HSF	Human Sensory Feedback
HSI	Human System Interface
HSI	Horizontal Situation Indicator
HSVs	Hydrant Servicing Vehicles
HUMINT	Human Intelligence
ICAO	International Civil Aviation Organization
ICWTS	Interactive Courseware Training Systems
IDA	Institute for Defense Analysis
IDD	Interface Design Document
IDHS	Intelligence Data Handling System
IETM	Interactive Electronic Technical Manuals
IFF	Identification Friend or Foe
IFPS	Intraformation Positions System
IFPS/TCAS	Intraformation Position/Traffic Collision Avoidance System
IFTW	Information for the Warrior
IG	Inspector General
ILS	Instrument Landing System
ILSST	Integrated Life Support System
IMA	Individual Mobilization Augmentee
IMINT	Imagery Intelligence
INMARSAT	International Maritime Satellite
INS	Inertial Navigation System
INU	Inertial Navigation Unit
IO	Information Operations
IOC	Initial Operating Capability
IOWG	Information Operations Working Group
IPA	Imagery Product Archive
IPRB	Installation Planning and Review Board
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
ITAS	Intratheater Airlift Scheduler
ITS	Information Transport Systems
ITUD	Integral Tanker Unit Deployment
ITV	In-transit Visibility
IVD	Interactive Video Disk
IW	Information Warfare
JA/ATT	Joint Airborne Air Transportability Training
JACC/CP	Joint Airborne Command Center/Command Post
JCS	Joint Chiefs of Staff
JDISS	Joint Deployable Intelligence Support System
JFAST	Joint Flow and Analysis System for Transportation
JMPS	Joint Mission Planning System
JOLT	Joint Office of Logistics Technology
JOSAC	Joint Operational Support Airlift Center
JPALS	Joint Precision Approach and Landing System
JRTC	Joint Readiness Training Center
JSRC	Joint Search and Rescue Center
JSSED	Joint Service Sensitive Equipment Decontamination
JULLS	Joint Universal Lessons Learned System
JV	Joint Vision
JWICS	Joint Worldwide Intelligence Communication System
LAN	Local Area Network
LCOM	Logistics Composite Model
LGRC	Logistics Readiness Center
LMR	Land Mobile Radio
LMTD	Loadmaster Training Device
LRU	Line Replaceable Unit
LSE	Life Support Equipment
LZ	Landing Zone
MAA	Mission Area Assessment
MADARS	Malfunction Detection Analysis and Recording System
MAF	Mobile Aerial Port Flights
MAF	Mobility Air Forces
MAFFS	Modular Airborne Firefighting System
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
MARC	Mobility Air Reporting and Communications
MASINT	Measurement Analysis and Signature Intelligence
MASS-AFM	Mobility Analysis Support System-Airlift Flow Model
MC	Mission Capable

MCC	Mobility Command Center
MCP	Military Construction Program
MEF	Mobility Enhancement Funds
MEO	Most Efficient Organization
MGRLT	Medical Global Reach Laydown Team
MHE	Materials Handling Equipment
MILCON	Military Construction
MILSTAR	Military Strategic and Tactical Relay Satellite
MISREPs	Mission Reports
MIST	Meteorological Information Standard Terminal
MITO	Minimum Interval Takeoff
MLS	Microwave Landing System
MLS	Multi-level Security
MNA	Mission Needs Analysis
MNS	Mission Need Statement
MOC	Meteorological Operational Capability
MOG	Maximum Aircraft on Ground
MOOTW	Military Operations Other Than War
MOReVIS	Mobile Real Time Information System
MOS	Manual Observing System
MOSAIC	Modeling System for Advanced Investigation of Countermeasures
MPF/D	Million Pounds of Fuel per Day
MPM/D	Million Passenger Miles per Day
MPT	Message Processing Terminal
MQTP	Maintenance Qualification Training Program
MRC	Major Regional Contingency
MRS BURU	Mobility Requirements Study Bottom-Up Review Update
MRT	Maintenance Recovery Team
M&S	Modeling and Simulation
MSA	Mission Support Analysis
MSC	Military Sealift Command
MSI	Multi-Spectral Imagery
MSM	Meritorious Service Medal
MST	Mission Support Team
MSTS	Mutli-Source Tactical System
MTBF	Mean Time Between Failure
MTF	Medical Treatment Facilities
MTM/D	Million Ton Miles per Day
MTMC	Military Traffic Management Command
MTT	Mobile Training Team
MTW	Multiple Theater War
MWR	Morale, Welfare and Recreation
MWRS	Morale, Welfare, Recreation, and Services
MX	Maintenance
NAF	Nonappropriated Fund

NAF	Numbered Air Force
NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization
NBC	Nuclear, Biological & Chemical
NCA	National Command Authorities
NCO	Noncommissioned Officer
NDB	Nondirectional Beacon
NDI	Non-Developmental Item
NDTA	National Defense Transportation Association
NEXRAD	Next Generation Weather Radar
NFIP	National Foreign Intelligence Program
NGSL	Next Generation Small Loader
NIMA	National Imagery and Mapping Agency
NM	Nautical Mile
NMCS	Not Mission Capable for Supply
NMS	National Military Strategy
NOAA	National Oceanic and Atmospheric Agency
NOTAM	Notices to Airmen
NOV	Notices of Violation
NPOESS	National Polar Orbiting Environmental Satellite System
NPR	National Performance Review
NSO	Navigator Systems officer
NSS	National Security Strategy
NVD	Night Vision Devices
NVG	Night Vision Goggles
NW	Nuclear Weapons
O&P	Outsourcing and Privatization
O&M	Operations and Maintenance
O&S	Operations and Support
OAS	Officer Assignment System
OCI	Offensive Counter Information
OCONUS	Outside of Continental United States
OFT	Operational Flight Trainer
OIS	Office Information System
OJT	On-the-Job Training
OLVIMS	On-Line Vehicle Interactive Management System
OOTW	Operations Other Than War
OPCON	Operations Control
OPLAN	Operations PLAN
OPSEC	Operations Security
OPTEMPO	Operations Tempo
ORD	Operational Requirements Document
ORI	Operational Readiness Inspection
OSA	Operational Support Airlift
OSD	Office of the Secretary of Defense

OSINT	Open Source Intel
OTH	Oveer The Horizon
OWCP	Objective Wing Command Post
PAA	Primary Aircraft Authorizations
PACAF	Pacific Air Forces
PACOM	Pacific Command
PAR	Precision Approach Radar
PAT	Process Action Team
PC	Personal Computer
PCMCIA	Personal Computer Memory Card International Association
PCS	Permanent Change of Station
PDF	Portable Document Format
PDM	Programmed Depot Maintenance
PEG	Program Evaluation Group
PERSCO	Personnel Support for Contingency Operations
PERSTEMPO	Personnel Tempo
PFPS	Portable Flight Planning Software
PFT	Program Flying Training
PGM	Precision Guided Munitions
P.L.	Public Law
PLSR	Precision Approach and Landing Capability
PMCS	Partially Mission Capable for Supply
PME	Professional Military Education
PMI	Patient Movement Items
PMPS	Portable Mission Planning System
PNAF	Primary Nuclear Airlift Force
POL	Petroleum, Oils, and Lubricants
POM	Program Objective Memorandum
POSIX	Portable Operating System Interface for Computer Environments
PRAM	Productivity, Reliability, Availability and Maintainability
PRV	Plant Replacement Value
PSP	Primary Supply Points
PSYOPS	Psychological Operations
PTM	Production Team Maintenance
PTT	Part Task Trainers
PWS	Performance Work Statements
QCOA	Quick Course of Action
QDR	Quadrennial Defense Review
QDUC	Quick Dial-Up Communications
R&M	Reliability and Maintainability
RAPCON	Radar Approach Control
RDT&E	Research, Development, Testing, and Evaluation
REACH	Recreation, Education, Awareness and Community Hub
REMIS	Reliability and Maintainability Information System
ReVIS	Real Time Vehicle Information System

RF	Radio Frequency
RFCI	Repeator Flight Control Indicator
RFI	Requests for Information
RIBS	Readiness in Base Services
RMA	Revolution in Military Affairs
RM&D	Reliability, Maintainability and Deployability
RNP	Required Navigation Performance
ROM	Read Only Memory
RPM	Real Property Maintenance
RTIC	Real Time Information in the Cockpit
RVSM	Reduced Vertical Separation Minima
SA	Situation Awareness
SA	Systems Administration
SAAM	Special Assignment Airlift Mission
SAES	Strategic Aeromedical Evacuation System
SAFMA	Strategic Airlift Force Mix Analysis
SAM	Special Air Mission
SAMs	Surface-to-Air Missiles
SATCOM	Satellite Communications
SBA	Strategic Brigade Airdrop
SBLC	Standard Base Level Computer
SCI	Sensitive Compartment Information
SCITS	Spinal Cord Injury Transport System
SCNS	Self-Contained Navigation System
SEAD	Suppression of Enemy Air Defenses
SECDEF	Secretary of Defense
SEI	Special Experience Identifier
SEI	Special Emphasis Item
SELCAL	Selective Calling
SERP	Sustaining Engineering Requirement Plan
SES	Senior Executive Service
SF	Security Forces
SFDR	Standard Flight Data Recorder
SHF	Super High Frequency
SIGINT	Signal Intelligence
SINCGARS	Single Channel Ground to Air Radios
SIOP	Single Integrated Operational Plan
SIPRNET	Secret Internet Protocol Router Network
SITREP	Situation Report
SKE	Station Keeping Equipment
SLEP	Service Life Extension Program
SOF	Special Operations Forces
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
SPIRITS	Spectral Inband Radiance Imaging Targets and Scenes
Sq Ops	Squadron Operations
SSB	Special Separation Benefit
SSC	Smaller-Scale Contingency
STAR	Standard Terminal Automated Radar Systems
STP	System Training Plan
STRATCOM	Strategic Command
STS	Specialty Training Standard
STT	Small Tactical Terminal
SUNT	Specialized Undergraduate Navigator Training
SV	Services
TACAN	Tactical Air Navigation
TACC	Tanker Airlift Control Center
TACMET	Tactical Meteorological Modification
TACTERMS	Tactical Terminals
TAES	Theater Aeromedical Evacuation System
TAFCS	Total Active Federal Commissioned Service
TAFIM	Technical Architecture for Information Management
TAFMS	Total Active Federal Military Service
TAI	Total Aircraft Inventory
TALCE	Tanker Airlift Control Element
TALO	Theater Airlift Liaison Officer
TAMIS	Tanker Airlift Mobility Integrated System
TAP	Transition Assistance Program
TASS	Tactical Automated Security System
TBM	Theater Battle Management
TBMCS	Theater Battle Management Core System
TCAS	Traffic Collision Avoidance System
TCPS	Transportable Collective Protection System
TDC	Theater Deployable Communications
TDY	Temporary Duty
TERA	Temporary Early Retirement Authority
TFA	Toxic Free Areas
TFS	Tactical Forecast System
TMO	Traffic Management Office
TNMCM	Total Not Mission Capable Rates for Maintenance
TNMCS	Total Not Mission Capable Rates for Supply
TOLD	Takeoff and Landing Data
TPFDD	Time-Phased Force Deployment Data
TPFDL	Time Phased Force Deployment List
TPIPT	Technical Planning Integrated Product Team
TPR	Training Personnel Requirement

TRANSCOM	Transportation Command
TSSAS	TPFDD Sizing, Sourcing, and Analysis System
TTF	Tanker Task Force
TWCF	Transportation Working Capital Fund
UAF	Unit Authorization File
UAV	Unmanned Aerial Vehicle
UE	Unit Equipped
UE ARC	Unit Equipped Air Reserve Component
UHF	Ultra High Frequency
UMD	Unit Manpower Document
US	United States
USAF	United States Air Force
USAFE	United States Air Forces in Europe
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
USSTRATCOM	United States Strategic Command
USTRANSCOM	United States Transportation Command
UTC	Unit Type Code
UTE	Utilization Rate
VALIENT	Virtual Airline Integration and Evaluation Tool
V/IFR	Visual/Instrument Flight Rules
VHA	Variable Housing Allowance
VHF	Very High Frequency
VI	Visual Information
VOR	Very High Frequency - Omni Directional - Radio
VORTAC	Combined VOR and TACAN
VPLR	Vacuum Packed Multi-Place Life Raft
VSI	Voluntary Separation Incentive
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
WGA	Workgroup Administration
WIC	Weapons Instructor Course
WMD	Weapons of Mass Destruction
WRM	War Readiness Materiel
WST	Weapon System Trainer
YA	Youth Activity

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USAF AMWC/WCS	Bldg 5656, Texas Ave	Fort Dix	NJ	08640-5656	50 10
TACC/CC	402 Scott Drive Unit 2K1	Scott AFB	IL	62225-5303	1 1
AFSAA/SAAM	1570 Air Force Pentagon	Washington	DC	20330-1570	1 1
DET 2 AMCSAF	2590 Loop Rd West	Wright-Patterson AFB	OH	45433-7142	1 1
4 AF/CC	3401 Acacia Street	McClellan AFB	CA	95652-1154	3 1
6 ARW/CC	8208 Hangar Loop Drive Suite 1	MacDill AFB	FL	33621-5502	4 2
15 AF/CC	540 Airlift Drive Bldg 381 Rm D402	Travis AFB	CA	94535-2406	4 2
19 ARG/CC	555 Borghese Drive	Robins AFB	GA	31098-2700	4 2
21 AF/CC	1907 E. Arnold Ave	McGuire AFB	NJ	08641-5613	4 2
22 ARW/CC	57837 Coffeyville Suite 133	McConnell AFB	KS	67221-3504	4 2
43 AW/CC	374 Maynard Street Suite A	Pope AFB	NC	28308-2380	4 2
60 AMW/CC	400 Brennan Circle	Travis AFB	CA	94535-5000	4 2
62 AW /CC	100 Main Street Suite 1025	McChord AFB	WA	98438-1199	4 2
89 AW/CC	1535 Command Drive Suite A225	Andrews AFB	MD	20762-7001	4 2
92 ARW/CC	1 East Bong Street Suite 228	Fairchild AFB	WA	99011-9588	4 2
94 AW/CC	1492 First Street	Dobbins AFB	GA	30069-5010	3 1
101 ARW/CC	103 Maniac Ave, Suite 505	Bangor ANGB	ME	04401-3099	3 1
105 AW/CC	One Militia Way	Stewart ANGB, Newburgh	NY	12550-5043	3 1
107 ARW/CC	9910 Guardian Street	Niagra Falls	NY	14304-6001	3 1
108 ARW/CC	3327 Charles Blvd	McGuire AFB	NJ	08641-5406	3 1
109 AW/CC	l Air Guard Road	Scotia	NY	12302-9752	3 1
117 ARW/CC	5401 East Lake Blvd	Birmingham IAP	AL	35217-3595	3 1
118 AW/CC	2400 Knapp Blvd	Nashville	TN	37217-0267	3 1
121 ARW/CC	7556 South Perimeter Road Rickenbacker IAP	Columbus	OH	43217-5910	3 1
123 AW/CC	1019 Old Grade Lane	Standiford Field, Louisville	KY	40213-2614	3 1
124 WG/CC	3787 Aeronca	Boise	ID	83705-8006	3 1
126 ARW/CC	6596 North Patton Road	O'Hare IAP ARS	IL	60666-5022	3 1
127 WG/CC	29423 George Avenue	Selfridge ANGB	MI	48045-5029	3 1
128 ARW/CC	1919 E Grange Ave	Milwaukee	WI	53207-6199	3 1
130 AW/CC	1679 Coonskin Drive	Charleston	WV	25311-5000	3 1
133 AW/CC	631 Minuteman Drive	St Paul	MN	55111-4116	3 1
134 ARW/CC	134 Briscoe Drive	Mc Ghee-Tyson ANGB	TN	37777-6200	3 1
136 AW/CC	8150 W. Jefferson Blvd	Hensley Fld, Dallas	TX	75211-9570	3 1
137 AW/CC	5624 Air Guard Drive	Oklahoma City	OK	73179-1009	3 1
139 AW/CC	705 Memorial Drive	St Joseph	MO	64503-9307	3 1
141 ARW/CC	1403 Wainwright Blvd	Fairchild AFB	WA	99011-9409	3 1
143 AW/CC	7 Flight Line Drive	North Kingstown	RI	02852-7502	3 1
145 AW/CC	5225 Morris Field Drive	Charlotte	NC	28208-5797	3 1
146 AW/CC	Channel Islands ANG Base 100 Mulcahey Drive	Port Hueneme	CA	93041-4001	3 1
151 ARW/CC	765 N 220 West	Salt Lake City	UT	84116-2999	3 1
152 AW/CC	1776 National Guard Way	Reno	NV	89502-4494	3 1
153 AW/CC	217 Dell Range Blvd	Cheyenne	WY	82003-2268	3 1
155 ARW/CC	2420 W. Butler Ave	Lincoln Map ANGB	NE	68524-1897	3 1

157 ARW/CC	302 New Market Street	Pease ANGB, Newington	NH	03803-0157	3	1
161 ARW/CC	2001 South 23rd Street	Sky Harbor IAP	AZ	85034-6098	3	1
163 ARW/CC	1620 Graeber Street Ste 6	March AFB	CA	92518-1624	3	1
164 AW/CC	2815 Democrat Drive	Memphis	TN	38118-1510	3	1
165 AW/CC	1401 Robert B. Miller, Jr., Dr P.O. Box 7568	Garden City	GA	31498-7568	3	1
166 AW/CC	2600 Spruance Drive Corporate Commons	New Castle	DE	19720-2495	3	1
167 AW/CC	222 Sabre Jet Bldg, Rm 107	EWVRA Shepherd FLD, Martinsburg	WV	25401-7704	3	1
171 ARW/CC	300 Tanker Road	Pittsburgh	PA	15108-4800	3	1
172 AW/CC	141 Military Drive	Jackson	MS	39208-8881	3	1
175 WG/CC	2701 Eastern Blvd	Baltimore	MD	21220-5000	3	1
179 AW/CC	1947 Harrington Memorial Drive	Mansfield	OH	44903-0179	3	1
182 AW/CC	2416 S. Falcon Blvd	Peoria	IL	61607-5023	3	1
186 ARW/CC	6225 M Street	Meridian	MS	39307-7112	3	1
189 AW/CC	102 Vandenberg Blvd	Little Rock AFB	AR	72099-5965	3	1
190 ARW/CC	5920 E Street	Topeka	KS	66619-5370	3	1
302 AW/CC	295 Dover Street, Suite 104	Peterson AFB	CO	80914-8020	3	1
305 AMW/CC	2901 Falcon Lane	McGuire AFB	NJ	08641-5002	4	2
315 AW/CC	218 North Bates Street	Charleston AFB	SC	29404-4917	3	1
317 AG/CC	110 Second Avenue, Suite 112	Dyess AFB	TX	79607-1720	4	2
319 ARW/CC	460 Steen Blvd	Grand Forks AFB	ND	68205-2631	4	2
349 AMW/CC	520 Waldron Street	Travis AFB	CA	94535-2100	3	1
375 AW/CC	101 Heritage Dr Room 208	Scott AFB	IL	62225-5000	4	2
403 AW/CC	701 Fisher Street	Keesler AFB	MS	39534-2572	3	1
433 AW/CC	203 Galaxy Rd	Kelly AFB	TX	78241-5554	3	1
434 ARW/CC	Building 667, Hoosier Blvd	Grissom AFB	IN	56971-5000	3	1
436 AW/CC	201 Eagle Way	Dover AFB	DE	19902-7209	4	2
437 AW/CC	102 East Hill Blvd Suite A	Charleston AFB	SC	29404-5004	4	2
439 AW/CC	100 Lloyd St, E Wing Suite 100	Westover AFB	MA	01022-1825	3	1
440 AW/CC	300 E. College Avenue	Gen Billy Mitchell IAP	WI	53207-6299	3	1
445 AW/CC	5514 McCormick Ave	Wright-Patterson AFB	OH	45433-5113	3	1
446 AW/CC	1205 12th Street NE, Suite 102W	McChord AFB	WA	98438-1326	3	1
452 AMW/CC	1261 Graeber Street Suite 30	March AFB	CA	92518-1768	3	1
459 AW/CC	3755 Patrick Ave	Andrews AFB	MD	20331-4814	3	1
463 AG/CC	1250 Thomas Avenue, Suite 153	Little Rock AFB	AR	72099-4940	4	2
507 ARW/CC	7435 Reserve Rd Suite 101	Tinker AFB	OK	73145-8726	3	1
512 AW/CC	202 Liberty Way	Dover AFB	DE	19902-7202	3	1
514 AMW/CC	2217 West Arnold Avenue	McGuire AFB	NJ	08641-5218	3	1
615 AMOG/CC	575 Waldron Street Bldg 241 Bay A1	Travis AFB	CA	94535-2150	4	2
615 AMSG/CC	290 Vickers Ave Bldg 1050	Hickam AFB	HI	96853-5272	4	2
621 AMOG/CC	1907 E. Arnold Ave	McGuire AFB	NJ	08641-5104	4	2
621 AMSG/CC	Unit 3305 Ramstein AB	APO	AE	09094-3305	4	2
624 AMSG/CC	3560 Surveyor St Suite A	Pope AFB	NC	28308-2088	3	1
625 AMSS/CC	Rota AB	FPO 09645	AE	09641-5000	3	1
626 AMSS/CC	Rhein Main AB	APO	AE	09097-5000	3	1
627 AMSS/CC	Mildenhall AB	APO	AE	09459-5000	3	1
628 AMSS/CC	Incirlik AB	APO	AE	09824-5000	3	1
630 AMSS/CC	Yokota AB	APO	AP	96328-5000	3	1

631 AMSS/CC	Osan AB	APO	AP	96278-5000	3	1
632 AMSS/CC	Bldg 42525 Burns Road	Elmendorf AFB	AK	99506-3935	3	1
633 AMSS/CC	Kadena AB	APO	AP	96368-5145	3	1
634 AMSS/CC	Anderson AB Unit 14008	APO	AP	96543-4008	3	1
635 AMSS/CC	290 Vickers Ave	Hickam AFB	HI	96853-5272	3	1
640 AMSS/CC	APO AA	Howard AFB	PM	34001-0620	4	2
908 AW/CC	401 West Maxwell Blvd	Maxwell AFB	AL	36112-6501	3	1
910 AW/CC	3976 King Graves Road	Youngstown Warren Regional Airport, Vienna	OH	44473-0910	3	1
911 AW/CC	2475 Defense Avenue, Suite 101	Pittsburgh Int'l Airport ARS Corapolis	PA	15108-4403	3	1
913 AW/CC	1051 Fairchild Street	Willow Grove ARS	PA	19090-5203	3	1
914 AW/CC	2720 Kirkbridge Drive	Niagara Falls IAP ARS	NY	14304-5001	3	1
916 ARW/CC	1195 Arnold Ave	Seymour Johnson AFB	NC	27531-2203	3	1
927 ARW/CC	43087 Lake Street	Selfridge ANGB	MI	48045-5247	3	1
931 ARG/CC	55447 Kansas Court, Suite 204	McConnell AFB	KS	78221-3723	3	1
932 AW/CC	2400 E. Drive, Room 133	Scott AFB	IL	62225-5408	3	1
934 AW/CC	760 Military Highway	Minneapolis	MN	55450-2000	3	1
940 ARW/CC	3427 Laura Street, Bldg 922	McClellan AFB	CA	95652-1122	3	1
USTRANSCOM:						
USTRANSCOM/TCJ5-SP	508 Scott Drive Rm 135	Scott AFB	IL	62225-5357	50	5
Air National Guard & Air Force Reserves:						
HQ AFRC/XP	155 Second Street	Robins AFB	GA	31098-1635	4	2
NGB/XO	2500 Army Pentagon Rm 2E375	Washington	DC	20310-2500	4	2
NGB/FM	2500 Army Pentagon Rm 2E368	Washington	DC	20310-2500	4	2
MAJCOMs:						
HQ ACC/XP	219 Dodd Blvd Suite 201	Langley AFB	VA	23665-2798	4	2
HQ AETC/XOP	355 B Street W	Randolph AFB	TX	78150-4522	4	2
HQ AFMC/XP	4375 Chidlaw Road Rm N133	Wright-Patterson AFB	OH	45433-5006	4	2
HQ AFSPC/XP	153 Paine Street Rm 181	Peterson AFB	CO	80914-1300	4	2
HQ AFSOC/XP	100 Bartley Street Suite 201	Hurlburt Field	FL	32544-5273	4	2
HQ PACAF/XP	10 Hickam Court, Suite 201	Hickam AFB	HI	96853-5252	4	2
HQ USAFE/XP	Unit 3220 Box 385	APO	AE	09094-0385	4	2
Air Staff:						
HQ USAF/XPXP	1480 Air Force Pentagon Rm 5E171	Washington	DC	20330-1670	1	1
HQ USAF/XPXC	Hoffman Building 1, Rm 116 2461 Eisenhower Avenue	Alexandria	VA	22301-0800	1	1
HQ USAF/XPXS	1480 Air Force Pentagon Rm 4D1083	Washington	DC	20330-1670	1	1
HQ USAF/XPX	1480 Air Force Pentagon Rm 5E171	Washington	DC	20330-1670	1	1
HQ USAF/XORFM	1480 Air Force Pentagon Rm 4D1034	Washington	DC	20330-1480	20	3
HQ USAF/XORF	1480 Air Force Pentagon Rm 4D1034	Washington	DC	20330-1480	1	1
HQ USAF/XOR	1480 Air Force Pentagon Rm 4D1034	Washington	DC	20330-1670	1	1
HQ USAF/XPPM	1480 Air Force Pentagon Rm 5D286	Washington	DC	20330-1670	5	2
HQ USAF/XPP	1480 Air Force Pentagon Rm 5D286	Washington	DC	20330-1670	1	1

HQ USAF/CCX	1670 Air Force Pentagon Rm 4E941	Washington	DC	20330-1670	1	1
Schools:						
National Defense University Attn: Library; Periodicals,	Building 62 300 5th Ave	Fort McNair	DC	20319-5066	1	1
Air War College/DFW (Attn: AMC Chair)	325 Chennault Circle	Maxwell AFB	AL	36112-6427	90	5
Air Command & Staff College/DE	225 Chennault Circle	Maxwell AFB	AL	36112-6426	5	1
CADRE/CC	401 Chennault Circle	Maxwell AFB	AL	36112-6428	2	1
Armed Force Staff College	Joint and Combined Staff Officer School; 7800 Hampton BLVD	Norfolk	VA	23511-1702	5	1
US Army War College	Carlisle Barracks	Carlisle	PA	17013-5238	1	1
Air Force Element/USACGSC	1 Reynolds Avenue	Fort Leavenworth	KS	66027-1352	1	1
US Army Transportation School	Assistant Commandant	Fort Eustis	VA	23604-5000	50	2
USACGSC Attn: ATZL-SWR (DLRO)	1 Reynolds Avenue	Fort Leavenworth	KS	66027-1352	1	1
Code 1J2 Naval War College	686 Cushin Road	Newport	RI	02841-1207	1	1
Marine Corps University; Logistics	2042 South Street	Quantico	VA	22134-5068	1	1
HQ USAFA/34 ES/CC	2354 Fairchild Dr, Suite 6A26	USAF Academy	CO	80840-6264	1	1
Division of Professional Development	US Navel Academy 112 Cooper Road	Annapolis	MD	21402-5022	1	1
Department of Military Instruction (MACC-Q-D)	Washington Hall ; Building 745	West Point	NY	10996-5000	1	1
AFIT/LSY	2950 P Street, Bldg 641	Wright-Patterson AFB	OH	45433-7765	10	2
Other:						
HQ AFOTEC/CC	8500 Gibson Blvd, SE	Kirtland AFB	NM	87117-5558	2	1
HQ NORAD/J30	250 South Peterson Blvd, Suite 116	Peterson AFB	CO	80914-3260	1	1
ASC/CC	1865 Fourth Street Suite 12	Wright-Patterson AFB	OH	45433-7126	1	1
ASC/XR	2275 D Street Suite 10	Wright-Patterson AFB	OH	45433-7227	10	10
ESC/CC	9 Eglin Street	Hanscom AFB	MA	01731-2109	1	1
HSC/CC	2510 Kennedy Circle Suite 220	Brooks AFB	TX	78235-5120	1	1
Air Force Research Labs/XP	4375 Chidlaw Rd, Suite 6	Wright-Patterson AFB	OH	45433-5006	2	1
WR-ALC/CC	215 Page Road, Suite 269	Robins AFB	GA	31098-1662	2	1
OC-ALC/CC	3001 Staff Drive	Tinker AFB	OK	73145-3001	2	1
SM-ALC/CC	3237 Peacekeeper Way Suite 1	McClellan AFB	CA	95652-1044	2	1
OO-ALC/CC	7981 Georgia Street	Hill AFB	UT	84056-5824	2	1
SA-ALC/CC	100 Moorman Street, Suite 1	Kelly AFB	TX	78241-5808	2	1
US Department of Transportation	Director, Office of Internation Aviation 400 Seventh Street SW, Room 6402	Washington	DC	20590-5000	1	1
Mobility Concepts Agency	ATTN: ATDO-MCA	Ft Monroe	VA	23651-5000	2	1
Air Force Association	1501 Lee Highway	Arlington	VA	22209-1198	1	1

Airlift/Tanker Association	4404 Dawson Ave	North Little Rock	AR	72116-7037	1 1
NDTA	50 South Pickett Street Suite 220	Alexandria	VA	22304-3008	1 1
RAND CORP	1700 Main Street, PO Box 2138	Santa Monica	CA	90407-2138	5 1

AMMP 98 FEEDBACK

The Air Mobility Master Plan 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 FY99 version.

Thank you.

1. Please complete the following so we can update our distribution list:
   Name:
   Organization:
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2. Does the AMMP give a clear explanation of the current and future air mobility mission? (i.e., usefulness as AMC's modernization plan?)

3. Please comment on the following sections and specify page numbers where possible:

   Executive Summary:

   Future:

   Operations:

   People:

   Infrastructure:

   Equipment:

   Roadmaps:

4. How can this document be improved?

5. Other organizations you believe should be on our distribution list:

6. Is the CD-ROM useful? Were you able to access the AMMP on the AMC worldwide web homepage?

7. Other comments, questions, suggestions:

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Remember, your feedback counts! Please send your comments to the appropriate headquarters functional office and the Long Range Plans Team (HQ AMC/XPXPL, 402 Scott Drive Unit 3L3, Scott AFB IL 62225-5307; Voice DSN 576-4671/72; Fax DSN 576-5372; E-mail WALDENDC@HQAMC.SAFB.AF.MIL or CELENTAR@HQAMC.SAFB.AF.MIL).