

**HEADQUARTERS AIR MOBILITY COMMAND WHITE PAPER**

**KC-X: THE NEXT MOBILITY PLATFORM**

**THE NEED FOR A FLEXIBLE TANKER**

## **KC-X: THE NEXT MOBILITY PLATFORM**

### **THE NEED FOR A FLEXIBLE TANKER**

The requirement for a flexible Aerial Refueling Aircraft that can operate throughout a battlespace to deliver fuel and/or cargo and/or passengers is rooted in Joint Doctrine. Equipping the Nation's new KC-X aircraft with appropriate floors for carrying passengers and cargo, reasonably-sized doors to accommodate standard-sized pallets, and modest defensive systems which allow the aircraft access to an area of operations will ensure success for US Combatant Commanders.

General Norton A. Schwartz, Commander, US Transportation Command, is on record stating his need for tanker flexibility: "I am looking for versatility; single-mission airplanes don't give that. The Secretary of Defense went to Baghdad in a C-17. Would I send [him] to Baghdad in a C-17 if I had a KC-X? Probably not, I would use the C-17 in a better way." "If I had a properly configured tanker that had doors and floors, could carry passengers, and defensive systems, I could...return the C-17 either to moving cargo or reduce the tempo."

General Michael Moseley, speaking to reporters during a 13 Dec 06 Pentagon briefing, noted the dual-role tanker would bolster the service's lift toolbox. "When you need a tanker, it is a tanker. When you don't need hundreds of tankers, then you use it in the mobility" role, the four-star said. "So to build an air bridge, if you need an air bridge for [B-2 bombers] for global strike, you need it as a tanker. You don't need it as a cargo carrying airplane – that's the beauty of having it both ways."

The requirement for this flexibility is well documented and proven in past conflicts. For example, during Operations DESERT SHIELD and DESERT STORM, the United Nations efforts to end the Iraqi occupation of Kuwait, KC-10s and KC-135s logged over 141,000 flying hours, delivering 1.2 billion pounds of fuel during some 85,000 refuelings and carrying nearly 17,000 passengers and 10,200 tons of cargo. During Operation DESERT SORTIE, the redeployment of forces back to the US from the Middle East in 1991, KC-10As and KC-135s flew 11,714 hours on 4,925 sorties delivering 34 million gallons of fuel and additionally conducted 2,894 airlift sorties. Without appropriate floors for carrying passengers and cargo, this would not have been possible and many more aircraft would have been required to bring US troops home.

US Joint Publications recognize this fact and have transferred these valuable lessons into current doctrine. For example, JP 3-17 "Joint Doctrine and Joint Tactics, Techniques, and Procedures for Air Mobility" states, "...all USAF tanker aircraft are capable of performing an airlift role and are used to augment core airlift assets. Under the dual role concept, air refueling aircraft can transport a combination of passengers and cargo while performing air refueling. In some circumstances, it may be more efficient to employ air refueling aircraft strictly in an airlift role. Deploying air refueling units may be tasked to use their organic capacity to transport unit personnel and support equipment or passengers and cargo from other units."

In order to comply with Joint Doctrine, the Nation's newest tanker requires appropriate floors and reasonably-sized doors to perform airlift missions when required by Combatant Commanders. We also have to operate this weapon system in a threat environment requiring defensive systems. It may be instructive to establish a functional capability for what is meant by "floors", "doors", and "defensive systems":

**Cargo floor capabilities:** The aircraft shall be capable of efficiently transporting equipment and personnel and fit seamlessly into the Defense Transportation System. The aircraft's entire main cargo deck must be convertible to an all cargo configuration that accommodates 463L pallets, an all passenger configuration (plus baggage) (or equivalent Aeromedical Evacuation (AE) capability to include ambulatory and /or patient support pallets) and must optimize a full range of palletized cargo, passengers, and AE configurations that fully and efficiently utilize all available main deck space.

**Cargo door capabilities:** With aircraft power on, a powered door that permits a 463L pallet access on the wide dimension, or coupled on the short-side to be loadable with room to turn (to line up inside) shall be provided. Height of door opening shall not limit height of cargo within the dimensions of all loadable positions in the aircraft.

**Defensive System capabilities:** Self Protection Measures (SPM) shall provide automated IR threat protection levels...and SPM shall provide automated RF detection and warning as described in the KC-X Threat Summary Appendix, Sections 4.1 and 4.2.

During OIF/OEF, the Air Force has seen a dramatic threat increase in the operating environment facing the mobility mission. For example, during FY 06, US tankers were fired upon 19 times in the CENTCOM AOR – the threat is real and the requirement for our aircraft to operate in those areas is well documented. Aircraft operating in this environment must possess onboard, aircraft self-protection systems to ensure safe and effective mobility operations.

Current threats dictate the need for self-protection devices (i.e., LAIRCM) designed to protect the aircraft from IR guided weapons such as MANPADS. In the near future we anticipate mobility aircraft will face a proliferation of mobile RF-guided tactical SAMs, will need a situation-awareness suite to avoid the threat, and will need to develop countermeasures on a limited basis to survive engagements on high priority missions (i.e., ASACMS – Advanced Situation Awareness and Countermeasure System).

Without Defensive Systems, tanker aircraft are forced to operate from locations further from the fight in order to mitigate risk, which in turn increases receiver transit time and fuel required. During a Troops-In-Contact (TIC) situation or a Combat Search and Rescue (CSAR) mission where Close Air Support assets are required to be on station in the Weapons Engagement Zone (WEZ), tanker assets based closer to the fight can better support those assets by operating closer to their receivers at altitudes in the WEZ. This in turn decreases off-station air refueling time for the CAS assets and decreases the likelihood an enemy could achieve a "soft kill" by taking CAS assets out

of the fight during a critical time. Defensive Systems on tankers represents a risk-mitigation strategy throughout the battlespace for all participants.

During cargo or AE missions, tanker aircraft equipped with Defensive Systems would be able to deliver cargo and personnel directly to and from higher threat locations. This capability increases the cargo and personnel movement volume and velocity into/out of higher threat locations, thus relieving some of the strain on US C-17 and C-130 fleets.

In short, failure to equip the KC-X with Defensive Systems, the equivalent of “up-armor” for ground troops, is irresponsible in light of the knowledge that such provision enables mobility assets and their customers to conduct responsive air operations in increasingly hostile environments.

### **Tanker Floors, Doors, and Defensive Systems in the Mobility Capability Study**

The Mobility Capability Study (MCS) and subsequent excursions in the past year (MCS-06) highlight the nation’s need for strategic and theater mobility capability in airlift and aerial refueling. It’s important to recognize that current plans for future force structure are funded only to support the bottom of the MCS range in each mission area. MCS calls for 292 to 383 strategic tails (C-17s and “fully modernized” C-5s). The US currently has a program for 190 C-17s and 111 aging C-5s. The efforts to modernize the C-5s are partially funded, and not yet completed with new Avionics Modernization Program (AMP) or Reliability Enhancements and Re-Engining Program (RERP). This effectively maintains the Air Force at the very bottom of the MCS range without a capability to respond to MCS excursions dealing with multiple homeland defense events or coincident/overlapping small scale security postures for humanitarian relief, disaster response, or non-combatant evacuation operations if needed during Major Contingency Operations.

The MCS calls for a combined total of 395 to 472 platforms (C-17s, C-130s, and/or JCAs) to meet the Nation’s Theater lift capabilities in Combatant Commanders’ areas of responsibility (AOR) around the globe. With the retirement of the C-130E by 2014 due to problems already seen in current groundings and restrictions, the Air Force will be left with a reduced C-130H and C-130J fleet, and possibly a limited number of Joint Cargo Aircraft (JCA) to fill the theater lift gaps – again living at the very bottom of the MCS range for the foreseeable future. While the KC-X is not designed to take the place of a dedicated intratheater platform (like C-130s) it can serve an invaluable role as a transload platform for commercial missions which will not deliver to threatened locations.

The air refueling tanker fleet currently includes 114 KC-135Es, 415 KC-135Rs, and 59 KC-10s. With the retirement of the KC-135E models, the US will be left with 474 tankers and a need to acquire KC-X assets to get us into the MCS required range of 520 to 640 aircraft. Again, the nation’s mobility force structure finds itself at the bottom of the acceptable MCS risk range.

To mitigate this risk in the future requires a readiness and flexibility to respond in unprecedented ways. Already the global war on terror (GWOT) has required TRANSCOM to posture C-17s forward in theater and use tankers to move cargo, passengers, and patients. When equipped at the bottom of the MCS range in all mission areas, the ability of each aircraft to perform more than a single role is imperative. Only with floors, doors, and defensive systems on its new tankers, will US airpower be able to answer this imperative across the spectrum of missions in all environments.

In addition to tanker requirements to self-deploy, serve as a dual role platform, and be designated as an aeromedical-response platform, our force must also respond to transload requirements when our CRAF partners must stop short of the AOR because of threats. The KC-X with floors, doors, and defensive systems makes an ideal platform to effect that transload. Since the KC-X shares its status as a commercial derivative asset with CRAF participants, the loads will be compatible – a velocity advantage. With Defensive Systems, the KC-X can take commercial loads (40%+ of bulk cargo and 95%+ of passengers) forward into theater to meet campaign objectives. Such operations also free C-17s (currently used in the transload mission area) to move the outsize and oversize cargo so vital to U.S. armed forces on the ground. Since the GWOT era began, KC-10s and KC-135s have contributed to move a total of 197,027 passengers and 50,491 short tons of cargo which has relieved the C-17s from flying 3312 missions to support those missions. It is unthinkable we would replace such robust capacity with a platform unable to contribute in this way.

A KC-X with floors, doors, and defensive systems hedges against shortfalls and improves velocity of the organic airlift fleet. Without this flexibility and combat capability, our entire mobility force structure will operate at the lowest acceptable levels of capability and assume significant risk whenever more capability is needed.

In a secondary mission capability, the MCS specifically lists passengers, cargo and medical evacuation (MEDEVAC) as roles for the tanker. Tankers in the employment and deployment roles are well positioned to support designated MEDEVAC missions when properly equipped. In the warfighting scenarios used for MCS, the deployed tanker fleet is also well postured to support transshipment operations. The value of this additional capability is a function of restrictions placed on the CRAF from operating in anti-access conditions. The more CRAF is restricted, the greater the utility of the tanker fleet in moving cargo and passengers forward to support combat operations. With a 50-passenger limit and a planning payload of 13 tons, the KC-135 has limited capability in this regard. But even this limited capability, when coupled with the availability of aircraft not tasked against their primary air-refueling mission, represents a notable capability for the mobility fleet. Future tankers, with increased passenger and cargo capability, will only enhance the benefits of this mission area.

In MCS scenarios that call for Major Combat Operations and heightened Homeland Defense air sovereignty levels, tankers have to relocate within CONUS to be postured to support the North American Defense Command (NORAD) mission. MCS assumed

that CONUS-based tankers would relocate to other CONUS tanker bases without drawing resources from the common-user lift pool to do so. Moving these units will require cargo and passenger handling capabilities. Floors and doors are needed for this mission. Tanker augmentation of these airlift missions offers the potential to fully exploit the capabilities of the tanker fleet.

### **Mobility Capability Study 2006 (MCS 06)**

Preliminary results of the in-progress MCS-06 show that tankers are least in demand when airlift assets are stretched most thin during the early deployment phase of a conflict. Tankers available to augment airlift missions during that critical time represent a capability that cannot be ignored. This capability is used to reduce stress on the organic airlift fleet in addition to when CRAF must transload in an anti-access environment discussed previously.

From January to December of 2005, 40%-50% of all planned airlift missions had only bulk cargo and/or passengers; these missions could have been flown by tanker aircraft. Using tankers to fly bulk cargo, or bulk cargo and passengers, reduce reliance on overburdened airlift assets, potentially extend the service life of the airlift fleet, and free up C-5s and C-17s to move oversize and outsize cargo – which they uniquely have the capacity to move.

### **Summary**

The need for the capabilities discussed above is rooted in Joint doctrine and has been expected of our tanker fleet since the first flying boom of the 1950's. Having defensive systems on the KC-X allows it to operate closer to the threats and reduces the strain on other theater and strategic mobility assets. The need for this capability was approved by the JROC (Capabilities Development Document (CDD)) on 27 Dec 06 and is part of the KC-X Request for Proposal (RFP). Daily, US Combatant Commanders count on tankers to carry patients, passengers, and cargo and would be hamstrung without this flexibility. The two most recent Mobility Capability Studies found that future tankers, with increased passenger and cargo capability, will enhance the benefits of our Joint Force. AMC is continually evaluating the potential for future greater contributions of the KC-X as a total mobility platform.

## ANNEX A – HISTORY

**Sep 1955** – Boeing received the first order for the KC-135A tanker. The first aircraft (#55-3118) flew on 31 Aug 1956. The initial production Stratotanker was delivered to Castle AFB, CA, in June 1957. The 732nd and final KC-135 was delivered to the Air Force in 1965.

**Jan 1980** – CFM56-2 selected to re-engine USAF and FAF KC-135A, new designation is KC-135R.

**1981** – 157 KC-135As operated by the Air Reserve Component were modified to replace their J57 engines with TF33-PW-102 engines from American Airlines. New designation is KC-135E.

**17 Mar 81** – The long awaited KC-10, the Advanced Tanker-Cargo Aircraft (ATCA) proposed by Strategic Air Command in 1967, was delivered to the command some 39 months after the Air Force selected the plane over Boeing's 747. The Air Force version of the McDonnell Douglas wide-body commercial aircraft was manufactured with military avionics, an aerial refueling boom, equipment for probe and drogue-type fueling, a refueling receptacle and a station for the refueling operator. In addition, the KC-10 had six fuel tanks with a total capacity of 356,000 pounds of fuel and the ability to transfer 1,500 gallons per minutes. When performing in its secondary mission, the KC-10 could transport up to 75 people and approximately 170,000 pounds of cargo over a non-refueled range of about 4,400 miles.

**1 Oct 82** – KC-10As supported the longest non-stop F-15 deployment ever while, at the same time, demonstrating the Extender's versatility. One KC-10, carrying 50,000 pounds of cargo and 50 passengers, refueled six F-15s flying between Kadena AB, Japan and Eglin AFB, FL, while a second launched from Elmendorf AFB, Alaska to refuel the tanker and the fighters.

**14-24 Feb 83** – Operation EARLY CALL, in Egypt, demonstrated the KC-10's dual importance as a tanker and a cargo carrier. Three KC-10s were stationed at Cairo West Airport to refuel E-3A aircraft being used to monitor Libyan air traffic and preparations for a possible attack on Khartoum by the regime of Muammar Qadhafi. During their 10-day deployment, the KC-10s flew 21 air refueling sorties – servicing both American and Egyptian aircraft- and also carried cargo.

**7 Aug 90-28 Feb 91** – During Operations DESERT SHIELD and DESERT STORM, the United Nations efforts to end the Iraqi occupation of Kuwait, KC-10s and KC-135s logged over 141,000 flying hours, delivering 1.2 billion pounds of fuel during some 85,000 refuelings and carrying nearly 17,000 passengers and 6,500 tons of cargo. KC-10s carried 1,111 passengers and 12,129 tons of cargo through 10 Mar 91.

**DOD Report to Congress, Conduct of the Persian Gulf War, Apr 1992** – KC-10 and KC-135 tanker aircraft also played a vital role in cargo and passenger movement.

These aircraft moved more than 4,800 tons of cargo and more than 14,200 passengers to support strategic bomber and tanker operations alone. Part of this effort was conducted by shuttles established on a scheduled basis to improve resupply efforts to the Pacific, European, and SWA theaters. Additionally, KC-10s transported more than 1,600 tons of cargo and more than 2,500 passengers in a dual-role capacity for USAF and USMC fighter unit moves, providing refueling support and airlift for the units on the same sorties. Finally, up to 20 KC-10s also were assigned for pure airlift sorties, moving more than 3,800 tons of cargo and more than 4,900 passengers in this capacity. The importance of air refueling to Operations DESERT SHIELD and DESERT STORM went far beyond airlift support. Over 300 KC-135s and KC-10s were used during Operation DESERT SHIELD; they flew more than 17,000 sorties, to include more than 11,500 air refueling sorties and nearly 75,000 hours; refueled more than 33,000 receivers, including 5,500 Navy and USMC aircraft with nearly 70 million gallons of fuel in six months. Tankers surpassed this effort during the six weeks of Operation DESERT STORM when they flew almost 17,000 sorties (more than 15,000 of these air refueling sorties) logged more than 66,000 hours, and refueled almost 52,000 aircraft with more than 125 million gallons of fuel. Approximately 12 percent of the fuel and 17 percent of the sorties supported the Navy and USMC. It is interesting to note that nearly every air-refueling capable aircraft used USAF tankers at some point during the war.

**6 Apr 92** – Following the Kurdish uprising against Saddam Hussein, the United Nations mounted the relief effort PROVIDE COMFORT. Through the end of May 1992, KC-135s flew 905 sorties lasting 1,668 hours to deliver 4.5 million gallons of fuel to aircraft protecting the Kurds and also flew 2,984 airlift sorties. Through June 1992, KC-10s contributed to the airlift total of 2,083 missions, transporting 23,901 passengers and 101,365 tons of cargo.

**1992** – Overhaul of KC-135 cockpit begins. PACER CRAG (Compass, Radar, and GPS) begins. The heart of this modification is a state of the art flight management system. This modification allows the navigator to be removed from the crew compliment.

**22 Jul 94** – After President Clinton directed “an immediate and massive increase” in US relief efforts to assist Rwandan refugees, the Air Mobility Command launched a large and complex humanitarian operation over vast distances. AMC aircraft first landed at Goma, Zaire, on the 23d and began operating into Entebbe, Uganda, the eventual hub of the operation, on 24 July. Through 11 September, AMC flew 700 Operation SUPPORT HOPE airlift missions, transporting over 11,000 passengers and 23,000 short tons for a total of 43 million passenger miles and 62 million ton miles. Nearly 400 KC-135 missions air refueled the C-5s and C-141s. KC-10s also flew several dozen missions to ferry fuel from Harare, Zimbabwe, to Entebbe where it was offloaded on the ground.

**7-11 Nov 03** – When no strategic airlifters were available, four KC-135s from the 92d Air Refueling Wing at Fairchild AFB, WA, and one KC-135 from the 22nd Air Refueling Wing at McConnell AFB, KS, transported the India Company of the 3d Marine Battalion



at Camp Lejeune, NC, to Djibouti. Djibouti was headquarters for the Combined Joint Task Force – Horn of Africa, the multinational force responsible for eradicating the trans-national terrorist networks operating in the Horn of Africa region. The Marines were needed to provide security at Djibouti International Airport. The five KC-135s airlifted 169 Marines and 9 short tons of cargo.

**4-23 Nov 06** – In one of the largest presidential support airlifts ever, Air Mobility Command flew 474 airlift and air refueling sorties to transport 2,723 passengers and 2,417 short tons of cargo on behalf of President George W. Bush's official visits to Singapore, Vietnam, and Indonesia from 16-20 Nov 06. C-17s performed 299 sorties or 63 percent of the total sorties flown. Since AMC's activation on 1 June 92, the command's presidential support airlift mission had been nicknamed Operation PHOENIX BANNER. Given the large number of sorties, the long distances to the aerial ports of debarkation, and the heavy commitments of C-17s to the wars in Iraq and Afghanistan, the 2006 Pacific PHOENIX BANNER resulted in the first-ever use of KC-10 tankers in an airlift role to support presidential travel requirements. White House communications equipment, unlike most other presidential cargo, can be palletized, and this made it well-suited for airlift by KC-10s. To move the communications gear from Andrews Air Force Base, Maryland, to Singapore and Vietnam, KC-10s flew 94 sorties to transport 396 passengers and 283 short tons of cargo. The tankers did not airlift communications equipment to Indonesia because Jakarta's Halim Perdanakusuma International Airport lacked cargo-handling equipment capable of unloading palletized cargo from KC-10 aircraft. KC-135 Stratotankers refueled the KC-10s over the northwestern United States and off the US west coast on 39 sorties. The Pacific PHOENIX BANNER also signified the first time that C-5s had not been scheduled as primary airlifters on a major presidential trip overseas, mainly because modernization and maintenance schedules curtailed the availability of C-5s to fly operational missions.

**Operation Enduring Freedom (OEF) – Afghanistan:** Grand Forks AFB (319 ARW) led tanker packages to three locations. For period Oct-Dec 2001 moved 516 passengers and 76.8 short tons of cargo on KC-135R/T aircraft.

**FY 2006 SAFIRE Events for OIF** – AMC assets shot at over 200 times; number of SAFIRE events is 2nd only to helicopters

**Operation Iraqi Freedom Lesson Learned – Tanker Employment in a Threat Environment:** Air mobility tankers are no longer able to keep separation from threats. The forward movement of ground troops without securing land, and the disintegration of what was once known as the enemy's forward edge of the battle area (FEBA), requires the tanker force to penetrate hostile territory. Air Force Tactics Techniques and Procedures (AFTTP) need to reflect this requirement and tanker systems must include real-time cockpit information and counter measures to both infrared and radar guided missile systems.

**OIF Swap Out – Iraq:** Because of threats, a typical A-10 squadron swap-out uses 3 C-17s to move 66.6 short tons (includes WRSK kit to follow fighters) and 41 passengers. The remaining 198 personnel are moved by commercial airlift to intermediate airfields.

They are then transloaded to either a C-17 or C-130 aircraft for the last leg. KC-X with airlift capability and Defensive Systems could accomplish dual role deployment freeing the C-17, C-130 and commercial airlift for other missions and speeding up deployment timelines.

**TSUNAMI Relief Thailand (26 Dec 2004):** PACAF KC-135 aircraft carrying humanitarian relief was the first military aircraft on scene.

**Six Ship KC-10 Deployments:** Operations package of 55 PAX, 12.5 TONS + maintenance package 88 PAX and 68.3 TONS – all but 4.8 TONS carried organically

**The Mobility Air Force (MAF) is currently engaged in air operations in hostile airspace** in and en route to foreign airfields and will remain so for the foreseeable future

We have seen a dramatic threat increase in the operating environment facing the mobility mission (most significant threat increase of all mission areas)

Aircraft operating in this environment must possess onboard self-protection systems to ensure safe and effective mobility operations

Current threats dictate the need for self-protection devices (i.e., LAIRCM) designed to protect the aircraft from IR guided weapons such as MANPADS

In the near future we anticipate mobility aircraft will face mobile RF guided weapons such as the tactical SAMs being proliferated, and will need a situation awareness suite to avoid the threat and countermeasures on a limited basis to survive engagements on high priority missions (i.e., ASACMS-Advanced Situation Awareness and Countermeasure System)

**Lack of Defensive Systems on tanker aircraft limits the MAF's capability** as a force enabler to the Combat Air Force (CAF); Tanker aircraft are forced to operate from locations further from the fight in order to mitigate risk, which in turn decreases the amount of fuel available to receivers

## **ANNEX B – JOINT AND SERVICE DOCTRINE**

### **The National Military Strategy of the United States of America, “A Strategy for Today; A Vision for Tomorrow” (2004)**

Overlapping major combat operations place major demands on strategic mobility. Achieving objectives in such operations requires robust sealift, airlift, aerial refueling and pre-positioned assets. Strategic mobility that supports these operations also requires supporting equipment to store, move and distribute materiel and an information infrastructure to provide real-time visibility of the entire logistics chain.

### **Joint Publication 1-02, "DOD Dictionary of Military and Associated Terms. As amended through 8 Aug 06.**

Force Extension: Tankers escorting fighters are force extended when they are refueled by other tankers while en route to their destination. Force extension is normally required when tankers are acting in a dual-role capacity because their cargo will likely preclude carrying enough fuel for the tanker and receivers to reach the final destination. On global attack missions, force extension can also be used to extend the effective range, payload, and loiter time of combat aircraft due to the increased offload capacity of the force extended tanker. See also air refueling; dual-role tanker.

Dual-role tankers: Dual-role tankers carry support personnel, supplies, and equipment for the deploying force while escorting and/or refueling combat aircraft to the area of responsibility. Dual-role tankers can minimize the total lift requirement while providing critical cargo and personnel at the combat aircraft's time of arrival.

### **Joint Publication 3-17, “Joint Doctrine and Joint Tactics, Techniques, and Procedures for Air Mobility” (14 Aug 02 Incorporating Change 1 14 Apr 06)**

The bulk of the Air Force's air mobility fleet consists of aircraft designed or modified to serve a broad range of military airlift operating requirements. Additionally, the Services operate more specialized fixed-wing transports which, though not originally acquired to meet a broad range of essential intratheater airlift missions, are capable of performing parts of it quite effectively.

Refueling platforms act as augmentation to the airlift fleet. This capability is most important during the deployment phase when airlift requirements are highest and requirements for theater support refuelings are the lowest.

Additionally, all USAF tanker aircraft are capable of performing an airlift role and are used to augment core airlift assets. Under the dual-role concept, air refueling aircraft can transport a combination of passengers and cargo while performing air refueling. In some circumstances, it may be more efficient to employ air refueling aircraft strictly in an airlift role. Deploying air refueling units may be tasked to use their organic capacity to transport unit personnel and support equipment or passengers and cargo from other

units. Air refueling aircraft may also be used to support USTRANSCOM airlift requirements such as routine channel operations or SAAMs.

**Joint Publication 4-01, “Joint Doctrine for the Defense Transportation System”  
(19 March 2003)**

Air Mobility Command: As a transportation component command of USTRANSCOM, AMC is the designated lead major command for Air Force air mobility issues and standards and is responsible for all CONUS-based common-user airlift service air mobility assets. AMC is responsible for maintaining international air tenders and the Worldwide Express (WWX) small parcel contract. AMC C-5, C-17, C-130, KC-10, and KC-135 aircraft are stationed in CONUS and operate through a combination of active, Air Force Reserve, and Air National Guard resources (when mobilized) to provide common-user air mobility under the COCOM of the Commander, USTRANSCOM. Additionally, AMC trains, equips, and operates CONUS-gained C-130s, C-9s, and operational support airlift (OSA) air mobility assets until they are assigned or attached to a geographic combatant commander. During a contingency or major operation, a number of these shorter-range air frames would normally be attached to a geographic combatant commander to create or supplement the theater air mobility capability. AMC air mobility forces conduct both intertheater and intratheater common user operations. Under certain conditions, AMC longer-range aircraft may be temporarily attached to a geographic combatant commander (even if only on a mission-by-mission basis) to provide additional theater capability.

**Air Force Doctrine Document (AFDD) 2-6: Air Mobility Operations**

Airland: Airland delivery occurs when a transport or tanker aircraft lands and unloads its cargo. Airland delivery, as opposed to airdrop, is the preferred method of aerial delivery when conditions permit, because it is the most efficient, safest, and least expensive way to deliver personnel and cargo. It minimizes the risk of injury to personnel and damage to equipment, eliminates payload dispersal, and offers an increased availability of resources.

Flexibility and Versatility: Air mobility enables commanders to simultaneously exploit mass, maneuver, and surprise (flexibility), thereby influencing effects at the strategic, operational, or tactical levels of war (versatility), often at the same time. Air mobility allows commanders to quickly position, concentrate, or reposition forces wherever and whenever needed. Air mobility forces are critical enablers to creating effects of deterrence, dissuasion, and destruction. The flexibility and versatility of air mobility forces allow the concentration of desired effects at the right time and the right place, and then permit rapid shift of forces when capabilities are needed elsewhere. For example, in a multiple theater scenario, tanker forces might provide primary combat support to strike and intelligence, surveillance, and reconnaissance aircraft in one theater, while airlift aircraft are primarily deploying medical units to the second in support of a humanitarian relief operation. When the operations in the first theater are complete the tankers could quickly reposition to perform evacuation flights from the second theater to the continental United States (CONUS).

**ADDITIONAL TANKER ROLES:** All tanker aircraft are capable of performing additional roles such as passenger lift, cargo movement, and aeromedical evacuation when modified. Some are modified to act as a communications link facilitating Command and Control (C2) and Intelligence, Surveillance and Reconnaissance (ISR) missions. When tankers transport a combination of passengers or cargo while performing air refueling, it is specifically called "dual role." C2 of air mobility aircraft performing multiple role missions on the same sortie must be vested in one authority, normally the COMAFFOR.

**Aircraft Deployment Support:** Air refueling assets extend the range of deploying combat and combat support aircraft, often allowing them to fly with few or no stops en route to an AOR. Air refueling increases the deterrent effect of CONUS based forces and allows rapid response to regional crises. The capability of aircraft to fly non-stop to a theater may eliminate the need to obtain landing rights from countries remaining neutral in a conflict. Successful execution of the Air and Space Expeditionary Task Force (AETF) concept is dependent on deployment support. The deployment support operation is considered a separate and distinct operation because the coordination, communication, and search and rescue responsibilities differ based on receiver capabilities. Normally, this operation is associated with the movement of fighter aircraft between theaters in the form of missions named "Coronets." Deployments of heavy aircraft (bombers, airlifters) normally use an air bridge operation to support the deployment. Coronets move fighter aircraft in support of contingencies, rotations, exercises, or aircraft movements for logistics purposes. These flights often include a cargo and passenger carrying element as well as the refueling. They normally have long lead times for planning, tasking, and execution, and the tanker portion of the flight is normally planned by the 18 AF Tanker Airlift Control Center (TACC). Coronet operations usually have a higher priority than routine training operations. Depending on operational requirements, the 18 AF TACC may position tanker aircraft and crews in preparation for deployment and may coordinate with the theater Air Mobility Operations Control Center (AMOCC) or Air Operations Center (AOC) for air refueling support, if required. Typically the tanker aircraft accompanies the receivers for the majority of the flight, especially during an oceanic crossing.

**Patient Support Pallet (PSP):** The PSP provides litter capability on the KC-135 and expands litter capacity on the C-17. The PSP is a modified 463L pallet with litter positions and seats and is centrally managed by AMC. It is designed to support steady-state theater operational requirements as well as evacuation on opportune airlift without integral litter capability. As a result, the PSP increases the number of aircraft capable of performing AE missions.

### **Air Mobility Master Plan (2006)**

**KC-135 Roadmap** – Although not its primary mission, the KC-135 is employed for opportune airlift and aeromedical evacuation; defensive systems are required for operations in threat conditions.

**KC-10 Roadmap** – Air refueling operations may be used to support global attack; air bridge; deployment; redeployment; homeland defense; theater support to joint, allied,

and coalition air forces; and specialized national defense missions. The KC-10A is uniquely capable of meeting these capability demands, It is used to conduct simultaneous cargo and air refueling missions using the centerline air refueling drogue or boom, or wingtip drogues. With its receiver capability, it can be used for force extension operations – the refueling of one tanker by another tanker – thus reduce the number of tankers used for deployment support.

## **ANNEX C – FROM THE FIELD**

**Deployment and Redeployment** – “Every deployer and redeployer carries cargo and passengers, usually three pallets of cargo and 15 to 30 passengers. We routinely use our tankers to deliver maintenance parts and people to repair broken aircraft that are away from home station; we are doing that today (9 Feb 07) and did it last month. These missions can be for broken tankers or other types of aircraft. My data indicates that last year 92 ARW aircraft moved almost 500K lbs of cargo most of that to and from our deployed locations, and almost 2500 passengers” 92nd Operations Group Commander (KC-135R), Fairchild AFB, WA

**Numbers, Velocity, and Precision** – “The 580+ tankers in today’s Air Force inventory represent the preponderance of the air mobility force structure, fly the fastest, and travel the furthest unrefueled distance of any AMC major weapon system. Those attributes in those numbers around the globe allow responsiveness to meet all mobility missions (air refueling, force projection, force extension, cargo movement, passenger movement, aeromedical evacuation, humanitarian support, disaster relief, etc.) when our nation demands a rapid response.” AMC/A9

**“DEFENSIVE SYSTEMS”** – The tanker fleet no longer operates in safe air refueling airspace, well away from the FEBA and the threat of SAMs, shoulder-launched weaponry, etc. Rather, tankers are directly involved in the "fight" providing necessary fuel to aircraft in support of land and air component commanders throughout an AOR. Case in point, McConnell AFB KC-135s conducted low altitude Special Operations Air Refuelings (SOARs) in the AOR and have been integral in prosecuting warfighter requirements. In 2006 alone, McConnell SOAR missions ISO OIF and OEF enabled:

127 Strike Assists

3,119 detainees captured (523 persons of importance)

841 Enemy killed in Action

251 transmitting devices destroyed

2 hostages rescued

137 weapons caches confiscated

Another example highlighting the utility Defensive Systems aboard the tanker: Following a receiver or UAV divert into a "hostile" area which required a "rescue" mission, tanker aircraft in AOR were available to deliver a rescue team and parts, but were unable to proceed due to a lack of required Defensive system. Consequently, days passed waiting for airlift to be assigned. (22nd Operations Group McConnell AFB, KS)

**“FLOORS & DOORS”** – The tanker fleet also provides tremendous support of aeromedical evacuation operations:

A KC-135 aircrew executed swap out of a Jordanian medical team to/from Afghanistan; supported 24 C-17 missions to complete mission

A KC-135 aircrew transported wounded OIF/OEF veterans to CONUS in time for Thanksgiving; ensured critical patients airlifted on time to proper medical facilities from PACOM theater to CONUS

A KC-135 aircrew conducted a critical aeromedical evacuation mission for seriously burned troops returning from OIF (22nd Operations Group McConnell AFB, KS)



## ANNEX D – AIRLIFT REQUIREMENT INFORMATION

**Airlift Capability (KPP #4).** The aircraft shall be capable of efficiently transporting equipment and personnel and fit seamlessly into the Defense Transportation System (**THRESHOLD, KPP**) The aircraft's entire main cargo deck must be convertible to an all cargo configuration that accommodates 463L pallets (**THRESHOLD, KPP**), an all passenger configuration (plus baggage) (or equivalent AE capability to include ambulatory and /or patient support pallets) (**THRESHOLD, KPP**), and must optimize a full range of palletized cargo, passengers, and AE configurations that fully and efficiently utilize all available main deck space (**THRESHOLD, KPP**). Ground operations shall not require external aircraft structural support devices (e.g., tail stand) (**THRESHOLD**). The aircraft must be visible to and appropriately synchronized by the joint deployment and distribution enterprise.

**Rationale:** Augment airlift fleet, meet expeditionary requirements of emerging military strategy and enable operational objectives. Supports Global Mobility CONOPS, JP 3-17, and AFDD 2-6.2. Satisfies Air Refueling Initial Capabilities Document (ICD) requirement for airlift and Aeromedical Evacuation, Air Mobility Master Plan (AMMP) 2006 and Government Accountability Office (GAO) Report to Congress on utility of dual-role aircraft. Current AMC KC-135R Unit Type Code and Log For listings for air crew, maintenance, and operations support.

**Key Characteristics Enabled:** Expeditionary, adaptable/tailorable, enduring/persistent, fast, and agile.

**Aeromedical Evacuation (KSA #2).** Capability to provide air transport and care in the air, using existing Patient Support Pallets (PSP), for 50 patients total, either 16 litter/34 ambulatory patients for up to 14 hours (**THRESHOLD, KSA**) or 24 litter/26 ambulatory patients for up to 16 hours (**OBJECTIVE**). The aircraft shall have the capability to accept the seat rail litter stanchions used on the C-17 (**THRESHOLD**). The aircraft shall be equipped with integral equipment to configure for 5 aeromedical crewmembers (**THRESHOLD**). **Rationale:** Required IAW AMC AE Vision for integral AE capability on any appropriate airframe; required by the Air Refueling ICD; required IAW AMC/SG planning factors for AE patient loads (AE crews are based on this number). AE crews consist of two flight nurses and 3 AE technicians.

**Litter Capability.** The aircraft shall be capable of using the existing PSPs and the existing Litter Station Augmentation Set (LSAS) (**THRESHOLD**). PSPs are a roll on/roll off system built on a standard 463L (108" x 88") pallet and configurable with litter stations, seats, or a combination. The LSAS is a kit containing 9 C-17 litter stations providing 27 litter positions. The aircraft shall have the capability to accept the litter stanchions used on the C-17 aircraft (**THRESHOLD**). A litter station should be capable of supporting up to 250 lbs in the top litter position, and 275 lbs each in the middle and bottom litter positions. Aircraft shall have integral (carried onboard at all times) capability to position six litter patients off the floor using two three-tier litter stations that

are secured to structural hard points/recessed fittings in the aircraft floor  
**(THRESHOLD)**.

**Rationale:** Required IAW AMC Aeromedical Evacuation (AE) Vision for integral AE capability on any appropriate airframe; required by the Air Refueling ICD; required IAW AMC/SG planning factors for AE patient loads (AE crews are based on this number).

**Communication Gateway:** The KC-X shall have the capability to accept roll-on, roll-off, plug and play, communication relay equipment, such as Roll-On-Beyond Line of Sight Enhancement (ROBE) and the Multi-Mission Payload (MMP) **(THRESHOLD)**. The KC-X shall have a common interface panel for connecting Air Force communication gateway equipment to the aircraft **(THRESHOLD)**, and provisions for future growth **(THRESHOLD)**. The aircraft should have the ability to receive data from the communication gateway equipment and integrate the data (up to SECRET) into cockpit displays **(OBJECTIVE)**.

**Rationale:** Improved connectivity required by AMMP 2006; operational necessity.