



A/TQ

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ON THE COVER: Modified view of a KC-135 Stratotanker (standing in for the future KC-X) refueling a B-52 Stratofortress over the Indian Ocean. The two aircraft are from a forward deployed location supporting Operation Enduring Freedom. The B-52 provides close air support to troops on the ground in Afghanistan. A new tanker aircraft is needed to ensure the global air bridge necessary for carrying out combat operations support will stay in place into the future. (U.S. Air Force photo/Staff Sgt. Doug Nicodemus)

Stepping Up

The feature article in this edition of A/TQ tells the remarkable story of 1st Lt Suella Bernard, the only nurse to ever fly aboard a glider during a combat aeromed operation [see story on page 16]. What makes her participation in the WWII operation "remarkable" is the fact that she *volunteered*. She stepped up when she was needed. That's the same spirit that today's all-volunteer air mobility force shows day in and day out.

From providing fuel, supplies and aeromedical support to troops on the frontline of the Global War on Terrorism, to providing humanitarian supplies to hurricane, flood, and earthquake victims both at home and abroad, America's air mobility force has been engaged in almost nonstop operations since its inception.

Airlifters and tankers have supported peacekeeping and humanitarian efforts in Afghanistan, Bosnia, Iraq, Cambodia, Somalia, Rwanda and Haiti, and continue to play a vital role in the ongoing Global War on Terrorism. These many examples of the effective application of non-lethal air power indicate that air mobility is a national asset of growing importance for responding to emergencies and protecting national interests around the globe.

While the airlift and tanker aircraft that provide the means are important, the most important factor in air mobility's success in maintaining America's global reach capabilities are the 141,000 active-duty and Air Reserve Component military and civilian personnel, including approximately 51,500 active duty airmen, 8,215 civilians, 43,444 Air Force Reservists and 37,902 Air National Guardmen, who work diligently, 24/7/365, to keep them flying.

In his address at the 2006 A/TA Convention & Symposium last October in Orlando, Florida, AMC commander, General Duncan McNabb, spoke to this point. "You're doing things faster, saving time and turning aircraft quicker, which saves money and is creating dividends for the command," said the general.

He went on to say, "You are our most important resource...You are the heart of this nation...What you are doing is absolutely magnificent and absolutely noble."

High praise that is justly deserved.

No doubt, future Heritage & Heroes features will be relating stories about individual air mobility warriors who stepped up when they were called upon – answering the call to duty when they were needed most. In today's uncertain world, there is probably an event happening as you are reading this, no matter when, that deserves to be saved for posterity.

Collin R. Bakse, editor

Chairman's COMMENTS



Gen Ron Fogleman
USAF, Ret

As we start the New Year I am reminded that, for the men and women of the Air Mobility Command, holidays and a new year on a calendar provide little respite from the taskings associated with the Long War on Terror or pop-up taskings such as the support for President Ford's funeral [see story on page 28]. The operations tempo continues while the need to innovate and find new and better ways to move people, planes and cargo around the world takes on increased urgency. This search for innovation is epitomized by the Air Force Smart Operations for the 21st Century (AFSO21) initiative. Born out of the necessity to do more with fewer resources, this Air Force wide initiative is providing airmen the opportunity to think out of the box and try new ideas without having to fight an entrenched bureaucracy.

While the Joint Precision Airdrop System (JPADS) did not originate with AFSO21, it never-the-less serves as an excellent example of the kind of results that are possible when the senior leadership allows the troops to think out of the box while providing encouragement and support to address a critical need. The members of the A/TA were provided a glimpse of this system by General McNabb during the 2006 convention, but like most things put into the hands of the ground and flight crews, JPADS has taken on a life of its own. Using guidance from Global Positioning Satellites (GPS) and a steerable chute, mobility forces can now drop a single load on a discrete drop zone or by individually programming each bundle they can drop multiple bundles on multiple drop zones on a single pass. Additionally, the drops can occur from higher altitudes providing more flexibility and less exposure to low altitude threats.

A major milestone for the mobility force took place in late January with the release of the long awaited Request for Proposal (RFP) for the KC-X tanker program. If the timelines hold the Air Force should be on contract for the replacement tanker by the end of 2007. *We need to get started!* Under the best assumptions on annual procurement rates it will be 15 to 20 years before the entire fleet is modernized.

The results of AFSO21 initiatives and the fielding of a new tanker will be historical events for the Air Mobility Command. It is important that the lessons learned from programs like these are captured for future generations of mobility warriors. This is the responsibility of AMC's award winning history office. I want to congratulate the Command Historian, Lillian Nolan, and her entire staff, for being recognized as the recipient of the General Bryce Poe II Award for the best major command history program in the Air Force [see story on page 27]. We in A/TA are doubly proud since Lillian also serves as the A/TA Historian.

Congratulations to all...and best wishes to our mobility troops for a healthy, happy and productive New Year.



*"You are our most important resource...
You are the heart of this nation...
What you are doing is absolutely magnificent and absolutely noble."*

President's MESSAGE



CMSgt Mark Smith
USAF, Ret

What a great convention in Orlando, Florida! Salutes to all – especially to our many volunteers for providing your time to organize a wonderful convention. And thanks to the membership – for your dedicated support and attendance. It is amazing to see our organization and conventions grow as we maintain the same level of camaraderie and friendship as experienced with a smaller group. We'll tweak the banquet seating plan to ensure everyone knows where to sit – we had plenty of seats! Thanks in advance for your understanding as we tackle these growth issues in a reasonable way.

I would like to congratulate all of our 2006 award recipients including our newest A/TA Hall of Fame inductee, General (Ret) Duane H. Cassidy. Your professionalism and contributions to air mobility are simply incredible.

One award which is not highlighted in the convention issue of A/TQ (it's a surprise) is the President's Award. This award identifies and recognizes an A/TA member-volunteer who has contributed immeasurably to the overall success of the Airlift/Tanker Association. The 2006 President's Award was presented to the Airlift/Tanker Quarterly Business Manager, Nicky McCollough. Nick has been our business manager since the spring of 1997 and has done an outstanding job soliciting advertising from our industry partners for the convention issue of our magazine. In 2006, A/TQ advertising sales established a new high as Nick began selling "inside cover" advertising in each issue to generate additional revenue. A true unsung hero of the Association, Nick often tells us that he's just an "old maintenance officer" who's not used to any kindness. The truth is - there would be a real void if not for the hard work and dedication of Nick McCollough. Nick has worked long and hard behind the scenes for 10 years supporting our most visible (and award winning) magazine. Congratulations Nick and thanks for your dedication to make our association so successful.

Also up for convention-related honors is LTC Jeff Bigelow – for his dedicated service as our Convention Symposium Director. Jeff accomplished the skillful job of organizing and guiding our professional development seminars at our conventions in Nashville and Orlando. We'll try to retain Jeff with an adult beverage or two again next year!

I would also like to recognize our AMC Commander, General Duncan McNabb and his Command Chief, Joe Barron, for their outstanding presentations at the convention. We thank and support you for your dedication and vision as you mold our transportation and airlift future.

Lastly and most importantly, thanks to many of you who are deployed serving our great nation. We sincerely appreciate your service to air mobility and the sacrifices you and your families are making to protect our freedom. Our prayers and support are with you always. God bless you all.

Cabin Report...Secure!

*most important resource...
of this nation...
absolutely magnificent and absolutely noble."*

— General Duncan McNabb, AMC Commander,
2006 A/TA Convention & Symposium Address

Secretary's Notes

Happy 2007 to all. I've told you in previous issues that besides the Convention, the most rewarding aspect of serving on your Board is the opportunity to visit you on your home turf. Over the past several years the Board has visited several Chapters and learned a bunch, while hopefully assisting the Chapters recruit and retain members. I get to do much of the planning for these visits and it is indeed a pleasure to work with you – true professionals.



Col Barry Creighton
USAF, Ret

So, we are looking forward to our 2007 visits with the Razorback Chapter in March, the Golden Bear Chapter in May, and the Pacific Northwest Chapter in July (for Rodeo). We profit greatly from these visits as we gain an appreciation of the accomplishments and challenges as seen through your eyes. And, hopefully you gain some benefit by having us spend a couple of days with you (the Chairman might even referee a Crud match if we ask him).

Gen Marr sorts through your requests and needs while recommending Board meeting locations. So if you are interested in getting in the queue for 2008, let him or me know. In the mean time, keep the blue side up.

Barry

Future A/TA Convention & Symposium Locations*

2007..... Opryland, Nashville

2008..... Marriott/Hilton, Anaheim

2009..... Opryland, Nashville

2010 ... Marriott World Center, Orlando

2011..... Opryland, Nashville

2012..... Marriott/Hilton, Anaheim

**Tentative outline of locations.
Subject to change.*

Association ROUND-UP

2007 A/TA Convention & Symposium

Thursday-Sunday • October 25-28, 2007

Gaylord Opryland Resort & Convention Center

Nashville, Tennessee

Rooms ROE Update for 2007 Convention & Symposium in Nashville

The Orlando Convention was extremely successful. More than 3700 attendees enjoyed the three days of exhibits, seminars, and seeing old friends. From just about every aspect, the Association's management of the hotel rooms worked. Of course, it only worked because of the number of volunteers at each base and exhibitor that worked the room list and ensured that the majority of the room commitments were met.

Just about every unit had at least one room in the main hotel and all the remaining rooms were in the same overflow hotel. The Association plans to continue to manage the room process and will rely on your support to ensure that it is successful again. Like 2006, there will be no time that any hotel will open the block for independent reservations.

The Association, to distribute "fairly" the government rooms for the general membership in the main hotel (understanding that there will NEVER be enough rooms in the main hotel for everyone), has divided the rooms in the main hotel using a proportional formula based on the number of rooms each base had for the Orlando convention. The Association will allocate the rooms to each base POC. We will also assign the base an overflow hotel for the remainder of the room requirement. Unlike 2006, the Association will need to have confirmed the number of rooms earlier to ensure the Association meets its contractual obligations with the different hotels.

Base and exhibitor room POCs must confirm hotel room requirements No Later Than July 16. We recognize that this is extremely early to know exactly how many

rooms a base will need. Through no fault of any one base or exhibitor, the Association was obligated to pay the cancellation fee for a number of hotel rooms in Orlando due to the reduction in room requirements after contractual deadlines to do this. By meeting this deadline line, the Association will avoid cancellation fees. Once confirmed, the POC will be responsible for filling those rooms. If unable to do so, the base or exhibitor will have to pay the cancellation fee for the room, which is one night room rate per room. This is a significant change and will require POCs to manage the room block very closely.

To provide each POC with some flexibility, the Association will require that each base have a minimum of 10 percent of the rooms as doubles. On a case by base basis, the Association will consider reducing or increasing the double up requirement. For example, if your base had 100 rooms in Orlando for 2006, the Association will allocate you 90 rooms for 2007. Of the 90 rooms, 10 rooms will be doubles (80 single government rate rooms, 10 double government rate rooms (100 attendees).

The final list of names and credit card information is due to the hotels no later than August 20. Like in previous years, you will be able to do a one-for-one swap.

The Association also has set aside a number of rooms in all the various hotels for those attendees not associated with a base or exhibitor. The rooms are at the government/military rate (for the active duty) and the conference rate (for exhibitors, retirees and others). These individuals should download

the reservation form from the website convention page, or contact ATARooms@cox.net to request a room.

For the retirees who believe they are entitled to a government rate, the Association uses two principals when negotiating with the hotels for rooms: First, hotels want to limit the mixture of the government rate rooms to conference rate rooms to approximately a 50/50 ratio; or to charge much higher rates for convention-rate rooms. This means that the Association must fill both room rates to honor the contracts. Second, the Association can only contract for what we estimate to be the number of active-duty rooms needed. Over-estimating incurs penalties.

Reservations for the convention will be made by Rooming List. The Rooming List must be provided to the hotels prior to August 20, 2007. All room reservations must be accompanied by a first-night room guarantee. The hotel will not hold any reservations unless secured by a credit card. The room POCs can make a one for one swap to avoid cancellation charges. Everyone will need to understand the cancellation rules as they are updated in the future. Remember, room reservation cancellation and convention registration cancellation are two separate actions. Like in 2006, every individual, through his or her room POC, is responsible for any changes to his or her hotel reservation and not the Association.

As we get closer to the convention, there will be more information on room rates, resort fees, cancellation fees, and other important information about hotel rooms.

See you in Nashville.

Nick McCollough, A/TQ Business Manager, Receives 2006 "President's Award"

The Airlift/Tanker Association, unlike most organizations of its size and stature relies on a spirit of volunteerism to fill and perform all of its major positions and functions. The position of Business Manager for the Association's publication, *Airlift/Tanker Quarterly* (A/TQ), has been filled by Nick McCollough for nearly a decade (his tenure began in the spring of 1997), and he done a masterful job in securing advertising support for the magazine from throughout the aerospace industry.

To recognize his efforts, he was awarded the 2006 President's Award during the 2006 A/TA Convention & Symposium held in Orlando, Florida. In the photo on the right, taken immediately following the presentation of the award by Association President Mark Smith (2nd from left), Nick (center) was joined on stage by General Duncan McNabb (left), commander Air Mobility Command; Lt Gen John Bradley of the Air Force Reserve Command (2nd from right); and, Lt Gen Craig McKenley, Director of the Air National Guard (right).



*Soar Like
an Eagle...*

The A/TA
*Enlisted Tuition Grant
Program*
Designed to help you reach your educational goals.

*Airlift/Tanker Association Enlisted Tuition Grants are available to
Air Force, Air National Guard and Air Force Reserve members
pursuing undergraduate or graduate degrees.*

ETG CRITERIA:

- Current Membership in the Airlift/Tanker Association
- Enlisted Member in Grades of E-1 through E-9
- Commander's Recommendation
- Assigned in an air mobility operational and/or support function (an augmentee on a mobility or maintenance support team, for example), OR, anyone directly or indirectly supporting the USAF Airlift or Air Refueling mission.
- Must be a current member of the Airlift/Tanker Association during the course which you are using to apply for the grant.
 - Application must be postmarked within three (3) months of course completion.
- Checks will be issued upon completion of a course with proof of a grade of C or better in an accredited degree program
 - Individuals are limited to one ETG per 12-month period.
 - Student financial need is not a principal criterion
 - May not be used for a lower or lateral previously awarded degree

Additional details and forms are available online at www.atalink.org

*If you meet the criteria, apply today! The A/TA wants to help you continue your
education so you too can soar like an eagle.*



*Working to
Improve
America's
Air Mobility
Force.*

FMC Technologies Donates \$5000 to the A/TA Education Fund

The success of the Airlift/Tanker Association is built on a solid foundation of corporate sponsorship. The Association's corporate partners continue to find new and inventive ways to raise awareness of their products and services in the mobility community, and in some cases raise funds for the Association's endeavors. FMC Technologies' fundraising endeavor during the 2006 Convention & Symposium, in Orlando, Florida, is an excellent case in point.

FMC Technologies, which manufactures the Halvorsen 25K Loader, trailer mounted air conditioner (TMAC), B-450 and B-600 tow tractors, and the 100-ton diesel/electric

...\$5000, which will be used to support the Association's Enlisted Tuition Grant and Arnold Air Society scholarship programs and other educational activities.

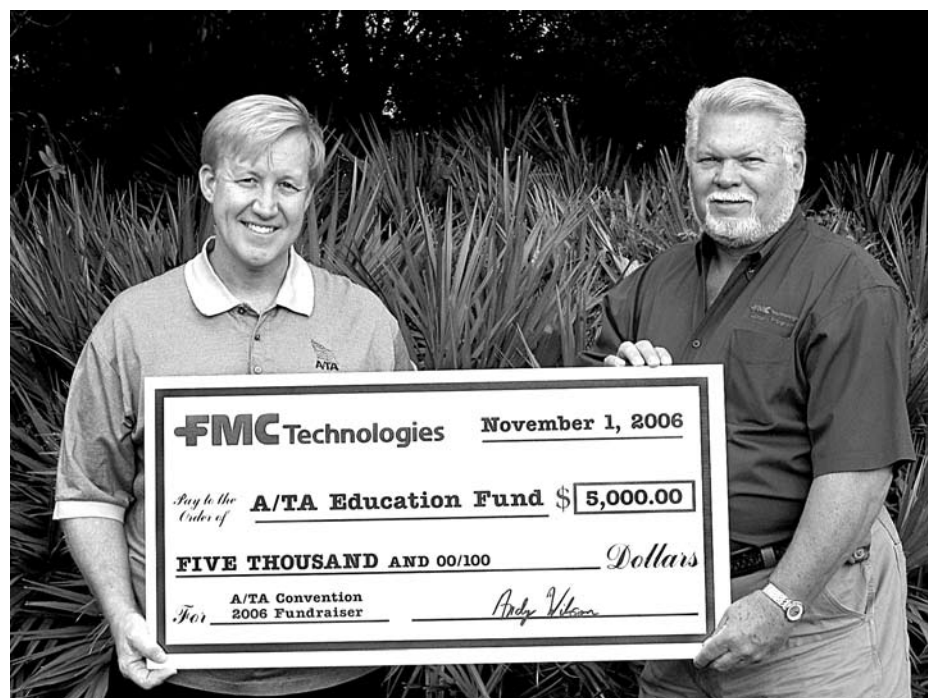
air conditioner for the U.S. military built their 2006 aerospace show booth around the participation of Gail Halvorsen and an actual Air Force NASCAR race car. The display was designed in response to a comment made by AMC commander Gen Duncan McNabb during AMC Technology Days at Scott AFB, Illinois, in which he referred to

the Halvorsen Loader as an outstanding example of "...AMC's pit stop" vision - increasing speed and velocity during AMC ground operations.

Through the sale of copies of Col. Gail Halvorsen's "The Berlin Candy Bomber," and "Mercedes and the Chocolate Pilot" autographed by Col. Halvorsen in person during the convention, coupled with a fun and exciting "NASCAR" style slot car competition and a dollar matching program, FMC ended up donating a total of \$5,000 to the Association's education fund.

The book sales alone raised \$3,000. Competitors in the slot car race donated a dollar to the fund as an "entry fee" which FMC matched dollar for dollar. The event raised \$966. FMC then added an additional check for \$1034 to bring the grand total contribution to \$5000, which will be used to support the Association's Enlisted Tuition Grant and Arnold Air Society scholarship programs and other educational activities.

The Association's Officers and Members of the Association extend their thanks to Show Manager Andy Wilson and the rest of the FMC Technologies "pit stop" team for their ongoing support of the Airlift/Tanker Association.



A/TA President Mark Smith (L) accepts a \$5000.00 check from FMC Technologies' Show Manager Andy Wilson (R). FMC raised the funds during the 2006 Convention through the sale of "The Berlin Candy Bomber" and "Mercedes and the Chocolate Pilot" autographed book sales and a unique slot car "NASCAR" racing competition. The \$5000.00 donation will be added to the Association's Education Fund. (Photo courtesy FMC).

Huyser Chapter

Bombers Over MidAmerica

by Collin Bakse, editor

What do a couple of WW II era bomber aircraft have to with air mobility?

For one thing, the Huyser Chapter of the A/TA used the chance for a flight aboard either a fully restored B-17 or B-24 as a way to raise funds to support its charity program (well, sort of - more on this later). Then there are the two aiplanes - the "Nine-O-Nine," a B-17 which served stints with the Air/Sea 1st Rescue Squadron and the Military Air Transport Service; and then served a two decade



A view of the farmland of mid-America out the front plexiglass nose of the "Nine-O-Nine," a B-17 Flying Fortress, on the flight from Louisville, Kentucky, to MidAmerica Airport adjacent to Scott AFB, Illinois. The eyepiece of a Norden Bomb Sight is in the foreground. (Photo by Collin Bakse)

career as a fire bomber fighting forest fires; and, the B-24 "Witchcraft," though having a little more tenuous connection with air mobility, there is its ride from India to England aboard a Heavy Lift cargo plane.

Both aircraft are part of the Collings Foundation's collection of flying vintage aircraft, and barnstorm around the country as part of the Foundation's "Wings of Freedom Tour." The Collings Foundation is a non-profit, Educational Foundation (501-C3), founded in 1979. The purpose of the Foundation is to organize and support "living history" events that enable Americans to learn more about their heritage through direct participation.

The "Wings of Freedom Tour" has two goals: to honor veterans - letting them know

they have not been forgotten; and to educate the visitors, especially younger Americans, about the planes and World War II. The Foundation encourages people to tour the planes, talk to the veterans who come to visit the aircraft, and participate in a "flight



The view from the left side gunner's position on a B-17. (Photo by Collin Bakse)
experience." Which gets me back to the Huyser Chapter fundraiser.

When the Chapter learned that the "Wings of Freedom Tour" would be making a stop at MidAmerica Airport, adjacent to Scott AFB, Illinois, it seemed like a good idea to raffle chances to win a flight aboard one of these icons of American might. And, it was. Ticket sales were brisk at first, but then the Chapter learned that, to borrow a WW II military phrase, there was a "SNAFU." And, therein lies a lesson for other A/TA chapters. Make sure your Chapter is properly registered with base MWR for on-base civilian activities, and be sure to follow the regulations to the letter. If the Huyser Chapter at Scott AFB, home of the Airlift/Tanker Hall of Fame, can run afoul of base MWR regulations so can any other Chapter. Thankfully, the Chapter ended up about breaking even – and there were a couple of lucky winners who had purchased tickets early – myself, and retired CMSgt Mike Torbush. And we were in for a special treat courtesy of the Collings Foundation – we were invited to accompany the flight crew and ground support crew on a van trip to Bowman Field in Louisville, Kentucky, and fly aboard the "Nine-O-Nine" and "Witchcraft" to MidAmerica Airport on 19 October 2006.

The weather that day was overcast, rainy and dreary, but the van trip to Louisville was high-spirited – lots of "war stories" and "prank stories" – even though we were all worried that the low ceiling would keep the vintage war birds grounded. We made good time to Louisville, waited a couple of hours for the weather to clear enough for the flight and were cleared for take-off at 1445 Eastern.

We split into two groups, half on each aircraft. I was aboard the B-17 and Chief Torbush was aboard the B-24. On the flight to MidAmerica Airport we were allowed nearly full access to the aircraft (some of areas, such as the B-17 belly turret are simply too dangerous to access without proper training).

Being aboard a B-17 "Flying Fortress" was especially meaningful for me since my father-in-law, Junior Edwards, was a B-17 side gunner during WW II and spent many months as a POW after surviving being shot down over Germany.

The "Nino-O-Nine"

The Collings Foundation's Flying Fortress was built at Long Beach, CA by the Douglas Aircraft Company and accepted on April 7, 1945. Although she was too late for combat, #44-83575 did serve as part of the Air/Sea 1st Rescue Squadron and later in the Military Air Transport Service.

In April 1952, #44-83575 was instrumented and subjected to the effects of three different nuclear explosions. After a thirteen-year "cool down" period, #44-83575 was sold as part of an 800-ton scrap pile and Aircraft Specialties Company began the restoration of the aircraft.

Following restoration and re-named the "Yucca Lady," #44-83575 served as a fire bomber dropping water and borate on forest fires. She was sold in January 1986 to the Collings Foundation. Restored back to her original wartime configuration by Tom Reilly Vintage Aircraft, she represents one of the finest B-17 restorations and has won several awards.



The "Nine-O-Nine." (Photo by Collin Bakse)

In August 1987, while performing at an airshow in western Pennsylvania, "Nine-O-Nine" was caught by a severe crosswind moments after touchdown and suffered major damage. Fortunately, there were no fatalities or serious injuries to the crew or riders.

For a second time, this B-17 "rose from the ashes." With nacelles from the famed B-17 "Shoo Shoo Baby", thousands of volunteer hours, support from the folks of Beaver Falls, PA, and donations from individuals and corporations, she was made whole again to carry on the proud and rugged heritage of the B-17.

The Collings Foundation B-17 was named "Nine-O-Nine" in honor of a 91st Bomb Group, 323rd Squadron plane of the same name which completed 140 missions without an abort or loss of a crewman.

The "Witchcraft"

Over sixty years ago, in August 1944, the Collings Foundation's Liberator was built at

the Consolidated Aircraft Company's Fort Worth, Texas plant. Shortly afterward, the aircraft was delivered to the US Army Air Force and in October of 1944 it was transferred the Royal Air Force. Under the British flag, the B-24 saw combat in the Pacific Theater as KH191 in operations ranging from



The "Witchcraft." (Photo by Collin Bakse)

anti-shipping to bombing and re-supply of resistance force operations.

At war's end, the aircraft was abandoned by the RAF in a bomber graveyard in Khanpur, India; with the assumption that it would not fly again. However, in 1948, the Indian Air Force succeeded in restoring 36 B-24's, including 44-44052, to operational status. These aircraft were utilized until 1968.

For the next 13 years, the aircraft sat abandoned in India until British aircraft collector, Doug Arnold, obtained it in 1981. The aircraft was disassembled and transported back to England in a Heavy Lift cargo plane. Once in England, the aircraft was advertised for sale in "as is" condition and in 1984, Dr. Robert F. Collings purchased it. After a sea voyage of three weeks, the B-24 arrived in Boston and was brought to Stow, MA in four truckloads.

After more than five years of hard work and 97,000+ hours of labor, the B-24 flew for the first time after restoration on September 10, 1989. Starting its new life in 1989 flying as "All American" a 15th Air Force aircraft which flew in Italy with the 461st Bomb Group, the B-24 flew for many years with this scheme. In 1999 it was repainted to represent "The Dragon and His Tail" a 5th Air Force B-24 flying in the Pacific Theater with the 43rd Bomb Group. In 2005 the B-24 was repainted as "Witchcraft" which honors the veterans of the 8th Air Force, which flew in the European Theater during WW II.

The original "Witchcraft" began combat service on April 10th, 1944, flying the first combat mission of the 467th Bomb Group. Over the next year "Witchcraft" flew an incredible 130 combat missions with various crews. "Witchcraft" was never once turned back while on a mission, and never had any crewmen injured or killed. Her last mission was flown on April 25th, 1945 which also was the last mission flown by the 467th Bomb Group. "...Witchcraft" was there at the beginning and at the end."

*"The number one priority for us
now is the tanker."*

General T. Michael Moseley
USAF Chief of Staff, October 12th, 2006



More Than *Just* a Tanker

The Role of the KC-X in Combat Operations

by Gregory P. Cook, Colonel, USAF (Ret)

Introduction

The time has come for the U.S. Air Force to buy a new tanker aircraft, and this is now the Service's number one acquisition priority. The venerable KC-135 fleet is nearly a half century old, its place in history assured even as it continues to serve as the primary tanker force supporting our nation's and allied air forces in the fight today and for the foreseeable future. Air refueling is one of the most important capabilities the Air Force provides to joint military operations, and the continuing viability of this vital national capability must be ensured. In recent years, the Department of Defense (DoD) and the Air Force have become increasingly concerned about the possibility of age-related problems grounding the aerial refueling fleet. While the aging U.S. air refueling fleet is large and operationally effective today, modernizing or replacing the current fleet of tankers presents DoD and USAF with difficult choices in terms of desired capabilities, force structure and budget.

"While the primary mission of air refueling will drive the KC-X requirement, it is absolutely essential that the full range of operational roles and missions that the aircraft could fulfill be considered in the development process."

The Air Force issued a draft Request for Proposal (RFP) to industry for a new KC-X tanker on December 15th, 2006, which provides significant details about expected missions, capabilities and system requirements for a new fleet of tanker aircraft. The KC-X program begins a long-term effort to recapitalize the forces that provide the nation's air refueling capability, with an anticipated production rate of up to 15-20 aircraft per year beginning by fiscal year 2012. Designed to provide an initial 179 tanker aircraft, decisions will be made later on whether to increase the number of aircraft purchased under this program or to acquire additional tanker aircraft through other programs.

The current schedule projects that recapitalizing the capability inherent in over 530 KC-135s could take up to five decades to complete and likely cost tens of billions of dollars. The average age of the KC-135 fleet in 2006 was 46 years; continued operation until 2050 would result in airplanes up to 90 years old. Operating military aircraft of this age is unprecedented in aviation history, and many questions remain unanswered about how long these aircraft can be operated safely and effectively. During the recapitalization period, it is likely that aircraft technology and aerial refueling needs will change significantly, as will U.S. national security imperatives, military strategies and operational concepts. Just as conditions in the first decade of the 21st century are dramatically different than they were 50 years ago when the KC-135 was introduced, so too will conditions be far different 40 to 50 years from now.

These and other issues impact our strategy to acquire new tanker capability. As the Air Force begins the process of obtaining a new primary air refueling aircraft, the legacy and operational history of the KC-135 and the KC-10 will surely shape the tanker requirements debate to come. In addition, several major studies have examined a wide range of safety, cost and operational issues related to the tanker fleet, with varying conclusions reached.

The range of technologies and capabilities required by the draft RFP and inherent in KC-X candidate aircraft make them far more capable than the KC-135 for airlift and other secondary missions, and as a result raise new questions about how these aircraft will and could be utilized. What characteristics and capabilities will these aircraft

possess and which ones will carry greater weight in the selection process? How important is flexibility and adaptability to evolving warfighting requirements? The RFP addresses these questions to a degree, but many other complex questions and issues remain.

While the primary mission of air refueling will drive the KC-X requirement, it is absolutely essential that the full range of operational roles and missions that the aircraft could fulfill be considered in the development process. Building in greater flexibility and adaptability at the outset would increase the overall utility of the aircraft and provide the U.S. with substantially more warfighting capability options in the long run. Large, commercial-derivative aircraft offer significant advantages in range, payload, versatility and cost-effectiveness compared to military-unique aircraft, with opportunities to expand the role they play in combat operations. This next generation of tanker aircraft will possess a range of capabilities that provide the U.S. with many options for future use – if we can widen the discussion on the role of these aircraft in combat operations and eliminate historical constraints on how we utilize our tanker fleet. We must insist that the full potential of this aircraft be explored for other roles and missions, recognizing that significant operational, organizational and doctrinal issues must also be addressed. Given the significant investment by the American taxpayer to acquire the KC-X, and that these aircraft will likely remain in service for 40-plus years, addressing the flexibility of the aircraft is a matter of both cost effectiveness and military utility over time.

What emerges is no less than a debate about the role and management of large aircraft in combat operations, with an underlying assumption that aircraft capable of performing multiple roles will provide greater flexibility and warfighting options to future combatant commanders. A thorough review and discussion of these issues is needed, with the primary goal of optimizing the capabilities of the entire air mobility fleet and the Air Force at large. The KC-X is more than just a tanker – it could very well transform the nature of future air and joint operations.

History of the Current Tanker Fleet

The original KC-135 aircraft design and fleet size evolved from Cold War requirements to implement and support the U.S. strategy of containment. A large fleet of tankers was needed to refuel bombers that would carry out strategic operations in the event



The average fleet age of the KC-135, shown here refueling a KC-10, is 46 years. The average fleet age of the 59 Air Force-owned KC-10s is over 20 years. Continued operation would result in airplanes 90+ years old and 70+ years old respectively, and raises questions about how long these aircraft can be operated safely and effectively. (US Air Force file photo).

of nuclear war with the former Soviet Union. A derivative of Boeing's 707 commercial airliner, a total of 732 KC-135 aircraft were built and procured at a rate of 75 to 100 per year during the late 1950s and early 1960s. In its Cold War role, the KC-135 spent 30 percent of its time on nuclear alert ready for takeoff, but in reality was flown very little. During the post-Cold War era, the aerial refueling aircraft mission expanded to support global operations of all types of aircraft even while the KC-135 fleet was reduced in size to just over 530 aircraft. Over 90% of the Air Force's current air refueling capability resides in the KC-135 fleet.

The KC-135 can carry 200,000 lbs of fuel. It dispenses fuel to USAF aircraft through a flying boom, and a drogue can be attached to refuel Navy, Marine Corps or allied-country aircraft. A small

percentage of KC-135s are equipped with air refueling receptacles that allow them to be refueled as well. In addition to its fuel payload, the KC-135 can carry 35,000 lbs of cargo and has room for six standard 463L pallets which can be loaded through a side cargo door. Depending on fuel storage and interior configuration, the KC-135 can carry up to 83,000 pounds of cargo or 80 passengers. Since initial fleet delivery, the aircraft has undergone major structural repairs and been upgraded or improved with capability-enhancing modifications, including new engines and avionics. About one fourth of remaining KC-135s are E-model variants, while the rest have been upgraded to the R-model configuration. The Multi-Point Refueling System Program outfitted a number of KC-135Rs with wingtip pods that allow the aircraft to simultaneously refuel two probe-equipped aircraft. Upgraded avionics and communications equipment will allow unrestricted global operations and enable the aircraft to serve as an airborne data link. Fifty aircraft were modified with cargo roller sets in the 1990s to exploit its cargo-carrying capability, but the KC-135 has never truly been employed to a large degree in this role.

The Air Force also owns 59 dual-role KC-10 tanker cargo aircraft with an average fleet age of over 20 years. The KC-10 can carry 356,000 lbs of fuel, almost twice as much as the KC-135, and can simultaneously use the flying boom and its two wingtip probe and drogue systems to refuel most military receivers. Every KC-10 is itself equipped with an air refueling receptacle that enables them to be refueled in the air to increase their delivery range and endurance, and each can carry up to 75 troops and 170,000 lbs of cargo in addition to its fuel payload. As a result, the KC-10 fleet represents approximately 12% of DoD's organic airlift capability. Current plans call for the KC-10 to also remain in the active inventory through 2040.

In addition to the KC-135, another 88 C-135 aircraft were procured and modified over time to provide VIP passenger transport, reconnaissance, test and airborne warning, command and control, and a variety of other functions. These C-135 variants include the VC-137 "Air Force One" Presidential airlift force, the EC-135 "Looking Glass" airborne command post, NASA and USAF NKC-135 aerial test beds, the E-3 Sentry Airborne Warning and Control System (AWACS) aircraft, and the E-8C Joint Surveillance Target Attack Radar System (J-STARS). In addition, the KC-135 family of aircraft, including "Cobra Ball," "Rivet Joint" and WC-135 weather reconnaissance aircraft, were derived from the C-135. The aircraft's long range, cabin size and payload capabilities for its time made it an ideal conversion aircraft in which to incorporate a variety of specialized mission capabilities, and illustrate the versatility of large aircraft in combat operations. Each of these specialized mission aircraft resulted from extensive and expensive modifications to the basic C-135 airframe.

Analysis and Studies of Tanker Requirements

The need to replace the KC-135 has been gaining urgency for some time. These aircraft were not built with longevity as a key acquisition objective, even though the KC-135 was modified and adapted many times to meet evolving warfighting requirements. Its low overall utilization rates over the years lead to conclusions that the fleet still has significant service life remaining, yet corrosion and other issues raise doubts about the long-term viability of the fleet. Many questions remain unanswered about how long these aircraft can be safely and effectively operated, with several major studies examining a wide range of safety, cost and operational issues. These include a 2004 Congressional General Accounting Office (GAO) report on air refueling, a Defense Science Board (DSB) Task Force Report on Aerial Refueling Requirements completed in 2004, an Air Force Tanker Requirements Study in 2005 (TRS-05), and a RAND Corporation Analysis of Alternatives (AoA) completed in 2006, among others. The debate continues.

GAO Report on Air Refueling. A 2004 GAO report estimated that annual operations and support costs for the KC-135 fleet would increase by 130%, from about \$2.2 billion in fiscal year 2003 to \$5.1 billion (in FY 2003 dollars) in fiscal year 2017. This \$2.9 billion increase indicated a cost growth rate of about 6.2 percent per year. The report recommended that the Secretary of Defense conduct a requirements study to determine current and projected aerial refueling requirements and expand a planned analysis of alternatives to include new options for providing aerial refueling.

Defense Science Board Task Force Report on Aerial Refueling. In May 2004, the DSB Task Force published its independent assessment of the condition of the aerial refueling fleet and options to provide tanker capability. It refuted Air Force claims that the KC-135 fleet needed urgent replacement, and recommended that USAF consider several tanker enhancement options such as purchasing

"The Defense Science Board Task Force concluded that a mixed tanker fleet of large, long-range tankers and smaller, "tactical" tankers would form an operationally effective air refueling force."

and converting used aircraft for aerial refueling, re-engining additional KC-135s, and increasing the use of contractor-provided aerial refueling services. The DSB also concluded that a mixed tanker fleet of large, long-range tankers and smaller, "tactical" tankers would form an operationally effective air refueling force.

In addition, the DSB report stated that new missions, new modes of operations and changing operational situations could either increase or decrease the demand for and nature of aerial refueling capabilities in the future. Homeland defense missions, for example, could demand over 100 KC-135 equivalents, depending on the number of cities and areas being covered by combat air patrol aircraft and the duration of these operations. Alternative concepts of operations, however, could significantly alter or reduce this number. The report also noted that recent reductions in organic firepower within U.S. ground forces and the resultant increase in precision firepower delivered from airborne assets drive demand for aerial refueling up. Other possibilities that alter the tanker requirement would be greater U.S. reliance on sea-based operations over long distances, or a transition to smaller tactical tankers in-theater, which may be necessary to avoid greater concentrations of larger tankers at fewer available airbases. Finally, the DSB report recognized that major geopolitical changes or reduced receiver force structure might lower the tanker requirement and that technical developments or breakthroughs might make a new design tanker aircraft an attractive alternative to its other recommendations.

Air Force Tanker Requirements Study 2005. TRS-05 highlighted a shortfall in the number of tanker aircraft and aircrews needed to meet worst case global refueling requirements, even though additional refueling requirements needed to support the Global War on Terrorism and homeland defense were not included in the study effort. TRS-05 estimated a tanker requirement of up to 600 KC-135-like aircraft, and postulated that the need for aerial refueling could grow in the future. It noted that the U.S. reduced by two-thirds the number of forward bases from which it can operate and that major overseas en route air bases have declined 69%. In order to maintain the same level of engagement with this new en route structure, the study concluded that U.S. forces must deploy more frequently and over greater distances, thus increasing the need for air refueling. Additional reductions or changes in forward basing and the en route structure could further alter the air refueling requirement.

A brief review of recent conflicts underscores the importance of tanker aircraft within the current geopolitical situation and

global posture. In both Iraq and Afghanistan, U.S. military aircraft projected power over long distances and in theaters with less than desirable access to forward bases or neighboring airspace. Thus, combat and support aircraft had to fly great distances both to the theater and while in theater, significantly increasing the demand on aerial refueling assets.

RAND Corporation Analysis of Alternatives. RAND was tasked by the Air Force in 2004 to analyze a broad range of acquisition strategies to recapitalize the KC-135 fleet, including the options of building new military tankers, acquiring used commercial planes and converting them to tankers, or outsourcing the air refueling mission to private contractors. Aircraft in the AoA were categorized into the following size categories:

- **Small** - less than 300,000 pounds maximum gross takeoff weight
- **Medium** - 300,000 to 550,000 pounds maximum gross takeoff weight
- **Large** - 550,000 to 1,000,000 pounds maximum gross takeoff weight
- **Very Large** - greater than 1,000,000 pounds maximum gross takeoff weight

The AoA study analyzed air refueling requirements necessary to support operations included in future operating scenarios from the 2005 DoD Mobility Capabilities Study. The requirement is defined by the amount of fuel that aerial tankers must supply, at specific times and locations, for a set of mission categories in future military scenarios.

The Pentagon released an executive summary of the study, entitled "Analysis of Alternatives (AoA) for KC-135 Recapitalization," in March 2006. The RAND study recommended that DoD consider buying a new fleet of medium or large airplanes based on successful commercial aircraft currently in production. "The most cost-effective tanker replacement alternative is a fleet consisting of new commercial-derivative tankers in the medium-to-large size range (300,000 to 1,000,000 pounds maximum gross take-off weight)," according to the study. The study says that Airbus 330 and 340 models, as well as Boeing's 767, 787, 777 and 747 versions, are all suitable aircraft within this range. In addition, the AoA stated that estimates of the cost-effectiveness of these alternatives were close enough to each other that none of them should be excluded as competitive candidates, given the information developed for and analyzed in the study. The RAND AoA study ruled out several options as not cost-effective. These include buying smaller aircraft, development of new airplanes for refueling needs, retrofitting used aircraft for the tanker mission, pursuit of unmanned or stealthy tankers, and outsourcing of the air refueling mission to private contractors. Additionally, the study found that the Air Force's decision on when to replace the tankers is not tied to the cost of replacement.

The Tanker Recapitalization Plan

In April 2006, the Aeronautical Systems Center sent out a Request for Information (RFI) on a KC-135 replacement platform. Consistent with the findings of the AoA, the RFI focused on a commercial-derivative tanker aircraft in the 300,000 to 1 million pound take-off weight class. The RFI also asked for vendor inputs on capabilities that might complement the recapitalization effort, such as specialized commercial aerial refueling services or KC-135 modifications and upgrades.

The Air Force used this information to formulate a draft Request for Proposal (RFP) for a new KC-X tanker that it released in September 2006, with a revised draft RFP issued to industry in December. Industry proposals are expected by February 2007, and source selection will occur in the February-July 2007 timeframe under the planned schedule, with the contract awarded in August 2007.

The KC-X program begins a long-term effort to recapitalize the forces that provide the nation's air refueling capability, with an anticipated production rate of up to 15-20 aircraft per year beginning by fiscal year 2012. At this rate, it will take decades to recapitalize the capability inherent in the KC-135 fleet, and the Air Force is keeping its options open for up to three separate tanker acquisition programs. The draft RFP states that after one third of the current KC-135 fleet is replaced, the Air Force will determine whether or not to continue producing the KC-X under this program, or to acquire more tanker aircraft under separate, follow-on programs known now as the KC-Y and KC-Z programs. The KC-X program is designed to provide an initial 179 aircraft over a 15-20 year period, with the first 4 built for test purposes and the next 175 aircraft for operational use. The current schedule projects that tanker fleet recapitalization could take five decades to complete. To put this in perspective, the process of replacing the KC-135 fleet on a one-to-one basis at a rate of 15 per year will take over 35 years to complete, concluding in 2047 at the earliest. At that time, there will be 90-year-old KC-135 aircraft still in the inventory, a situation unprecedented in aviation history.

Given these issues, the top priorities appear to be simply to get the program started and begin procuring aircraft as soon as possible. A Commercial Off-The-Shelf (COTS) program is the only feasible approach to achieving these goals, and the RFP clearly points industry in that direction. It states that the "KC-X program acquisition strategy is focused on commercial derivative, Federal Aviation Administration (FAA), or equivalent in accordance with approved bilateral airworthiness agreements, certified transport aircraft."

Only two companies are currently capable of fielding aircraft that meet the RFP requirements – Boeing and a Northrop Grumman/EADS North America partnership. Within their production lines exist several commercial aircraft that would meet the KC-X requirement, albeit with modifications. They include Boeing's 767, 777, 787 and 747 airplanes, as well as the Airbus A-330 and the A-340. Northrop Grumman and EADS are teaming to offer the conceptual KC-30 tanker aircraft, which is based on the Airbus A-330. Boeing

"The KC-X program begins a long-term effort to recapitalize the forces that provide the nation's air refueling capability...The current schedule projects that tanker fleet recapitalization could take five decades to complete."

is proposing its KC-767 aerial refueler, but has said that if a larger plane is needed for the expected cargo mission, the company could enter a different airframe for the competition. The KC-767A has about the same fuel capacity as the KC-135R, but is larger, heavier, and more fuel efficient, with additional interior room for cargo and passengers. The KC-30 is considerably larger than both the KC-135 and the KC-767A, with about 20 percent greater fuel capacity and increased cargo and passenger carrying capacity.

KC-X Mission and Capability Requirements.

The RFP identifies primary KC-X air refueling operating missions as those supporting global attack, air-bridge, deployment, sustainment, employment, redeployment, homeland defense, theater support to joint, allied, and coalition air forces, and specialized national defense missions. Specialized air refueling missions include support for special operations and U.S. nuclear forces. In the air refueling role, the KC-X is required to provide worldwide, day and night, adverse weather aerial refueling on the same sortie to receiver capable fixed wing U.S., allied, and coalition military aircraft, to include unmanned air vehicles (UAVs). The

RFP notes that the inherent flexibility of the KC-X platform will enable it to accommodate a diversity of secondary missions without significant impact to the primary aerial refueling mission. These include cargo and/or passenger transportation, aeromedical evacuation, plus Command, Control, Communications and Computers (C4) augmentation and treaty compliance missions.

The KC-X draft System Requirements Document (SRD) presents technical performance requirements for the new aircraft. The KC-X aircraft is expected to provide world-wide Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM) compliant capabilities and same-sortie boom/receptacle and probe/drogue capabilities with provisions for simultaneous multiple point probe and drogue aerial refueling. It will have significant inherent cargo, passenger handling, and aeromedical evacuation capabilities. The KC-X will operate in medium threat areas with self-defense/protection capability and will be compatible with night vision imaging needs for special operations.

KC-X Reliability and Maintainability. The draft RFP requires the KC-X Mission Capable (MC) Rate to be at least 90-92% and it must be able to sustain sortie rates from 8-29% above the current KC-135 sortie rate. A four-hour ground maintenance turn time is considered optimum, and departure reliability is required to be at least 95%. Depot rate is expected to be about 5%. By comparison, the KC-135's current MC rate is below 77% and its depot rate around 17%, with associated costs rising. According to the RFP, the KC-X must be capable of operating from a 7,000 ft dry, hard-surface runway at sea level up to its maximum gross weight for takeoff. Depending on Air Force usage, expected service life for the aircraft is 40 years based on an estimated 750 to 1000 flight hours per year. The RFP also specifies a number of capabilities incorporated into the aircraft.

Cargo and Passenger Handling Capabilities. The cabin door and passenger/cargo compartment will permit the loading and movement of 463L pallets on the wide dimension, or coupled on the short-side, to be loadable with adequate room to turn. It will also have an integral cargo loading system capable of turning coupled pallets and loading all pallet positions without additional equipment once the pallets are on the aircraft. The aircraft will have an integrated capability to pull fully loaded 463L cargo pallets onboard from the loader, and will be able to move cargo pallets fore and aft throughout the cargo compartment. An objective requirement is for the aircraft to have a powered system with remote hand controls. The threshold requirement is to be able to carry six 463L pallets and 50 passengers, approximately what the KC-135 carries today.

Aircrew, Passenger and Patient Support. The RFP specifies that separate crew rest accommodations will be provided for three to six crewmembers, and that it must be capable of supporting up to a 15-member crew and a maximum passenger or aeromedical evacuation patient load with sufficient lavatory and galley needs. At the minimum, it must be able to use existing patient support pallets for 50 total patients, with provisions for 16 litter and 34 ambulatory patients.

Communications and Information Systems. One of the most noteworthy sections of the KC-X RFP is the description of the communication systems requirements in the Net Ready Appendix to the SRD. A Key Performance Parameter requires that the KC-X be capable of supporting secure net-centric military operations and of accomplishing all identified joint, critical operational activities.

The KC-X will support the USAF Command and Control constellation, be fully connected to the Global Information Grid (GIG) and contain Network Centric architectures to provide global connectivity and interoperability with enhanced reach-back and reach-forward support, asset status, and reporting capabilities. Additionally, the aircraft will provide a clear growth path to future communications and intelligence systems that emphasize data transmission capability. Command and control (C2) will be

exercised through present C2 channels and future systems which utilize data transfer capability. During mission execution, the KC-X will receive information flow from multiple sources, with links to various C2 and Intelligence, Surveillance and Reconnaissance (ISR) platforms such as Airborne Warning and Control System (AWACS) and other mission aircraft.

The KC-X may support the Joint Force Commander with airborne network capability, C2 and enhanced battlespace awareness through modular payloads. With various types of payload packages onboard, the aircraft would be capable of enhanced communications relay or other mission-specific functions. These systems will allow Joint Force Commanders to communicate with and direct combat forces via advanced communications routing capability aboard the KC-X. Additionally, information coming from intelligence gathering assets or provided by other combat aircraft can be relayed to Joint Force Commanders through its airborne networking capability. Finally, the KC-X will provide an onboard local area network (LAN) with multiple commercial compatible connections distributed throughout the aircraft, including the flight deck, boom control and cargo areas. The LAN will provide crew and passengers with connectivity to the GIG.

Cabin Power and Electrical Systems. A number of 110-volt AC electrical outlets will be available and readily accessible on the flight deck and galley area to support any current or future mission needs. Additional outlets will also be available to meet passenger and aeromedical evacuation requirements and spaced on the right and left sides throughout the cabin and in the patient support area.

Aircraft Self-Protection Measures and Defensive Systems. A global mission, air refueling is subject to a wide range of threats, including chemical and biological environments and strategic or tactical use of Electro Magnetic Pulse (EMP). Directed energy weapons represent an emerging threat to the KC-X and include lasers and radio frequency weapons that could pose a threat primarily during ground operations and during takeoff and landings. The most likely threat elements are electro-optical radar and infrared surface-to-air-missiles (including man portable missiles), antiaircraft artillery and counter air aircraft. The most stressing threats are long range radio frequency (RF) surface to air missiles and long range RF air-to-air missiles. While the KC-X will not operate in an area of a known high threat envelope without requesting suppression of enemy air defenses and air support, the KC-X must be able to operate in medium threat or hostile environments through the use of aircraft self-protection measures and onboard defensive systems.

Improved reliability and maintainability, in combination with this set of capability requirements, opens the door to a wide range of potential future uses for the airplane. The large cabin, with its built-in electrical, communications and information systems, could be adapted to support multiple mission needs though modular payloads or permanent modifications.

Operational, Organizational and Doctrinal Issues

In the past, the Air Force has resisted suggestions to fully combine airlift, air refueling and other missions simultaneously on a single large aircraft. The KC-10 is recognized as a dual-role tanker-transport aircraft, but neither it nor the KC-135 have routinely been employed in the cargo role. Originally dubbed the "Advanced Tanker Cargo Aircraft," organizational priorities and management practices prevent the KC-10's airlift capabilities from being fully utilized and its contributions in numerous mobility studies are marginalized through assumptions about its planned use. While the reasons for this range from the organizational separation of the air refueling and airlift communities to a lack of compatible cargo loaders available worldwide, a key element is that the limited KC-10 fleet size has made the aircraft a high demand, low density asset. Whether the KC-X suffers the same fate has yet to be seen.

USAF senior leaders have emphasized that airlift is a vital capability for the new tanker fleet, as have Combatant Commanders, the Army and the Marine Corps, all of whom rely on airlift to move troops and equipment. Even though adding cargo- and passenger-carrying capability to the tanker fleet requires additional aircraft structure and systems at an increased cost, this is a prudent investment in future aircraft adaptability and flexibility. There will also be a slight tradeoff in capability because the weight of the additional structure and systems potentially reduces the amount of fuel that each aircraft can carry. Since the KC-X RFP already requires built-in

“In the past, the Air Force has resisted suggestions to equally combine airlift, air refueling and other missions on a single large aircraft.”

airlift capability enhancements, it appears the Air Force embraces this requirement.

In the RFP, the Key Performance Parameter (KPP) for airlift says that “the aircraft shall be capable of efficiently transporting equipment and personnel,” although there is no threshold or objective requirement established. There is no apparent weighting of the airlift KPP among the ten KPPs identified within the RFP, and no underlying metrics or analysis associated with it to date. A clearly articulated method to evaluate the value of this capability for source selection is also not evident. The value of the airlift KPP should be appropriately weighted relative to the air refueling KPPs, and there should be a clear method to evaluate value gained for pallets, passengers and litters. Otherwise industry will strive to maximize fuel offload capability at the expense of potentially very significant airlift capability. Historically, this occurred during acquisition of the KC-10, which did not incorporate adequate environmental and other capabilities to fully capitalize on its passenger carrying potential. In short, let’s not miss the opportunity to ensure that this important program is defined to optimize the versatility of this aircraft in both the air refueling and airlift mission.

Air Mobility Fleet Optimization. There is little dispute that the KC-X has the potential to increase overall air refueling and airlift capabilities and effectiveness, but changing the doctrine to operationally employ the KC-X to take advantage of these new multi-role capabilities is an entirely different matter. In addition to integrating the aircraft into the air refueling management and tasking system, efforts should be made to incorporate the KC-X fully into airlift management and tasking systems as well. This will allow greater use of its airlift capabilities if and when overall demand for air refueling stabilizes or dips to low levels.

The KC-X program presents opportunities to improve the utility of the entire air mobility fleet. By design, commercial airliners and their derivative aircraft are optimized to carry passengers and cargo payloads efficiently and cost effectively over long distances. Military airlifters, by comparison, are designed to carry military equipment of all sizes and transport them directly to or as close to the fight as possible, thereby trading efficiency for military effectiveness. Tactical capabilities such as roll-on/roll-off compatibility, airdrop, short field capability and the ability to transport over and outsize cargo are all examples of military-unique airlift requirements that create inefficiencies in other areas. It should therefore come as no surprise that both KC-X candidates can carry more pallets and passengers than the C-17, for example, which makes sense because their original design as commercial carriers optimizes them for that role. But they also lack the military-unique airlift attributes of the C-17, C-5 and C-130 described above that could be employed in a tactical environment.

The airlift capability inherent in the KC-X is not trivial; depending on the aircraft selected it will be able to carry 20 to 32 cargo pallets,

200 to 280 passengers, and 80 to 120 aeromedical evacuation litters. By comparison, the C-17 carries 18 pallets or 102 troops, the C-5 can carry up to 36 pallets and 73 passengers, and the KC-10’s cargo compartment can accommodate loads ranging from 27 pallets to a mix of 17 pallets and 75 passengers. The KC-X is clearly more than just a tanker, and will provide significant additional cargo capability and capacity for the Defense Transportation System. Some may fear that emphasizing the airlift capabilities of the tanker fleet may detract from C-17, C-5, C-130 and other airlift missions and acquisition priorities, but in reality the KC-X would likely complement the nation’s airlift force and better optimize the use of air mobility forces in general.

The KC-X will be an incredibly efficient strategic transporter of people, patients, and palletized or bulk cargo when not needed for air refueling. Used in this manner, it could provide a welcome relief to and complement the over-tasked airlift fleet, and allow those forces to be focused towards satisfying unique or specialized airlift needs that they were specifically designed to support. The C-5 and C-17 could be used more effectively to transport rolling, over and out-sized equipment over strategic distances, or the C-17 could be freed up to perform combat delivery missions into austere areas, a mission for which it is optimized. With its defensive systems and aircraft self-protection measures, the KC-X would also transport passengers and cargo into medium threat environments and combat zone airfields that civilian contract carrier aircraft could not risk flying into.

In addition, there is a historical supply/demand mismatch in

“The KC-X would likely complement the nation’s airlift force and better optimize the use of air mobility forces in general.”

air mobility forces that might be resolved with the KC-X. In recent years, the day-to-day demand for airlift capability has exceeded the supply available, while the tanker fleet has been historically underutilized except during wartime surges or limited phase operations. The low crew ratio of the tanker force is one variable that precludes achieving higher utilization rates for the fleet, and this is another area that deserves special attention. If higher tanker utilization rates can be realized, the ability to dynamically re-task tankers into an airlift role and back again, or to combine airlift and air refueling missions, has the potential to revolutionize air mobility operations by allowing the system to adapt more readily to surge demands in both tanker and airlift needs.

Aircraft Size, Parking and Fuel Considerations. The RAND AoA identified two other issues for decision makers to consider when choosing among alternatives. First, tanker alternatives differ in how much airfield parking area they require and from what airfields they can be operated. This is a feature of interest because of constraints on airfield parking areas, runway lengths and fuel availability in some theaters of operation. Smaller aircraft use less area but carry less fuel, and are thus reliant on the availability of fuel in forward operating areas. Alternatively, large aircraft that carry more fuel could offset low availability of fuel in theater. Since these requirements are specific both to the aircraft and the theater, how to value the airfield access issues and operational characteristics of the alternatives is a matter for discussion. There does not appear to be a methodology in the KC-X selection process to determine the relative value of aircraft size and parking versus fuel offload capacity, nor are assumptions about the availability of fuel in theater addressed. We cannot assume that fuel will be readily available at forward bases and areas where the KC-X is expected to operate, and the aircraft might very well find itself in a fuel delivery mission.

Fleet Mix. The Defense Science Board Task Force air refueling

report reported that a tanker fleet consisting of at least two different types of aircraft is likely to be the most cost-effective hedge against a massive, unanticipated problem grounding a fleet of a single airframe type. Furthermore, it surmised that some missions are dependent on large numbers of tanker aircraft (during fighter employment for example, when refueling is widely dispersed in area but compressed in time), whereas other missions could be more efficiently served by fewer, larger capacity aircraft, such as strategic bomber missions or during fighter deployment and redeployment. RAND's AoA study also found that a mixed fleet consisting of more than one of these alternative candidates had comparable cost-effectiveness, so the study concluded that there is no reason to exclude the possibility of a mixed Airbus-Boeing aircraft purchase on cost-effectiveness grounds alone. In summary, a mix of large tankers for strategic and deployment missions and smaller, tactical tankers for employment missions may be an option for USAF to consider in the long run. Historical use of the KC-135 and KC-10 illustrate the value of having both large and small aircraft in a mixed tanker fleet. The significant question that needs to be addressed is whether or not we need to increase the percentage of large aircraft in the mix. Historical demand and use of the KC-10 indicates that we currently do not have enough large dual-role tanker-cargo aircraft in USAF.

The Role of Large Aircraft in Combat Operations

The range of technologies and capabilities required by the RFP and inherent in KC-X candidate aircraft make them far more capable than the KC-135 for airlift and other secondary missions, and as a result raise new questions about how these aircraft will and could be utilized. These imbedded capabilities enhance the inherent flexibility of the KC-X platform to execute a wide variety of additional roles and missions in a manner that does not significantly detract from its primary aerial refueling mission. How important is flexibility and adaptability to evolving warfighting requirements and to what extent will the new tanker take on additional roles and missions? How will value be applied to these variables and what characteristics and capabilities will carry greater weight in the selection process? These questions spur a debate about the role and management of large aircraft in combat operations, with an underlying assumption that aircraft capable of performing multiple

"The long and storied history of the C/KC-135 fleet provides insights into how the KC-X might be employed during the next 40 to 50 years."

roles will provide greater flexibility and more warfighting options to future combatant commanders. The nature of this debate is driven by the expected future operating environment for these aircraft and how concepts of operations for these aircraft and their mission might change. A thorough discussion and study of all these issues is needed, with the primary goal of optimizing the capabilities of the entire air mobility fleet and Air Force capabilities at large.

The long and storied history of the C/KC-135 fleet provides insights into how the KC-X might be employed during the next 40 to 50 years. In the future, large commercial-derivative aircraft are expected to employ airborne laser and other energy weapons, serve as UAV "mother ships," launch space vehicles, or perform any number of as yet undetermined missions, with reductions in payload size, increases in stand-off and precision capabilities, and other technological developments driving potential changes. The key attributes that contribute to future adaptability and flexibility are being incorporated into the KC-X, including its long range and endurance, ability to be air refueled, built-in cargo and passenger handling capacity and capabilities, plus its electrical power capacity and net-centric communications capabilities. By

incorporating a technological and communications architecture that is open-ended, the KC-X could evolve into a true multi-mission capable aircraft, with future modifications either permanent in nature or attained through the addition of payload modules and adaptations both within and outside the aircraft. Its ability to remain on station through air refueling could also lead to more "persistent" air operations, with mission length measured in days – or weeks – rather than hours. Persistent operations of this nature would require a revision in on-board crew and passenger support capabilities and development of new concepts of operations. No longer constrained to a single mission, the role of large aircraft in combat operations could be expanded with acquisition of the KC-X and its follow-on aircraft.

Conclusion

Air refueling is one of the most important capabilities the Air Force provides to joint military operations, and we must ensure the continuing viability of this vital national capability. While the KC-X program is principally a tanker recapitalization program to replace the capability inherent in the current air refueling fleet, it is absolutely essential that the full range of operational roles and missions that the aircraft could fulfill be considered in the development process. We've learned a great deal from the history of the KC-135/C-135 fleet, and how its long range, endurance, fuselage size, and fuel receiving capability contributed to its utilization in a variety of air missions. This next generation of tanker aircraft will possess an even greater range of capabilities that provide the U.S. with many more options for future use – if we can widen the discussion on the role of this aircraft in combat operations and eliminate historical constraints on how we utilize our tanker fleet. Acquiring an aircraft that simply replaces the current capacity and capability of the KC-135 on a one-for-one basis does little to enhance the nation's long-term warfighting options, and USAF

"USAF should be careful not to constrain the role of the KC-X."

should be careful not to constrain the role of the KC-X. While the primary mission of air refueling will drive the KC-X requirement, we must insist that the full potential of this aircraft be explored for other roles and missions it might fulfill during the next 50 to 75 years. Building in the capability to maximize cargo handling, passenger support and aeromedical evacuation capabilities is a good start, as is increasing the communications, information processing, battlespace awareness and defensive capabilities of the aircraft. The cost of doing so is a worthy investment, as building in greater flexibility and adaptability at the outset will increase the overall utility of the aircraft over time, provide greater value to the American taxpayer, and give warfighting commanders substantially more capability options in the future. The next step is to consider the potential operational, organizational and doctrinal implications of this aircraft. In the end, the KC-X and its successors might very well transform the nature of future air and joint operations, providing we don't treat them as "just" another tanker.



Gregory P. Cook is a former Air Force Colonel now engaged as an independent analyst, author, speaker and consultant. A life member of the Airlift/Tanker Association, Cook serves as the Association's Public Affairs Coordinator and is a frequent contributor to A/TQ.



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Mobility
HERITAGE & HEROES

1st Lt. Suella Bernard
**A Constant
Courage**

by Murdoch Moore

*When First Lieutenant Suella V. Bernard
of the 816th Medical Air Evacuation Squadron,
U.S. Army Air Force, learned of an impending
glider flight into the Remagen bridgehead to
evacuate casualties
she immediately volunteered
for the mission...*

Suella Bernard was a part of what has been called "America's Greatest Generation." She grew up in Waynesville, Ohio (south of Dayton) during the Depression, a time of uncertainty for the future and institutions. The year 1940 saw her graduating from the Springfield (Ohio) City Hospital School of Nursing. While some of her classmates headed for the big city lights and multi-storied hospital wards of Chicago, Cincinnati and Kansas City, Suella sought a higher calling – that of a U.S. Army Air Force flight nurse. Her ward, a 18 stretcher-capable C-47 flying the unfriendly skies of wartime Western Europe.

First Lieutenant Bernard's trade route was among the newly carved out landing strips and recently captured German airfields. These held casualty evacuation stations. She provided transitory medical care for the wounded as they were flown to rear area receiving hospitals in France and the United Kingdom. Her C-47 was not marked with red crosses – per the "Rules of War" to do so would make them ineligible for hauling troops, fuel, and cargo into those forward airfields. American flight nurses, dead-heading out, adapted to the functional ways of war – snuggling into the empty deck spaces, they talked, read, relaxed or took cat naps. This was the quiet time, the time before the doors opened and the work with broken bodies and resultant worries began.

Worries before the door opened were left to the guys in the pointy end of the aircraft. The flight nurses let them worry about flight irritants such as muddy runways, no navigation aids, a fluid war front, Luftwaffe fighter sweeps and the occasional pot-shot fired from by-passed German forces.

On March 22nd, 1945, Suella did things a little differently. All of the above duties and hazards were still present, but her air ambulance now lacked engines. She alone among six available flight nurses volunteered to fly across the Rhine River to the Remagen bridgehead to pick up wounded in a Waco CG-4 cargo glider. Her return, if it worked, would be via an aerial snap tow* from a C-47.

A faulty German demolition job and a few courageous infantrymen and tankers enabled the 1st U. S. Army to gain the Rhine River's east bank. While British General Bernard Montgomery urged no

advance beyond the bank bridgehead pocket – to stay the course for his planned, big, elaborate waterborne/airborne leap to the north (Operation VARSITY) [See "The Other Rhein Crossing" – Page 20] – Supreme Allied Commander Dwight Eisenhower and his American generals saw it differently. High command orders came down. There was literally only "one-way" traffic allowed on the Remagen Bridge – eastward. When supporting pontoon and treadway (walking) bridges spanned the Rhine they were also designated "one way." It was a tough and absolutely correct order. It was especially tough if you were among the American wounded on the Rhine River's east bank.



In this rare photograph of an individual earning the Air Medal, First Lieutenant Suella V. Bernard (kneeling center) comforts a wounded soldier just before the modified Waco GC-4 cargo glider they were aboard was "snatched" aloft by a C-47 and heading for a hospital in France. (Photo courtesy of Silent Wings Museum, Lubbock, Texas)

Due to the intensity of the German counter attack (from frogmen to V-2 rockets) American wounded piled up on the Rhine's east bank. Occasionally an idle or west bank returning Army combat engineer boat would back haul wounded, but it was not enough. As there was not enough available land for an airstrip, a staff officer suggested using gliders to haul out the more critically wounded – an aerial snagged glider needing only 100 yards to take off. A medevac glider experiment had been tried in rear area France and was found practical. The order went out - "Send in Medevac Gliders!"

I now revert to Gerard Devlin's excellent SILENT WINGS (St Martins Press /1985) for his description of the mission:

Orders to fly the medevac mission were issued on March 22nd by the IX Troop Carrier Command. The mission order directed the 402nd Squadron to fly its two modified gliders (twelve stretcher mounts/two triple stacked per side) across the Rhine and release them for a landing beside the 1st Army's main medical clearing station near the

city of Remagen. As soon as the gliders had been filled with wounded soldiers, the tow planes were to return to the LZ, make an aerial pickup, and deliver them to the 44th Evacuation Hospital, located 50 miles to the rear of the American front lines in France. There the gliders would be met by teams of medics who were to rush the wounded directly into surgery. If this worked it would be first time that any of the combatants in Europe had used gliders to evacuate battle casualties.

It was nearing noon on the twenty second when the two flying ambulances were hauled into the sky on the first leg of their flight to the Remagen bridgehead. The combinations flew in single file, one directly behind the other. The leading glider had Lieutenant Colonel Louis "Skid" Magid and Lieutenant Howard Voorhees at its controls. The second glider's chief pilot was Lieutenant Walter A. Barker. His copilot was Major Howard H. Cloud, who had just recovered from a severe leg wound sustained five months before while landing a glider near the city of Groesbeck, Holland (Operation MARKET GARDEN). Also on board the second glider was an army nurse, Lieutenant Suella V. Bernard, who had volunteered to go along on the mission to care inflight for the more seriously wounded soldiers.

Bernard was a member of the 816th Medical Air Evacuation Squadron. She had flown a number of similar missions aboard powered airplanes, but this was the first time she had ever been in a glider.

Less than an hour after departure the glider-tug combinations crossed the Rhine at an altitude of 600 feet. Barely visible in the distance were eight P-51 Mustang fighters escorting them. The leading glider cast off first and made a good landing beside waiting field ambulances which held 24 soldiers, most of whom had been seriously wounded that morning. Fifteen minutes after it touched down, the first glider was snatched out and on its way to France.

The second glider came in, and teams of medics quickly loaded the remaining 12 patients on board while other soldiers assisted a ground crew that was preparing the glider for pickup. During this loading period Lieutenant Bernard discovered that the

four most seriously wounded patients in her glider were German. Some of the American patients complained bitterly to Bernard about the presence of the Germans, saying they should be left behind. She eventually quieted their protests, reminding them that the Geneva Convention obliged the US Army to provide full and impartial medical treatment to both German and American battle casualties.

Four members of the ground crew lowered the gliders upraised nose section immediately after the last casualty had been loaded. Major Cloud and Lieutenant Baker then climbed aboard, strapped themselves into their seats, and then went through a series of safety checks in preparation for pickup. A bare two minutes after the pilots made the final safety check their tow-plane swooped down, snatched the glider, and lifted it smoothly into flight. One of the nylon straps supporting the litters was pulled loose from its tiedown, but Nurse Bernard, who happened to be near the strap when it gave way, repaired it before it could cause any further injury to the patients.

Some 30 minutes after they were snatched from the Remagen bridgehead, both of the flying ambulances landed in a cleared field beside the 44th Evacuation Hospital in France. The evacuation had been a complete success. Both pilots and Nurse Bernard were awarded an Air Medal for the part they played in (the evacuation).

Also receiving Air Medals for the evacuation were the other CG-4 and C-47 crew members, plus, Captain Albert D. Haug, Chief Surgeon of the 816th MAES,

(acting as flight surgeon on one of the gliders – which one is historically unclear). Lieutenant Bernard would later receive a second Air Medal for flying fifty air evac missions.

*Pick-ups of gliders from the battlefield by the “snatch” method had been in



WW II flight nurses, including 1st Lt Suella Bernard (leaning center) take a much deserved rest during an all too brief break in their daily routine of caring for wounded soldiers. (Photo courtesy of the Delp family).

practice and used by troop carrier units in the European Theater since Normandy, when the technique was employed to recover serviceable gliders where C-47s could not land. A ground crew set up a pick-up station for the glider, and a low flying C-47 specially equipped with the pick-up unit would swoop in low trailing an arm

with a hook. The hook was connected to a steel cable that passed through the arm and wound around a drum inside the pick-up mechanism mounted in the aircraft. Pay out of the cable was controlled by a multiple disc brake in the drum unit. As the hook connected with a glider tow loop suspended from the pick-up station, shock to the glider was controlled through the pick-up mechanism brake and the glider became airborne as the cable played out.

The following is the personal, aft of the center of gravity, view of the mission by Suella (Sue) Bernard Delp –

Glider Pick-Up At Remagen

“Several persons in recent months have asked me about the glider pick-up with patients at Remagen, Germany and across the Rhine River during WWII when all the bridges were temporarily out. This happened forty five years ago - on March 22nd, 1945 - and this is some of what I remember.

“First the planning had all been done when I came upon the scene and the gliders already (had been) made into hospital ships for transporting patients.

“I remember this was not a completely new operation, since it had been previously been done over mountainous territory in the China-Burma-India theatre, although reportedly not with nurses. At any rate, it was not heroic on my part - Major Haug (our CO) had asked me to go on this flight just after my return from one of our routine flights with patients on a C-47. I was told I would care for patients in flight, the same as on other trips, and I

Another rare photograph taken on March 22, 1945. This panoramic view shows one of the Waco CG-4A gliders being loaded with American and German wounded less than a half hour before it was snatched into flight by a C-47 and flown to a hospital in France. (U.S. Army photo).



readily agreed to do so.

"I remember our landing at the pick-up point – a field – was smooth and uneventful. However, patients were not there and ready to be loaded as anticipated. I later heard that



The first glider on the historic Remagen med evac mission landing in a field near an orchard just outside Rheinbreitbach, Germany, on 23 March 1945. (Photo courtesy of the Delp family).

some had been ready the day before and we did not make the flight because of bad weather. There were several army ground personnel milling around, but no patients.

"I remember we waited what seemed like quite a long time and became concerned that the C-47 circling over-head would run out of gas and have to leave without us. I did not see and do not remember anything about the second glider.

"I remember the patients did finally arrive, were loaded in the glider, and the C-47 picked us up. There was quite a jolt on take-off and one of the thongs by which the litters were suspended broke – thus dangling at one corner. Someone riding with me helped me to re-attach it. My one completely unconscious patient happened to be in this group. And I remember worrying a great deal about him.

"I don't know how long the flight lasted but one of the wheels collapsed on landing and we came to rest against a fence and had a smooth landing in spite of it. The patients

were removed from the glider and taken by army ambulance to a hospital.

"This probably could have become a successful on-going operation, but, since transportation across the Rhine was reestablished shortly thereafter, there was no longer any need for any similar air evac missions."

While Lieutenant Bernard might have played down the mission and her fortitude, it was not quite an ordinary medevac mission. Glider crew members in a combat zone had roughly a 20% lethality rate per mission. This was roughly the attrition (killed, wounded, captured) rate of B-17 crewmembers flying unescorted missions over Germany in 1943. While the B-17 had ten fifty caliber machine guns to defend itself, the crew defense system on the CG-4 was passive – its canvas skin.



Preparing a CG-4 for patient on-loading during the Remagen med evac mission. The gliders were modified to carry up to 12 patients each. (Photo courtesy of the Delp family).

Lieutenant Suella Bernard is the only known nurse. Allied or Axis, to have flown on a combat glider mission in World War II or thereafter. Combat gliders were a stop gap, short field, insertion method quickly superseded by the helicopter, her claim to fame is not likely to ever be challenged.

After helping to assure the continuance of western civilization, 1st Lieutenant Suella Bernard, like the rest of her World War II generation, returned to America to restart their lives. Marriage, family, and hospital



Loading patients aboard the glider for transport to a hospital in France. (Photo courtesy Delp family).

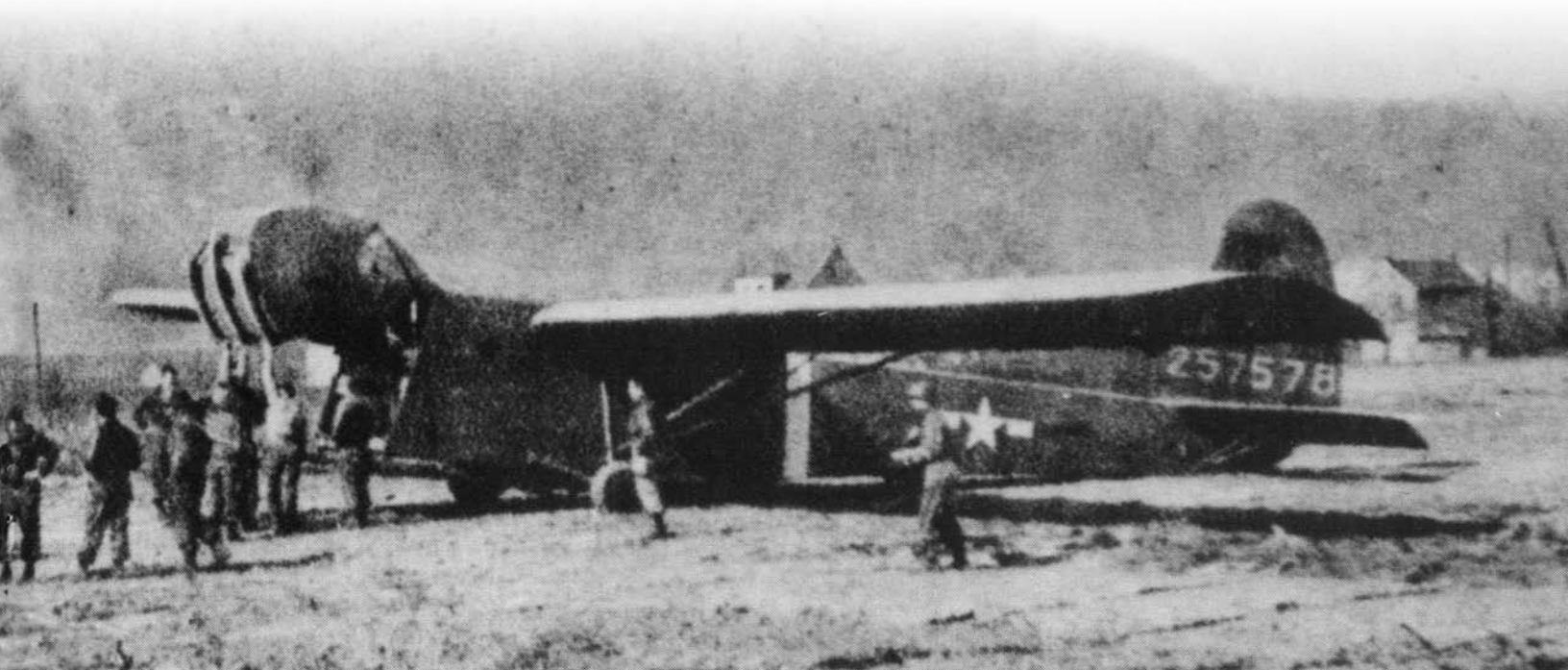
nursing followed. Her retirement years found her doing volunteer pre-admittance nursing. When she passed away in April, 2002, the air mobility community lost an unheralded hero and pioneer, or as she would, no doubt, have seen it, an Air Force flight nurse simply doing her job.

Sources:

I would like to thank son John Delp; nieces Anrdea Bernard Stubbs and Rhonda Bernard; and, nephew Paul Bernard, for their help in acquiring information concerning Suella Bernard Delp. Additional help was provided by Fred McDougale, Waco Museum, Troy, Ohio; Eddy Grigsby, The Silent Wings (Glider) Museum, Lubbock, Texas; and, the Museum of the United States Air Force, Dayton, Ohio.

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THE OTHER RHINE CROSSING *by Murdoch Moore*

World War II's Operation VARSITY?

It had none of the first usage novelty of North Africa (capture the airfield for immediate use by your jump plane), the friendly fire incident of Sicily (23 C-47s shot down), the poor air navigation of Normandy (paratroops landing 25 miles from their DZ), or the unexpected armor of Amhem (10,095 airborne troops in, 2,163 came out) so, perhaps that's why, Operation VARSITY, the single-largest airborne movement in history (21,700 airborne troops leaping the Rhine River) remains largely unknown. Sadly, even the divisions carried, the American 17th Airborne and the British 6th Airborne, are now largely forgotten.

An air armada of 1,696 transports and 1,348 gliders carried those two divisions. (Numerical discrepancy explanation: An empty C-47 would usually tow two 15 passenger American Waco CG-4s. The heavier British 25 trooper Horsa and tank carrying Hamilcar (22,000lb capable) were single towed by RAF heavy and medium bombers).

The Rhine crossing was advanced planned and choreographed. For a tactical twist, the airborne assault would follow a night river crossing by British and U.S. Armies (U.S. Navy landing craft were trucked overland for the crossing). In fact, staging was so complete a VIP observation platform was built, allowing Generals Eisenhower, Montgomery, Ridgeway and British Prime Minister Churchill front row center seats.

The Germans were not unaware of the west bank build up – 710 light and 115 heavy anti-aircraft guns were added to the Wesel, Germany area. Many of those guns were manned by experienced, long serving Luftwaffe personnel. In sharp contrast, the local Wehrmacht was a “scratch” army – its under-strength, pulverized divisions back-filled with homeguard adolescents and pensioners.

As scheduled on March 23, after an intense artillery bombardment, Navy and Army aweighed to the far shore. Before the first air transport crossed over the Rhine the Wehrmacht was in retreat, but covering that retreat were those 825 anti-aircraft guns. As noted the German anti-aircraft gunners were air-battle hardened and not conditioned to retreating. Those guns would eventually down 53 aircraft and badly damage another 440 – a near 25% transport aircraft casualty rate

The British glider tugs high-towed and released at 2,500 feet. This reduced RAF aircrew casualties from small arms fire, but allowed the German AAA time to line up and sight in on the steady-course-holding, slow moving gliders. RAF casualties were light. Not so among the pilots of the British Army's Glider Pilot Regiment (27% killed) and those seated behind them.

From a vantage point on the west bank of the Rhine, Prime Minister Churchill (seated), General Eisenhower (center) and Field Marshal Montgomery observe Allied glider and parachute assault landings taking place across the river near Wesel, Germany, on March 24, 1945. (U.S. Army Photo)

The Americans low-towed at 600 feet, just enough time for glider release, a steep banking turn, and rollout into the LZ. Jumping at 600 feet the American paratroop hang time was a few seconds, their 2,500 feet jumping British counterparts hung for a minute or more.

An unfortunate by-product of the American low altitude drop was an increase of small arm/light AA hits on the Curtiss C-46. This was the first usage of the C-46 in a major airborne operation. It seemed a good idea –the C-46 could carry thirty paratroops, compared to the C-47's twenty, and unlike the C-47, the C-46 had exit doors on both sides of the fuselage, allowing a quicker exit and a tighter “stick” ground pattern. Unfortunately the C-46 did not have self-sealing tanks. One hit would allow high octane fuel to stream in to and accumulate beneath the cargo deck. An ignition source, be it engine spark, tracer or hot round, would turn the C-46 into a cauldron. Of the 53 aircraft lost in Operation Varsity thirty four were C-46s. General Ridgeway, a multi combat jump veteran, immediately issued an order barring C-46s from further paratroop transport duty.

Allied casualties, mostly air related, were roughly 2,500 (506 killed). The German killed, wounded and/or captured numbered roughly 2,000 lost. A link up was made at noon.

General Montgomery got his “showboat” crossing of the Rhine. (He was actually third over – his arch nemesis, General George Patton, had crossed two days before). Less than two months later the Germans surrendered unconditionally.

History judges Operation Varsity as anti-climactic. It kept the Nazis off balance, but was in no way decisive. Yet lessons hard-learned by the airborne team earlier in the war enabled two second string airborne divisions to come in and play at varsity level.



*History
can be a very moving
Experience...*



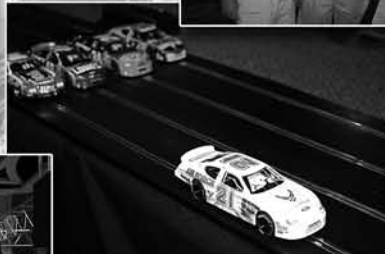
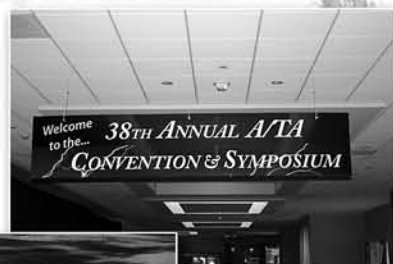
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Industry HIGHLIGHTS

The 2006 convention in Orlando represented a number of firsts for A/TA and was clearly another successful event. This was our first convention held at the Orlando World Center Resort which was a superb location for our event. When we return to Orlando in 2010, we will be able to have our entire exhibit hall in a single ballroom as well as much larger seminar rooms for our symposium. Thanks to our exhibitors, the 2006 exhibit area located in and around the Crystal and Grand Ballrooms was a spectacular sight. We had our largest number of exhibitors: a total of 151 (+17%) and we increased our revenues by 23% - this is how we keep the individual registration fees low. Many of our exhibitors had larger exhibits this year and we still had approximately the same number of government exhibitors. Any way you look at it, our exhibit hall was a resounding success - thanks again, in large part, to our industry partners.

We are busy developing the exhibit floor plans for our 2007 convention that will be held at the Gaylord Opryland Hotel in Nashville. Negotiations are under way and our facility requirements are nearly complete. We will be posting updated materials for our exhibitors on our website as soon as possible to support your planning efforts. I will be enlisting the support of a few volunteers to help me better support our industry partners - you will be hearing more about this soon (keep an eye on our website for details). A/TA also returns to our typical Thursday-Sunday venue in Nashville (and this year we avoid Halloween), October 25-28, 2007.

Starting this year, we are defining new categories for our exhibitors so that we can better serve our growing number of exhibitors. Below is a list of new categories and a brief description of each for your consideration. These new categories are intended to better describe our A/TA-industry relationship and better recognize our loyal supporters who are critical to our convention success:

- **INDUSTRY PARTNERS** - This is the category that we previously called Corporate Members. These are our loyal industry supporters that wish to be recognized as A/TA industry members and pay an annual corporate membership fee (\$1500). Almost all of these members are also annual exhibitors and receive preferred exhibit rates (lower) and preferred locations for their companies.
- **INDUSTRY SUPPORTERS** - These exhibitors do not pay the annual membership fee, but are still consistent supporters of A/TA. Many of these are our smaller exhibitors that have been coming to A/TA for a long time and we value their loyal support. These exhibit spaces are assigned following the Industry Partners and are sequenced based on payment of the exhibit fees.
- **GOVERNMENT SUPPORTERS** - These are paying government exhibitors who receive preferred rates and are assigned spaces based on sequence of payments received (same as Industry Supporters). These government exhibitors have an option of one additional pro bono space with the space(s) purchased.
- **PRO BONO** - These are government exhibitors that are authorized a single exhibit space (free of charge) that is assigned after all the paying exhibitors are located in the exhibit hall. Frequently, not assigned until shortly before the convention.

We are evaluating additional changes to better serve our exhibitors and streamline our administrative processes. More information will be forthcoming on these changes in the near future. Thanks again to all our exhibitors - you make A/TA a first-class event and play a vital role in our convention success - you are valued partners of A/TA.

Regards,
Bob Dawson, VP Industry Affairs

A/TA Corporate Members (as of 1 January 2007)

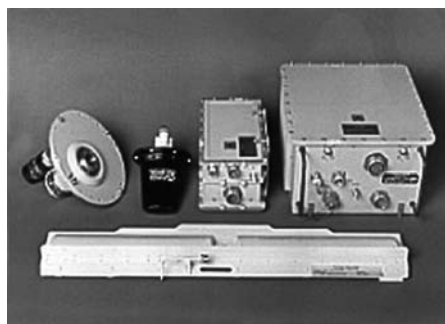
AAI Engineering Support Inc.
AAR Mobility Systems
ARINC
Armed Services Mutual Benefit Association
Atlas Air Worldwide Holdings
BAE Systems of North America
Bell Helicopter Textron Inc.
The Boeing Company
Booz Allen Hamilton
Bose Corporation
Butler Parachute Systems Group, Inc.
C-27J Spartan JCA Team
CAE
Capewell Components Company
Cessna Aircraft Company
Computer Sciences Corporation
Consolidated Air Support Systems (CASS), Inc.
Derco Aerospace, Inc.
DRS EW & Network Systems
DRS Sustainment Systems & Services
DRS Training & Control Systems
Dyn Corp International
Dynamics Research Corporation
EADS North America
Federal Express Corporation (FedEx)
Federated Software Group
Flightcom Corporation
FlightSafety International
FMC Technologies, Inc.
GE - Aviation
Global Ground Support
Goodrich Corporation
Gulfstream Aerospace Corporation
Hamilton Sundstrand
Honeywell International
IBM
Jeppesen
L-3 Communications, Integrated Systems
Little Giant Ladders / Wing Enterprises
Lockheed Martin Corporation
McLane Advanced Technologies, LLC
Moog, Inc.
MTC Technologies
National Air Cargo
NAT Seattle Inc.
Northrop Grumman Corporation
Parker Aerospace
Phantom Products, Inc.
Pratt & Whitney / Military Engines
Quantum3D, Inc.
Raytheon Company
Rockwell Collins, Inc.
Rolls-Royce North America
SAIC
Sanmina-SCI
Sargent Fletcher, Inc
Smiths Aerospace
Snow Aviation International, Inc.
Spokane Industries, Inc.
Standard Aero Ltd.
Support Systems Associates, Inc.
Symetrics Industries, LLC
Systems & Processes Engineering Corp
Telephonics Corporation
Thales
Thrane & Thrane
Tybrin
Volga Dnepr Airlines
Vought Aircraft Industries, Inc.
Wel-Fab, Inc., Collapsible Container Division
World Air Holdings

CORPORATE MEMBER SPOTLIGHT



DRS: "Tomorrow's Technology Today"

DRS Technologies provides leading edge, integrated high technology products, services and support to military forces, government agencies, prime contractors and commercial customers worldwide. Focused on defense technology, DRS develops and manufactures a broad range of mission critical systems that uniquely position the company to support the military's near-term force modernization and emerging transformation initiatives. DRS's high-technology products and services are used by all branches of the U.S. military, major



DRS's SKE, now in its sixth generation, has been installed on numerous U.S. and international military transport aircraft for more than thirty years, including C-130 Hercules, C-141 Starlifter, C-1 Trader and other aircraft.

aerospace and defense prime contractors, government intelligence agencies, international military forces and industrial markets. After 38 years of service to the defense industry, DRS now holds leading market positions in thermal imaging devices, combat display workstations, electronic sensor systems, power systems, battlefield digitization systems and deployable flight incident recorders. DRS also provides communications and surveillance systems, diagnostics and test systems, and training and simulation systems.

As a proud corporate member of the Airlift/Tanker Association, DRS actively supports U.S. Air Force and Air Mobility requirements and forces worldwide. By providing high quality products and services, DRS's experience and qualifications as a systems/subsystem integrator continues to satisfy warfighter airborne, shipboard and ground mission requirements.

Through multiple lines of business (LOB) that include Mission Avionics, DRS develops airborne networks such as Formation Stationkeeping equipment, deployable flight recorders, mission recorders, boresight systems, and digital imaging. DRS's Control

Systems LOB provides sensor system integration, onboard power and weapon controls, air cargo systems and aerial delivery systems. The Range Instrumentation LOB supplies ground electronic warfare products such as threat emitters and equipment trainers, as well as test and training range instrumentation. DRS's Sustainment Systems LOB provides the warfighter with environmental control, fuel and water distribution, decontamination systems, combat support capabilities, such as heavy materiel handling systems, reconnaissance and surveillance systems integration, ground support and automatic test equipment, security systems and radar systems.

Stationkeeping Equipment (SKE)

DRS Electronic Warfare and Network Systems (EWNS) has been the world's leading supplier of instrument formation flying and air drop systems for over 40 years. Formerly Sierra Technologies, the company developed Stationkeeping Equipment (SKE) for the U.S. Air Force in the late 1960's, with five generations of SKE subsequently installed on over 1000 C-130s, C-141s, C-17s and allied aircraft worldwide. The system allows SKE-equipped aircraft to fly precise formation in instrument meteorological conditions (IMC) to air drops and formation instrument approaches and landings. Using the DRS-developed AN/TPN-27B mini zone marker as a navigational aid, aircraft equipped with SKE can conduct precise air drops in IMC without use of other external aids such as GPS or ground-mapping radar.

SKE is a successful, combat-proven capability. During Operation Urgent Fury in Grenada in 1983, SKE-equipped C-130s conducted combat airdrops over Grenada, and formations of C-130s and C-141s used SKE to execute multiple combat airdrops during Operation Just Cause in Panama in 1989. During combat operations in Northern Iraq in 2003, fifteen C-17s equipped with SKE successfully completed the largest airborne operation since World War II.

Since joining DRS, the company continues to work with Air Mobility Command and prime contractors to integrate and improve formation flying systems and capabilities on existing and new-generation aircraft. In 2005, DRS EWNS continued the technological evolution of SKE with investment research and development of its Wireless Wideband Network (WWN). WWN technology allows

greater capabilities for larger formations, civil aviation compatibility, improved reliability and enhanced operational safety, with a design compliant to FAA software aviation guidelines as defined by certification requirements DO-178B and DO-254. Designed to meet air mobility formation capability needs, WWN is at the core of the next evolution in SKE technology known as SKE Generation VI or SKE GenVI. This leap forward in the evolution of SKE promises to provide a new, higher standard of formation positioning technology that is compact, reliable, and available at low cost.

DRS is the only company to specialize in formation flying systems for combat delivery in IMC and continues to invest in advanced SKE technology to meet the evolving requirements for independent safe



Formations of C-130s and C-141s used SKE to execute multiple combat airdrops during Operation Just Cause in Panama in 1989.

formation flight. DRS understands and is addressing both near and long-term SKE sustainment issues as they relate to the entire Air Mobility fleet. No other company has more history, experience, technology or investment in SKE than DRS EWNS.

TACAN (Tactical Air Navigation System Equipment)

DRS's TACAN equipment operates in conjunction with TACAN and VORTAC ground stations to provide distance, ground speed, time-to-station and bearing with respect to station data. The solid-state, lightweight, high performance AN/ARN-136(V) airborne TACAN system, developed by DRS, incorporates advanced electronic technology and design concepts, and consists of a receiver-transmitter, azimuth computer, control unit and range indicator. When teamed with other instruments, DRS's TACAN provides the nucleus for a highly versatile and comprehensive

navigation system with all the capabilities needed for efficient operation in today's air traffic environment. It is currently in full-rate production for the Boeing T-45 Advanced Jet Trainer Program.

Tactical Training Realism – Electronic Warfare Threat Simulators

USAF trains aircrews with a DRS-built system called the Unmanned Threat Emitter



During combat operations in Northern Iraq in 2003, fifteen C-17s equipped with SKE successfully completed the largest airborne operation since World War II.

(UMTE). This system radiates threat signals that simulate surface-to-air missiles and anti-aircraft artillery radar, and is designed to be environmentally rugged, unmanned, and remotely operable. UMTE is deployed worldwide at electronic warfare (EW) ranges to support tactical training in a realistic EW environment. The Mobile Threat Emitter System (MoTES) also serves as a valuable training tool, providing tactical mobility with highly accurate threat representations of radar-guided anti-aircraft artillery and surface-to-air missile systems. The company continues to develop new electronic warfare threat simulators geared toward modernizing US Air Force, Army and Naval training facilities.

DRS-EWNS Technical and Support Services

At the heart of virtually every system developed by DRS EWNS over the past two decades is real-time embedded software. Its software engineering team has developed over 300,000 lines of code in various computer languages, with software targeted to a variety of platforms, including Intel and Motorola microprocessors, Digital Signal Processors and personal computers. In the area of support engineering, DRS-EWNS complements its proven reputation for technical excellence with an engineering support team whose specialized areas of attention contribute to its product reliability and customer satisfaction. Some of its support engineering includes reliability and maintainability engineering, integrated logistics support services, electrical stress analysis and derating, test engineering, prototype engineering fabrication and build, system engineering and analysis, and a full service documentation and publication department.

Test and Training Range Instrumentation Systems

DRS Training and Control Systems (TCS) has fielded and supported a wide range of both test and training systems worldwide for over 40 years. We design and manufacture GPS-based airborne instrumentation pods and internal systems for fighter, bomber, transport, helicopter and experimental test platforms for domestic and international customers. Our USAFE Rangeless Instrumentation System (URITS) is in operation daily by USAF aircrews to train one day and fly real world combat operations the next. The DRS P4RC Airborne Instrumentation Pod is widely used for domestic rangeless combat training. Our next generation P5 Combat Training System (P5CTS) offers worldwide airborne instrumentation and state-of-the-art readiness training capabilities such as electronic warfare, no-drop bomb scoring, and enhanced weapon simulations, with real-time kill notification/acknowledgement. The DRS Advanced Range Data System (ARDS) is the time, space, position information (TSPI) standard at all major U.S. test ranges. DRS TCS also provides the hardware and software to complete the ground infrastructure for these ranges, including post mission and real-time display and debriefing ground stations, microwave systems, training/documentation and after market performance based logistics support. DRS TCS tailors life cycle support for domestic and international customer test and training systems with a full range of test equipment, spares, training, documentation, depot repair, and contractor logistics support.

Air Cargo Handling Systems

Since 1964, DRS TCS has designed, developed and produced onboard cargo handling and aerial delivery systems for airdrop supply operations, point-to-point air cargo transport, and time-critical sensor and weapon system deployment for military aircraft. These systems are in routine use on the EADS CASA C-295, CN-235, and C-212 aircraft with various allied air forces. DRS TCS also designs and produces specialized onboard cargo handling systems used on the U.S. Army Special Operations forces MH-47 helicopter and the U.S. Air Force KC-135 tanker aircraft.

Power Control Systems

DRS TCS provides power control systems for a variety of airborne, shipboard and ground-based applications around the world. Designed for military and commercial applications, these systems distribute and control the necessary power for weapons, systems, subsystems, motors, fans and lighting. Airborne applications

include generator control units involved in the regulation of aircraft onboard electrical power generators.

DRS Technologies: One of the World's Fastest Growing Defense Technology Companies

While DRS EWNS and DRS TCS provide specialized products and support for USAF Air Mobility forces and other customers, the impact and reach of their parent company DRS Technologies is far more extensive. DRS strives to provide quality products and services and stand behind them, invest in research and development and new market opportunities, and leverage existing core defense programs and business areas. The company has implemented an aggressive strategy for growth, focused on aligning the company with the Department of Defense's transformational efforts, building strategic alliances with other companies in the U.S. and abroad, and pursuing synergistic acquisitions to further grow the business. By globalizing its market reach and partnering with industry leaders on high-priority programs, DRS Technologies will remain well positioned as a vibrant, mid-tier technology leader. DRS has demonstrated that it has the agility, technology and focus to respond quickly to customers' needs. With a compound annual revenue growth



While DRS EWNS and DRS TCS provide specialized products and support for USAF Air Mobility forces and other customers, the impact and reach of their parent company DRS Technologies is far more extensive.

rate of 30% over the past five years, DRS has been recognized as one of the fastest growing defense technology companies in the world. The company now employs over 9,700 people worldwide, operating in 24 States, Canada and the United Kingdom.

DRS Technologies' commitment to the Airlift/Tanker Association is evidenced by the three corporate divisions which are A/TA Corporate Members: DRS EW & Network Systems, DRS Sustainment Systems & Services and DRS Training & Control Systems. The Association thanks DRS for its continuing support.

AMC History Office Earns First General Bryce Poe II Award

by Tech. Sgt. Mark Diamond, Air Mobility Command Public Affairs

The Air Mobility Command History Office, located at Scott AFB, Illinois, is the first recipient of the U.S. Air Force General Bryce Poe II Award.

The new award – presented by the Air Force chief of staff during the recent Air Force History and Museums Program Worldwide Conference – recognizes the best annual history written by a major command headquarters history office.

AMC Command Historian Lillian Nolan said being recognized for their annual historical report shows the Air Force chief of staff's level of commitment to heritage and the Air Force History and Museums Program.

She added that the recognition means even more knowing that her office is the first recipient of the Air Force-level award.

"I believe we in AMC History are proactive in all we do for our commander and staff," Ms. Nolan said. "It is obvious that my folks love their work by the level of excellence we have been able to achieve."

Several members of the AMC History Office echoed Ms. Nolan's statements.

"It was quite an honor for our office to receive this award, especially when you consider the fact it was the initial presentation of this new award," said John Murphy, who accepted the award on the behalf of AMC History Office.

He said the fact that the presentation of an award that recognizes his office's hard work and dedication took place in front of their peers made it that much better.

"I think our office is full of dedicated professionals who take pride in the work we do, so to have that acknowledged this way was simply fantastic," Mr. Murphy said.

Mark Morgan, another member of the AMC History Office present during the presentation, described the award as "a very pleasant surprise" and "pretty exciting."

"Throughout the U.S. Air Force History and Museum Program we all put in long hours and a lot of hard work to support and assist the commanders, so recognition of this sort was definitely gratifying," Mr. Morgan said.

"I was honestly unaware that there was an award for best MAJCOM annual history," said Kathy Skipper, also from the AMC History Office. "I was and am very proud to be a member of this team. We all work very hard in this office and love the mission here at AMC. It is truly a privilege to be one of the people responsible for recording the history of this great organization."

According to Ms. Nolan, the Air Force History and Museums Program's mission is to improve U.S. Air Force combat capability and program development through the collection, preservation, interpretation, dissemination and display of historical information, artifacts and Air Force heritage.

She said her office accomplishes this mission through heritage questions and slides, and presentation of historical exhibits at events such as the Tuskegee Airmen convention, the Airlift/Tanker Association convention, the 50th Anniversary of the C-130 at Little Rock, and actively participating in the historical background behind the AMC Heritage Center, and providing educational awareness at events such as High Flight."

Additionally, Ms. Nolan said a museum representative works with each unit on acquisition and maintenance of static display aircraft; yet another way to tell the Air Force and unit story.

Although the History Office manages many different functions and activities, Ms. Nolan said accomplishing an annual or semi-annual historical report is a primary function of her office and the AMC field historians.

"Each wing and independent group has their own historian who tells the unit story much as we do here at the MAJCOM," she said. "Each wing and independent group in this command has a historian who captures their respective important issues, events, and maintains their own archive while we at headquarters maintain the archives for the entire command."

Ms. Nolan said with their extensive archive collection and talented historians, History offices are often called upon.

"We are able to pull together data that can be used for analysis or comparison/contrast in assisting our leadership to have the full picture so vital in the decision-making process," Ms. Nolan added.

The General Bryce Poe II Award is named in honor of retired U.S. Air Force Gen. Bryce Poe II whose 38-year Air Force career culminated as the commander of Air Force Logistics Command. During the Korean War, then-Lieutenant Poe flew the first Air Force jet reconnaissance sortie. A longtime and vigorous supporter of the Air Force History and Museums Program, General Poe earned a Master of Arts in History from the University of Omaha, and served as the president of the Air Force Historical Foundation until 1996. General Poe died Nov. 20, 2000.

Keesler's Flying Jennies Receive Final C-130J-30

by Airman 1st Class Tabitha Spinks
403rd Wing Public Affairs

A crew from Air Force Reserve Command's 815th Airlift Squadron, Keesler AFB, Mississippi, recently delivered the unit's final C-130J-30 aircraft here after accepting it from the manufacturer at Dobbins Air Reserve Base, Georgia.



Aircraft 8159 pulls into a parking space at Keesler, AFB, Jan. 9. The aircraft is the final delivery rounding out the 403rd Wing's full complement. The unit now has 10 WC-130Js and eight C-130J-30s. (AFRC Photo).

Maj. Gen. Hanferd "Rusty" J. Moen Jr. piloted the aircraft from Georgia to Mississippi Jan. 9. General Moen is the director of intelligence, air, space and information operations at Headquarters Air Force Reserve Command, Robins Air Force Base, Georgia.

Delivery of the aircraft was the last step in the unit's conversion to the J-model. The conversion began Oct. 12, 1999.

The 815th AS, also known as the Flying Jennies, has been instrumental in getting the J-model qualified for combat. The unit has participated in testing and evaluation of this new weapons system since 1998.

Most recently, unit reservists deployed to Central and South America to assist U.S. Southern Command with drug interdiction efforts. In the past, they have deployed an aircraft and aircrews to Southwest Asia in support of operations Iraqi Freedom and Enduring Freedom.

Their participation in the Air Force's first combat deployment of the new C-130J-30 a "stretched" version of the aircraft, proved it can travel faster, farther and higher than older Hercules while carrying more troops and equipment.

In addition to eight C-130J-30s, the squadron's 403rd Wing also flies 10 WC-130Js. (AFRCNS)

Mark Your Calendars!
2007 A/TA Convention & Symposium
25-28 October 2007
Nashville, Tennessee

Former TACC Vice Assumes Center's Command

by Roger Drinnon, Air Mobility Command Public Affairs

Maj. Gen. Ron Ladnier formally assumed command of the 18th Air Force's Tanker Airlift Control Center, Scott AFB, Illinois on 22 January in a change-of-command ceremony.

General Ladnier had served as the TACC's vice commander since July. He succeeds Maj. Gen. Winfield Scott, III, who moves on to an assignment as deputy chief of staff, strategic communications, Multi-National Forces, Iraq. General Scott commanded the TACC since May of 2005.

"Everyone at Scott Air Force Base knows we've got to get our Soldiers, Sailors, Airmen and Marines to the fight, and we all know you've got to sustain that fight," said General Ladnier. "And certainly a big part of getting to the fight is (the 18th AF's parent unit) Air Mobility Command," he continued. "Taking command of the TACC is indeed a huge challenge, but I'm excited about getting started."

The TACC is 18 AF's hub for planning and directing tanker and transport air-

craft operations around the world. The global air operations center is responsible for around-the-clock centralized command and control of both Air Force and



commercial contract air mobility aircraft. TACC personnel also plan, schedule and track tanker, airlift and aeromedical evacuation aircraft worldwide as part of AMC's "Global Reach" mission, which includes both wartime and disaster and

humanitarian relief operations. The TACC was an integral part of non-combat evacuation operations in Lebanon last year and provided critical support in the aftermath of Hurricane's Katrina and Rita and the earthquake in Pakistan during 2005.

During General Scott's time as TACC commander, the center managed more than 231,000 sorties, moving nearly 3 million passengers and nearly 1.1 million tons of cargo for AMC.

Also during General Scott's tenure, the TACC executed almost 8,000 aeromedical evacuation sorties - moving nearly 31,000 patients. The TACC also managed more than 5,000 sorties that delivered more than 50,000 personnel and nearly 44,000 tons of cargo in direct support of the President.

General Ladnier said he expects to continue the TACC's legacy of professionalism and teamwork.

"We have a big mission, but I think we have outstanding folks to accomplish that mission," said General Ladnier.

Tankers Support President Ford's Memorial Service

by Senior Airman J. Paul Croxon, 319th Air Refueling Wing Public Affairs

The 319th Air Refueling Wing flew a unique and poignant mission earlier this month through which the Warriors of the North paid their respects to a patriot the best way they knew how: aerial refueling.

The mission flown by the Grand Forks Air Force Base tankers wasn't unique, but the final destination of the receivers was. Three KC-135R Stratotankers met with three more KC-135s from Seymour Johnson Air Force Base, N.C., to provide aerial refueling for 32 F-15E Strike Eagles, also from Seymour Johnson AFB.

The 38 aircraft were enroute to Grand Rapids, Mich., where 21 Strike Eagles flew the missing man flyover for President Gerald Ford's funeral. The remaining fighters circled the area in case one of the 21 needed to be replaced.

"It's not uncommon for tankers to 'drag' a squadron of fighters long distances," said Capt. Michael Mayo, 911th Air Refueling Squadron. "I haven't done any formations with this many aircraft since Operation Northern Watch."

According to the flight crews, the tankers met up with the fighters over North Carolina. The tankers flew an echelon formation in which each tanker and four fighters flew 500 feet above each other with a mile between them.

"I could look out my right window and

see 12 jets," Captain Mayo said.

A mission involving three squadrons of fighters and half a dozen tankers for a State Funeral flyover takes a tremendous amount of coordination.

"Both active and Reserve aircraft from three major commands worked together to provide one of the Air Force's highest honors to President Ford..."

"While everyone else had Jan. 2 off, we were in a conference call with the fighter pilots coordinating the mission," said 1st Lt. Ryan Armstrong, 912th Air Refueling Squadron. "We were very aware that this mission was for an official State Funeral and the world would be watching. We wanted to make sure all the details were worked out."

Even with the intensive planning, this mission had unique difficulties not encountered in most aerial refueling missions.

"The most difficult part of the mission for me was the radio traffic," said Staff Sgt. Adam Smith, 912 ARS. "I could really only see one aircraft at a time through the boom pod but I was in radio contact with about 15 people on the same frequency."

In addition to the Grand Forks and Seymour Johnson tanker crews, two KC-10 Extenders from McGuire Air Force Base, N.J., and two more KC-135s from Robins Air Force Base, Ga., took the fighters home.

"Both active and Reserve aircraft from three major commands worked together to provide one of the Air Force's highest honors to President Ford," said Lieutenant Armstrong. "It's a once-in-a-lifetime opportunity that I'll remember for the rest of my life."

Capt. Ryan Miksell, 319th Operations Support Squadron, Lieutenant Armstrong, Staff Sgt. Creston Saul and Airman Smith from the 912 ARS and Captain Mayo flew the lead Grand Forks tanker. The second tanker crew was Staff Sgt. Justin Dixon, 905th Air Refueling Squadron and Maj. Ronald Kalaquin, Capt. Ryan Smith and 1st Lt. Jonathan Holland, all from the 912 ARS. Capt. Justin Pautler, Capt. Erik Redl and Senior Airman Jeremy Welch, all from the 905 ARS, flew the third tanker.