



ARSAG '06

Conference Minutes

Sunday, 23 April

Room: Library Room, Lobby Level

1000-1700 NATO AAR Panel Wg Cdr Adrian Hayward

Monday, 24 April

Room: Balboa Room, Third Level

1300-1600 European Airlift Centre Lt Col Lionel Poirot

Room: Library Room, Lobby Level

Special Projects Pre-Conference Workshop

0800	<i>Introductions (All Special Projects Participants)</i>	Dex Kalt
0805	<i>Special Projects Review and Future Meetings</i>	
0810	<i>Meeting Agenda</i>	
0815	<i>Joint Standardization Board Presentation</i>	Michael Goy, HQ DLA
0835	<i>Questions and Answers</i>	
0845	<i>Break</i>	

Room: Library Room, Annex, Lobby Level

0900	<i>Reliability & Maintainability ARSAG Guide Document Meeting</i>	Ralph Aviles, NAVAIR
1200	<i>R & M Adjourn for Lunch to Reconvene in Afternoon as Required</i>	

Room: Library Room, Lobby Level

0915	<i>Special Projects Pre-Conference Workshop Reconvenes following break</i>	Dex Kalt
0915	<i>Aerial Refueling Tanker/Receiver Clearance Process Meeting Agenda</i>	Lt Col John Fletcher, JAPCC/CS
0930	<i>Generic Aerial Refueling Support Request ATP-56 Briefing</i>	Lt Col John Fletcher
0945	<i>Documentation of Clearance ATP-56 Briefing</i>	Dex Kalt
1000	<i>Required Aerial Refueling Technical Data Exchange (P & I Survey Revised) Tanker/Receiver Aircraft and Establish Requirements for Compatibility Testing (Ground & Flight) Briefing</i>	Michael Larsen, ASC/ENFA
1030	<i>Aerial Refueling Tanker/Receiver Aircraft Process, Documentation Process and Record Keeping Repository Current US process and points of contact US Navy US Air Force Process adoption Inquiry (agencies and countries) Points of contact (military and industry)</i>	Jennifer Ingmire Steve Quinn
1100	<i>Tanker/Receiver Aircraft Interface Data Base Existing aircraft agencies Future aircraft via, Acquisition Contract, Aircraft Manufacturer Tanker aircraft Receiver aircraft</i>	Michael Larsen, ASC/ENFA
1130	<i>Agency/Agencies Identification for Repository and Data Keeping Discussions and Resolutions</i>	General Participation
1200	<i>Adjourn for Lunch</i>	
1300	<i>Special Projects Pre-Conference Workshop Reconvenes following lunch STANAG 7191 Boom/Receptacle & Guide Document</i>	Steve Quinn, ASC/ENFA Mark Burket, ASC/YFSA Farhad Choudhury, NAVAIR
1430	<i>STANAG 3447 Revision Status</i>	
1445	<i>Break</i>	
1500	<i>Guide Document for Probe/Drogue Interface, Structural Strength</i>	Tom Cavallaro, NAVAIR
1630	<i>Reliability and Maintainability Panel Report (Document Guide Progress)</i>	Ralph Aviles, NAVAIR
1700	<i>Special Projects Meeting Adjourns</i>	

(See attached Special Projects Pre-Conference Workshop Minutes)

Room: California Ballroom A, B, C, Second Level

1715 Briefers, Panel Chairs, Steering Group Meet Dex Kalt, ARSAG
Dave Sly, Boeing

Tuesday, 25 April

ARSAG '06 General Session Convenes

Room: California Ballroom A, B, C, Second Level

0830	Welcome to ARSAG	Dex Kalt, ARSAG Executive Director
0835	Opening Remarks	Martin Vukich, ARSAG Chairman
	Introduction of Keynote Speaker	Major General Mark A. Pillar Mobilization Assistant to SAF/AQ
0840	Keynote Speaker	Vice Admiral James M. Zortman Commander, Naval Air Forces Commander, Naval Air Force, U.S. Pacific Fleet
0900	Status Reports	
	Introductions by	Capt Giovanni Pagano
	Australia	GPCAPT Stephen Bucholtz
	Brazil	Lt Col Gilberto Moreira Siqueira
	Canada	Maj Christopher Clarke
	France	Capt Franck Bottéro
	Germany	Maj Udo Op de Hipt
	Israel	Lt Col Oded Shimshoni
	Italy	Lt Col Fabio Nuccetelli
	Japan	LTC Satoru Nagasato
	The Netherlands	Maj Marco Pulles
	Spain	Maj Pedro Sipols
	Sweden	Tom Andersson
1000	<i>Break</i>	
1100	Status Reports, continued	
	Turkey	Maj Kutlu Somek
	Norway	Lars Roeine
	India	Wing Commander Navalsaini
	United Kingdom	Sqn Ldr Rhys Parker
	US Announcements	Farhad Choudhury
	US Air Force	Lt Col Slim Morgan
	US Navy	CDR Richard Dorn
	US Marine Corps	Stephen Williams
	US Army	CW4 Myron Beals
	US Air Force Reserves	Col Ken Lewis
	NATO	Lt Col John Fletcher
	NATO AAR Panel	Wg Cdr Adrian Hayward
	EAC	Lt Col Lionel Poirot
1125	<i>Announcements</i>	Gomer Custer, Col. USAF (Ret), Argo-Tech
1130	Adjourn to Garden Pavilion Terrace – The Boeing Company (Host)	
1200	Awards Luncheon	
1230	Our Future	Lieutenant General John B. Sams, Jr. USAF (Ret) Vice President, Air Force Systems The Boeing Company
	Introductions by	Col Ken Lewis
	ARC Strategic Mobility: Not a Force in Reserve	Major General Robert E. Duignan Commander, 4 th Air Force
1300	Awards Presentations	Major General Mark A. Pillar Mobilization Assistant to SAF/AQ
1315	<i>Break</i>	Dex Kalt, ARSAG Executive Director

Tuesday, 25 April, continued

Safety Panel

1330	Introductions	Maj Dave McCann, US Navy Safety Ctr.
1335	RAAF Safety Report	WO Roger Chambers
1345	USAF Safety Report	Maj Dennis Clark, USSC
1355	USN/USMC Safety Report	Maj Dave McCann
1405	A-310 MRTT Status Report	Gerhard Mey, BWB
1415	JP-8 + Alternative Fuel Initiative	Robert Morris, AFRL/PRTG
1430	Questions and Answers	Maj Dave McCann

Summary:

The Safety Panel included U.S. Navy and U.S. Air Force reports as well as reports from Australia and Germany. A well-received presentation from the Air Force Research Laboratories discussed alternative fuel options; many listeners found the presenter's argument compelling. The Safety panel itself tried to show concerns in future aircraft design and placement of probes where they would not damage an engine with FOD during a mishap. The Panel Chair hopes to have Maj Dennis Clark, a delegate new to ARSAG, back in ARSAG 2007. Reports indicated a shift away from F-14 mishaps to the F-18 (the F-14 will be officially decommissioned this year). The Safety Panel Chairman expects to address future aspects in safety next year to include a segment on aircrew fatigue and performance rates.

Submitted: Maj Dave McCann

Studies and Analysis Panel

1505	Introduction	Allan Haenisch, SAF/AQQM
1510	Status of KC-135 Replacement Program	Maj Gen Mark A. Pillar, SAF/AQ/MA
1520	Mobility Capability Study	Lt Col Carl "Cal" Lude, USAF, J8 Warfighting Analysis Div. (Pentagon)
1535	KC-135 Fleet Viability Board	John Wetzel, AF/A4/7-FVB
1550	AoA for KC-135 Recapitalization Results	John Stillion, Dave Orletsky, RAND
1610	Questions and Answers	Allan Haenisch

Summary:

On Tuesday afternoon, the Studies and Analysis Panel featured four briefings to the general assembly. These included, "Status of the KC-135 Replacement Program" from Maj Gen Mark Pillar, SAF/AQ-MA, "Mobility Capability Study" from Lt Col Carl "Cal" Lude, USAF, J8 Warfighting Analysis Division, "KC-135 Fleet Viability Board Assessment" from John Wetzel, AF/A4/7-FVB and "AoA for KC-135 Recapitalization Results" from John Stillion, RAND. The purpose of these briefings was to bring ARSAG attendees up-to-date on studies that had been concluded in the last 12 months. Maj Gen Pillar began the program by informing ARSAG attendees on the "official" USAF position on the KC-135 Replacement Program. Lt Col Cal Lude informed attendees on tanker requirements from the Mobility Capability Study (MCS), John Wetzel briefed ARSAG on the health and status of the KC-135D/E/R/T fleet as found by the Fleet Viability Board, and John Stillion briefed the results from the RAND Analysis of Alternatives for KC-135 Recapitalization.

Submitted by Allan Haenisch

1615	Special Projects Report	Dex Kalt, ARSAG Executive Director
1630	Joint Standardization Board (JSB)	Michael Goy, HQ DLA
1645	<i>Adjourn for the Day</i>	
1800	Exhibitors Reception (All Attendees and Their Guests are Invited)	

The Exhibitors' Reception, held in the Garden Pavilion and on the Garden Pavilion Terrace, was attended by nearly all the ARSAG '06 conference attendees and their guests. ARSAG delegates took the opportunity to view the exhibits, talk with exhibitors, visit with other delegates and enjoy the fine refreshments and live music.

Wednesday, 26 April

Operations Panel

0800	Panel Introductions	Col Jeffrey Franklin, AMC
0805	Aerial Refueling Topic	Major General (S) John M. Howlett Mobilization Assistant to the Commander, HQ Air Mobility Command
0820	Questions & Answers	
0825	US Air Force Tanker Operations	Lt Col Sean Carey, TACC
0840	Tankers Enabling Greater Combat Effects	Maj Alan Adams, USAF
0850	AOC Tanker Operations	Lt Col Paul Richardson USAF/MOS
	Aerial Refueling Tool Kit	Chuck Vellins, EWA
	Tanker Assessment	Scott Brummett, EWA
0920	Questions and Answers	Col Jeffrey Franklin

Summary:

1. The theme presented by the Operations panel this year was "Efficiency in the use of Tanker Assets". Leading off with LtCol Carey from AMC/TACC tanker operations with his brief on how TACC has changed and streamlined its tanker command and control practices was key to this theme. My plan is have another iteration of this briefing (hopefully delivered again by LtCol Carey) for ARSAG '07. My rationale is that much of the work done during the past year has spawned additional changes in the tanker tasking/execution process for AMC and the Air Force. Chief of these is the creation of a true tanker mission validation process in the USTRANSCOM organization. I believe that the Ops panel should include a brief on this subject until the renaissance with TACC command and control is complete.

2. LtCol Paul Richardson and his team from USAF/MOS have made great strides in the integration of tanker missions into a combat ATO production. For deployed/chopped operations, this is the USAF tanker's bread and butter. Refinement of this process lead directly to cutting down the number of tankers needed to support a theater operation.

3. Major Alan Adams is a real visionary. His acute analysis of the theater tanker utilization issue is revolutionary and refreshing. More importantly, his analysis is based upon actual experience in the SWA AOR. I believe his refreshing "Out of the box" thinking is the best way to improve this dynamic issue. I am hopeful that many of his "theoretical" process improvement recommendations can be refined, tested, and incorporated into a tanker employment doctrine piece.

4. I was gratified to have MG Howlett's words at the centerpiece of my panel's time. I support having his message presented during the Operations Panel's time (even though it wasn't exactly on theme) because having the Senior Officer perspective/participation does so much to ad validity to the ARSAG charter.

5. I have two distinct goals for next year's ARSAG. First, I believe the Ops panel focuses on boom air refueling operations and I would like to discuss probe and drogue operations issues. We have the MIPRs and WARPs to go along with the BDAs and centerline on the KC-10 and the Air Force is handling more drogue ops every day. I would like to get a briefing on AF employment ops using the drogues. Second, I am disappointed at the limited representation of AMC leadership at ARSAG. AMC (as they air arm of USTRANSCOM) holds functional responsibility for worldwide air refueling operations. To that end, even one day attendance and a short briefing would be welcome. I will pursue this effort over the course of the year.

Submitted by: Col Jeff Franklin

Training Panel

0925	Training Panel Introductions, Charter, Panel Update	Russ Hunter, CSC
0930	Aerial Refueling Training	Mike Saraniero, Sierra Nevada
0940	Boom Operator Training	SMSgt De Jauregui, 4 AF/DOV
0950	A/A42R-1 Aerial Refueling Store (ARS) Synchronization Job Performance Aid (JPA)	Michael Leigh, A/A42R-1 ARS JPA
1000	Contract Aerial Refueling Tanking Future	Kevin O'Neill, Omega Air
1010	Questions and Answers	Russ Hunter
1015	Break	

Summary:

Panel Chair, Russ Hunter from CSC gave an introduction and the new panel co-chairs: COL Ken Lewis, USAFR, Norm Gibson, C/KC135 International Program Division, Tinker AFB, Van Davis, and Steve Hampton, Customer Training Specialist, Boeing Corp. He also displayed the Training Panel Charter and discussed the severity of the growing problem of the expanding US Army helicopter fleet and associated AAR training currently provided by the DoD KC/HC/MC-130 fleet.

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Unfortunately, Mr. Mike Saraniero, Sierra Nevada Corp. was not able to deliver his presentation on AAR training and autonomous AAR. However he said the he would be able to provide the presentation next year.

SMSgt Frank DeJauregui, 4AF DOV, provided an excellent overview of Boom Operator training and associated issues. He discussed how, if the fidelity of the devices could be certified, simulation could be used to not only provide standard and degraded system operation training, but could provide the “boomers” with legitimate “contacts” for currency requirements. He cautioned that any device falling short of that capability would not be considered completely useful to the Boom Operator training community. Additionally he clearly showed how several of the incidents relating to boom AAR could be directly attributed to training and how some of these training shortfalls could be overcome. We have asked SMSgt DeJauregui to return next year for an update presentation if possible.

Michael Leigh, DLA/Document Automation & Production Service, delivered an in-depth discussion on the A/A42R-1 Aerial Refueling Store (ARS), Synchronization Job Performance Aid (JPA). The JPA is a powerful training tool that can, among other capabilities, provide written and or spoken narrative along with simultaneous video or modeling and simulation of a given work package. JPA can be used as an adjunct or supplement to IETM’s or can be used effectively as a substitutional training tool.

Regrettably, Ulick McEvaddy was unable to deliver the presentation on the achievement of OMEGA Air in support of USN and USAF AAR training with leased tanker application. Kevin O’Neill, Director of Quality Control, briefed in his stead and did an excellent job. OMEGA is experiencing great success in filling the AAR training and long haul void by providing contract tanker support. OMEGA has delivered a very large amount of fuel safely over the past year and has maintained a high rate of aircraft availability. Kevin also spoke of new aircraft acquisition plans at OMEGA.

Lighting and Markings Panel

1045	Introductions	Richard Kemp, Honeywell
1050	Lighting Technology Update	Scott Mangum Honeywell
1100	F/A-22 Aerial Refueling Lighting Enhancement	2nd LT Paul Frisinger, ASC/YFSA
1115	USAF/UDRI Aerial Refueling Lighting Report	Robert Marx, MSW/TSMSS
1130	Aerial Refueling Status Display Standardization for Probe & Drogue Briefings and Discussion	Jennifer Ingmire, NAVAIR Dave Hilker, MC130SSEN SqN Ldr Rhys Parker, RAF Rick Kahler, Boeing
1145	Questions and Answers	Richard Kemp

Summary:

On Wednesday April 25th, 2006 the following presentations were given from the Lighting and Marking Panel at the 2006 ARSAG conference held at San Diego California

A lighting technology update using solid-state light (LED’s) for aerial refueling lighting was given by Scott Mangum from Honeywell (Grimes).

2nd Lt Paul Frisinger from ASC/YFSA gave an update on the F/A-22 Aerial Refueling Lighting problem with being able to illuminate the receptacle area well enough to complete refueling at night time conditions which has now been approved.

The results from the USAF lighting study conducted by the University of Dayton Research Institute were presented by Robert Marx of MSW/TSMSS; he also handed out a limited number of CD’s with the lighting study findings.

Jennifer Ingmire, Dave Hilker & SqN Ldr Rhys Parker gave a discussion on aerial refueling drogue status display standardization.

There were some questions and discussion about the drogue status display standardization. One question was: Should there be a separate STANAG for standard drogue status display? There was also a comment that there would be different versions of NVG goggles being used by different countries so it may be difficult to standardize on shapes & sizes of the status lights to differentiate the different colors using goggles? Also a comment was made that it may be cost effective to standardize hose markings since they are replaced every four years.

Submitted by Richard Kemp

1150	Announcements	Gomer Custer, Col. USAF (Ret), Argo-Tech
1200	Luncheon	
	Why Multi-Mission Makes Sense	General Walter Kross, USAF (Ret.) Former Commander in Chief U.S. Transportation Command and Commander, Air Mobility Command

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Reliability & Maintainability Panel

1330	Panel Introductions	Ralph Aviles, NAVAIR
1335	KC-135 / KC-10 Status Report BDA Kit & MPRS Classification	Sherie Donahay, OC-ALC
1355	Aerial Refueling Maintenance Probe/Drogue	Cary Depew, Lockheed Martin
1410	Summary Update of Aerial Refueling Systems & Equipment (Pod Fire Suppression, Ground Support Equipment)	Mike Bandak, Sargent Fletcher
1430	Questions & Answers	Ralph Aviles

Summary:

The regular R&M Panel session was kicked off by Ralph Aviles, R&M Panel Chair, after he introduced the Panel members and presenters, and provided an overview of the R&M Panel's main function and goals in dealing with Aerial Refueling Systems and the Fleet. During ARSAG 2006, the R&M panel focused its efforts on providing an overview of maintenance practices and on the status of various maintenance support equipment for various refueling systems. The systems that were discussed included Probe and Drogue systems and wing mounted refueling pods.

The topics discussed provided the audience with an overview of how past experiences and maintenance problems have been resolved or mitigated by the development of component upgrades and modifications, and how these changes have improved the overall reliability of such systems. Another topic of big importance that was briefly presented during the R&M Panel session was the classification type of the BDA kit and Multi-Point Refueling System (MPRS). A discussion on whether these systems should be cataloged as airborne systems or ground support equipment ensued.

Other R&M Panel items

On the first day of scheduled meetings, prior to the regular ARSAG 2006 session, and under the guidance and request from the ARSAG Executive Director, Mr. Dexter Kalt, the R&M Panel, kicked off a meeting to discuss the creation of an 'ARSAG Maintenance Guide' for Aerial Refueling. The purpose of this document guide is to compile as many of the lessons learned on past refueling problems and challenges and to share those experiences with the existing refueling community in an attempt to pass along good and valuable information they can use during use and troubleshooting of their systems. The ARSAG project number for this initiative was assigned to be Project #12. A draft version is expected to be presented to ARSAG in 2007.

Submitted by Ralph Aviles

Interoperability Procedures & Documentation Panel

1435	Introductions	Lt Col John Fletcher, JAPCC/CS
1440	Special Projects Report (Clearance Process)	Lt Col John Fletcher
1445	STANAG 3447 Update	Tom Cavallaro, NAVAIR
1450	STANAG 7191, New, Update	Stephen Quinn, ASC/ENFA
1455	Canadian Interoperability Issues	T.B.D., Canadian Forces
1500	Italian Interoperability Issues	T.B.D., Italian Air Force
1505	German Interoperability Issues	T.B.D., German Air Force
1515	Refueling Flow	Maj Ed Lang, USMC
1520	USAF Proposals for ATP-56(B)	Wg Cdr Adrian Hayward, JAPCC/CS Wg Cdr Martin Walsh, AMC/DA37V
1540	Questions and Answers	Lt Col John Fletcher
1545	Break	

Summary:

The ARSAG 2006 Interoperability Procedures & Documentation Panel included presentations on three aspects of interoperability standardization: documentation (STANAG briefings and Clearance Process), common operations procedures (Refueling Flow and ATP-56), and national operations (Italian Issues).

Submitted by: Lt Col John Fletcher

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Industry Panel

1615	Introductions	Wally Averill, Lockheed Martin
1620	Sargent Fletcher/Flight Refuelling Limited New Tanker / Receiver Platform Applications	Wally Herzog, Cobham
1630	Smiths Aerospace Update	Greg Steiner, Smiths Aerospace
1640	Boeing New Tanker Programs Update	Greg Rusbarsky, Boeing
1650	A400M Low Level (Helicopter) Refueling	Peter Scoffham, Airbus Military
1700	Roadmap to Tactical Air-to-Air Refueling	Mike Swick, Lockheed Martin Aero
1710	KC-30 Advanced Multi-Role Tanker Transport Update	Marc Lindsley, Northrop Grumman
1720	Questions and Answers	Panel Briefers

Summary:

Industry Panel 2006 Conference Objective: Provide an executive level overview of each company's contribution to "platforms – tanker / receiver – for now and into the future" in 10 minutes or less

Cobham: Overview of revised Cobham organization – SFI vice FRL – and pertinent responsibilities of each with respect to regional coverage, advances in refueling technology pertaining to UAV/UVAC air-to-air refueling. All US efforts under purview of SFI, international under purview of FRL

Smiths Aerospace: Organizational and facilities update, links to Boeing's B-767 program, advances in drogue stabilization for high-speed air-to-air refueling

Boeing: B-767 design and marketing progress, international involvement to date (Japan/Italy), and positioning for USAF multi-role tanker re-capitalization program

Airbus Military: Overview of A400M applicability and use as a tactical tanker (low level, helicopter) for air-to-air refueling, focus on design, safety measures, and survivability

Lockheed Martin: Roadmap to advance tactical air-to-air refueling within the battlefield relative to communications, operations, and survivability issues

Northrop Grumman: Update on design and program issues relative to the KC-30 platform and its suitability in addressing the USAF multi-role tanker requirements

Submitted by: Wally Averill

1725	ARSAG International Survey Discussion	Martin Vukich, ARSAG Chairman
1735	Adjourn for the Day	

Thursday, 27 April

Advanced Concepts Panel

0800	Introductions	Farhad Choudhury, NAVAIR
0805	Controllable Drogue	Bob Dawson, Smiths Aerospace
0820	Aerial Refueling Multipoint	David Smith, Boeing
0830	Autonomous Aerial Refueling	Scott Price, Cobham
0840	Cockpit/Systems Update for A330 MRTT	Stefan Doerries, Airbus
0850	Future Aerial Refueling	Bryan Edmondson, Cobham
0900	Questions and Answers	Farhad Choudhury

Summary:

Farhad Choudhury, Advanced Concepts Panel Chair, opened his panel session by introducing his co-chairs, the panel charter, the briefers, their topics and their respective agencies.

First speaker was Bob Dawson, from Smiths Aerospace, who provided a very informative brief on their "**Controllable Drogue**". He spoke about retractable fins on the drogue for stabilization. He also talked about passive and active drogue stabilization.

Second speaker was David Smith from Boeing who spoke about the advantages and flexibility of "**Multi-Point Aerial Refueling Boom**" (MPARB). He spoke about needing a single RARO and possibility of auto-hook up into the UARSI of receiver aircraft.

Third speaker was Stefan Dorries from Airbus, who presented "**Cockpit/Systems Update for A330 MRTT**". Stefan spoke about future military strategic aircraft cockpit, with enhanced fuel control panels & fuel monitoring, new displays, self-defense systems, which will meet military navigation, communication, IFF and GPS requirements.

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Fourth speaker was Bryan Edmondson from Cobham (Flight Refueling Limited), who spoke about “**Future Aerial Refueling**”. Bryan spoke about capability and technology development and product insertion. He spoke about their advance drogue, all speed variable drag drogue (VDD), hi-speed VDD, low speed VDD (on the Combat Talon II) and synthetic modeling and simulation. Bryan also mentioned advanced reception coupling, health management & prognostics and autonomous boom/drogue POD.

Fifth and last speaker was Scott Price from Cobham (Sargent Fletcher Inc.), who briefed the audience on “**Autonomous Refueling Capability**”. Scott talked about the Boeing Dominator UAV with its micro probe and micro drogue refueling capability. He also mentioned the various UAV refueling categories such as micro, mini, short, medium and long range. He showed a video of ground test of a robot with micro probe hooking up to a micro drogue.

Farhad concluded his panel session by asking the briefers to join him on the stage and Farhad re-introduced them and their agencies again and asked the audience if they had any questions of any of the briefers.

Submitted by: Farhad Choudhury

System Design Panel

0905	Introductions	Tom Cavallaro, NAVAIR
0910	V-22 Probe Design Evolution	Chris Mouskis, Cobham
0920	V-22 Aerial Refueling & Rapid Ground Refueling Kit	Roger Lacy, Boeing
0935	Aerial Refueling Hose Design and Fabrication	James Bruchas, IconPolymer
0945	Aerial Refueling Mil-Spec Status Report	Tom Cavallaro, NAVAIR
0950	All Electrical Boom	Javier Yague, EADS CASA Klaus Wegscheider, Liebherr Robert E. Kovacevich, Eaton
1005	Questions and Answers	Tom Cavallaro
1010	<i>Announcements</i>	<i>Gomer Custer, ARSAG Secretary</i>
1015	<i>Break</i>	

Summary:

This panel consisted of four presentations and was moderated by Tom Cavallaro, System Design Panel Chairman. The first speaker was Steve Purdy of FRL, and his topic was V-22 Probe Design Evolution. The next speaker also spoke on the V-22, but this time discussing its potential to be a tanker a/c. Roger Lacy of Boeing delivered V-22 Aerial Refueling & Rapid Ground Refueling Kit.

The third speaker was Jim Bruchas of Icon Polymer; he discussed Aerial Refueling Hose Design and Fabrication. The final speaker was Javier Yague of EADS CASA. Javier led a speaking trio discussing the All Electrical Boom. A fifth presentation was planned but eliminated by the Chairman in order to save time on the schedule. The presentation, authored by Tom Cavallaro of NAVAIR, was to summarize the current status of US Military Specifications and Standards. This presentation was made available in printed form for any that had interest.

Test and Evaluation Panel

1045	Introductions	Dave Benson, AFFTC
1050	V-22 Aerial Refueling Design and Test Evaluation	Diego Mera, US Navy
1100	MC-130H Tanker Program Update	Robert Boggs, Boeing
1110	Findings from MA-4 Coupling Pressure Regulator Tests	Ron Belaska, US Army
1120	MA-4 Coupling Regulator Testing	Dave Hilker, MC130SS/EN
1130	Flight Test Results of New Buddy Store RAT	Tom Cavallaro, NAVAIR
1145	Questions and Answers	Dave Benson

Summary:

The panel session began with a brief introduction by Dave Benson. The first briefing was a Joint NAVAIR (Diego Mera) and AF Flight Test Center (T.J. Pitsor) presentation of the results of the MV-22B/KC-135R ground (successful) and flight test (less than successful) results, with video of testing and results discussed.

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The next briefing was an update on the Combat Talon II testing and fielding progress (all DT, most OT complete, 10 modified aircraft – ½ the CTII fleet), given by Clarence McDonald from Boeing, Fort Walton Beach. This was followed by Ron Belaska (US Army) briefing the results of the recent Combat Talon II / MH-47G & MH-60K/L fuel transfer testing, including failed regulator testing, which led to Dave Hilker's (MC130SS/EN) presentation on the MA-4 coupling. Mr. Belaska's briefing detailed the differences between the two integral pressure regulators in the MA-4 coupling, specifically how the two regulators compared against each other. Mr. Hilker's brief re-emphasized the importance of routine coupling pressure regulator check-outs and some of the difficulties with the current ground support equipment.

The final briefing (Tom Cavallaro, NAVAIR) gave the results of recent developments regarding the Buddy Store system, including evaluations of the new Ram Air Turbine.

Submitted by: Dave Benson

1150 Meeting Wrap-Up Dex Kalt, Executive Director
1200 Conference Adjourns

1300 **USS Midway Aircraft Carrier Tour,**

ARSAG 2006 Tour of the USS Midway Aircraft Carrier

On Thursday afternoon, 27 April 2006, many of the ARSAG attendees were bussed (while some decided to walk) from the Westin Horton Plaza Hotel to take a tour of the USS Midway (CV-41). The Midway has served the United States Navy for 47 years before being converted to a museum. It has participated courageously in numerous conflicts, the most recent being Desert Storm. The Midway had been forward deployed and home-ported in Yokosuka, Japan for many years, with her Carrier Air Wing Five.

The ARSAG attendees took tours of the many decks of the ship (seeing sleeping quarters, chow hall, hangar deck, flight deck, control rooms on the tower, view from "vulture row", cockpit simulators, aircraft elevators, catapults, arresting gear/cables and jet blast deflectors). There were numerous Navy static aircraft on display such as: E-2 Hawkeye, S-3 Viking, F-14 Tomcat, A-5 Vigilante, A-6 Intruder, A-7 Corsair, F-8 Crusader, F/A-18 Hornet, UH-1 Huey and H-3 Sea King helicopters, just to name a few.

Across the bay, from the deck of the USS Midway, the public can see some of the operational ships and carriers of the US Navy's Pacific Fleet, while on the other side of the Midway one can see beautiful and scenic city of San Diego. For those that attended the tour of the USS Midway, it was a wonderful and memorable way for the ARSAG 2006 Conference to come to an end

Submitted by: Farhad Choudhury

Friday, 28 April:

ARSAG Delegates are invited to attend AirFest 2006 at March Air Reserve Base,

AirFest 2006

On Friday, 28 May, sixty ARSAG '06 attendees were able to stay over an extra day following the conference and experience a rare treat at March ARB, Riverside, California. The 4th Air Force and the 452nd Air Mobility Wing hosted AirFest 2006, an assemblage of virtually all Air Force aircraft, some Navy, vintage WWII and commercial airplanes, and a MIG -21.

ARSAG personnel were issued VIP passes and given free run of the ramp and flightline areas to crawl aboard everything from the giant C-5s to F-16s. As Friday was designated a practice and assembly day for the weekend event, it was not open to the general public. Champion aerobatic pilots performed unbelievable stunts and aerial maneuvers right over the runway at shoe top levels. Heritage flight demonstrations included a P-38 and P-51's along with their current counterpart, a F-15. The Air Force Thunderbirds went through their practice routine generating the inspiration and awe for which they are so well known.

The 4th Air Force Commander, Major General Robert E. Duignan, officiated at the opening ceremony at the Parade Field with a Nationally acclaimed fife and drum corps, a magnificent USAFR Honor Guard, the Viet Nam Moving Wall, and a professional assemblage of Airman from the host units. It was a superlative show and tremendous day for everyone. All of us in ARSAG salute the outstanding men and women from March who organized this grand extravaganza of US Military Airpower.

Submitted by: Gomer Custer



ARSAG '06

Conference Minutes Summary

ARSAG '06, the annual conference of the Aerial Refueling Systems Advisory Group was held at the Westin Horton Plaza in San Diego, California.. The conference dates were Monday, 24 April through Thursday, 27 April.

A Special Projects Pre-Conference Workshop was held on Monday, 24 April. At an ARSAG Panel Chairs and Steering Group Meeting, and a Briefers' Meeting, in the afternoon, leaders and speakers made final preparations their conference participation.

ARSAG was honored to host both the NATO Air-to-Air Refueling (AAR) standardization panel and the European Airlift Center (EAC) who held meetings on Sunday, 23 April and Monday, 24 April.

The ARSAG '06 General Assembly was convened on Tuesday morning, 24 April. Dex Kalt, Executive Director, ARSAG International, welcomed all to the conference and introduced the ARSAG's chairman, Martin Vukich who provided a brief introduction to the organization. ARSAG was honored by its key-note speaker, Vice Admiral James M. Zortman Vice Admiral James M. Zortman, Commander, Naval Air Forces, Commander, Naval Air Force, U.S. Pacific Fleet.

Aerial refueling status reports were presented by representatives of international air forces and ministries of defense. They were followed by reports from the NATO AAR panel and the European Airlift Center (EAC).

ARSAG conferees were welcomed to the Awards Luncheon by Lieutenant General John Sams, Jr., USAF (Ret.) on behalf of The Boeing Company, the luncheon's sponsoring organization. It was ARSAG's privilege to be addressed by Major General Robert E. Duignan, Commander, 4th Air Force

Awards for extraordinary service to aerial refueling were presented to Tom Taquino, formerly of XAR Industries and to Lieutenant Colonel James (Slim) Morgan. Awards for outstanding service to ARSAG were presented to Major General Mark A. Pillar, Colonel Jeffrey Franklin, Mike Bandak and Colonel Gomer Custer, USAF (Ret.). Tom Cavallaro, Commander Richard Dorn, Farhad Choudhury and Lieutenant Colonel Ken Lewis were recognized for their outstanding contributions to ARSAG '06. Dex Kalt, Gomer Custer and Major General Mark A Pillar presented the awards.

Status briefings continued with reports from the US Air Force, AMC; US Navy and Marine Corps; Air Force Reserves; and Special Operations forces.

Each of ARSAG's eleven panels presented a program of briefings beginning on Tuesday and continuing through Thursday noon. The briefings are included on the ARSAG '06 conference CD. The briefing topics along with the briefers; names and panel summaries are listed in the ARSAG '06 Conference Minutes document.

On Tuesday evening, conferees and their guests attended an Exhibitors' Reception. Enlightening and interesting exhibits were mounted by Boeing, Northrop Grumman, EADS, Lockheed Martin Aeronautics, Pratt & Whitney, Hamilton Sundstrand, CES, QinetiQ, General Electric AE, Smiths Aerospace, Sargent Fletcher / Cobham, Southwest Research Institute, Acme Worldwide, Demo Systems LLC, DAC International, Aero-K, Magnus Aviation, Applied Aerospace Structures Corp and Marshall Aerospace. Conference attendees were invited to visit the exhibit area during the conference week.

On Wednesday, 26 April, conferees were welcomed to a luncheon sponsored by Northrop Grumman by Major General John Brooks, USAF (Ret.). ARSAG was honored to be addressed by General Walter Kross, USAF (Ret.), former Commander in Chief U.S. Transportation Command and Commander, Air Mobility Command.

During the course of the conference, ARSAG attendees enjoyed the privilege of being addressed by Major General Mark A. Pillar, Mobilization Assistant to SAF/AQ and by Major General (S) John M. Howlett, Mobilization Assistant to the Commander, HQ Air Mobility Command.

On Thursday afternoon, buses took conference attendees to an enjoyable and enlightening tour of the Midway aircraft carrier. On Friday, ARSAG conferees were special guests at a VIP preview day of AirFest '06, an outstanding air show at March Air Base. Descriptions of these tours are included in the conference minutes.

Appreciation

ARSAG expresses its appreciation to the sponsors who made the ARSAG '06 conference possible. They included: EADS, Argo-Tech, The Boeing Company, Omega Air, Northrop Grumman, Smiths Aerospace, EADS CASA, EADS North America, Airbus Military, General Electric Aircraft Engines, Honeywell, Lockheed Martin, Parker Hannifin, Pratt & Whitney and Sargent Fletcher / Cobham.

ARSAG's Board of Directors, Steering Group and Panel Chairs deserve recognition and gratitude for their leadership, hard work and dedication to ARSAG.

SMSGt Frank De Jauregui assisted in arrangements and served as guide to the tour to AirFest at March Air Base on Friday; his fine work was greatly appreciated.

The audio-visual portion of the program was managed by Dave Sly of Boeing who set and ran the PowerPoint briefings. Dave compiles the records of the conference briefings, copies to CD's and distributes them to the attendees. Dale Fredrickson and Darrell Monday taped the conference.

ARSAG expresses its appreciation to Babs Bokkes, Laura O'Gorman, Karen Alvarez and Stacy and Thomas Coggeshall for their able management of conference registration and administration. Special thanks are due to Dorothy Custer and Micki Lewis who arranged and guided delightful day trips on Tuesday and Wednesday for the conferees' guests. They were ably assisted by Linda Pillar.

ARSAG '06 was particularly successful and a record-setter; four hundred six attendees registered for the conference. Many expressions of appreciation for the outstanding briefings and presentations have been received. The success of the conference reflects the contributions of the keynote speaker, guest speakers and briefers who gave of their time, expertise and energy to offer relevant and informative presentations to the international assembly that was ARSAG '06.



ARSAG INTERNATIONAL

ARSAG '06

**ARSAG was honored to welcome distinguished speakers, delegates and guests to the ARSAG '06 conference, in San Diego, CA
They included but were not limited to the following:**

Distinguished Guest and Keynote Speakers

Keynote Speaker

Vice Admiral James M. Zortman
*Commander, Naval Air Forces
Commander, Naval Air Force,
U.S. Pacific Fleet*

Guest Speakers

General Walter Kross, USAF (Ret.)
*Former Commander in Chief U.S.
Transportation Command and
Commander, Air Mobility Command*

Lieutenant General John. B. Sams, Jr.
USAF, Ret. The Boeing Company

Major General Robert E. Duignan
Commander, 4th Air Force

Major General Mark A. Pillar
Mobilization Assistant to SAF/AQ

Major General (S) John M. Howlett
*Mobilization Assistant to the Commander,
HQ Air Mobility Command*

Vice Admiral James M. Zortman

Vice Admiral James M. Zortman assumed command of the Naval Air Forces and Naval Air Force, U.S. Pacific Fleet on 17 August 2004 in San Diego, California.

Initial sea duty assignment was Damage Control Assistant aboard *USS Gray* (FF-1054). Following flight training in the A6 *Intruder*, subsequent sea duty and squadron assignments have included Attack Squadron 95 aboard *USS Coral Sea* (CV-43) and *USS America* (CV-66), Attack Squadron 128, Assistant Navigator aboard *USS Constellation* (CV-64), and Attack Squadron 95 aboard *USS Enterprise* (CVN-65).

Vice Admiral Zortman commanded the Medium Attack Warfare School Pacific, Attack Squadron 52 aboard *USS Carl Vinson* (CVN-70) and *USS Kitty Hawk* (CV-63), Carrier Air Wing Seventeen aboard *Enterprise*, and Carrier Group Seven and the *USS John C. Stennis* Battle Group participating in combat operations in support of *Operation Enduring Freedom*.

Staff billets have included Joint Staff Directorate of Operations (J-3), Chief of Naval Operations Strategic Studies Group Fellow, Executive Assistant to the Vice Chairman, Joint Chiefs of Staff and Director of Operations and Politico-Military Affairs on the staff of the Chief of Naval Operations. His most current assignment was Commander, Naval Air Force, U.S. Atlantic Fleet in Norfolk, VA.

Awards include the Defense Superior Service Medal, Legion of Merit, Bronze Star, Defense Meritorious Service Medal, Meritorious Service Medal, Air Medal, Navy Commendation Medal, Joint Service Achievement Medal, Navy Achievement Medal and various unit awards.

Vice Admiral Zortman is a native of Onawa, Iowa. He attended the U.S. Naval Academy, graduating in 1973 with a degree in Economics.

Lieutenant General John B. Sams, Jr. USAF (Ret.)

John Sams is vice president of Air Force Systems for Boeing Integrated Defense Systems. His primary role is to shape the precision engagement market and execute strategies for the Air Force customer.

Based in St. Louis, Sams shares responsibility for the leadership and management of the AFS business unit and leads the company's U.S. Air Force Tanker Capture Team. Prior to this assignment, he was program manager for the U.S. Air Force 767 Tanker Program and deputy to the Tanker Programs general manager.

Sams joined the company in November 1999 after retiring from the U.S. Air Force. In February 2000, he assumed the position of director of C-17 Field Services, responsible for the successful deployment of C-17 Globemaster III aircraft into the Air Force operating inventory. He then became the director of Business Development for the 767 Global Tanker/Transport Aircraft program.

During his 32-year career with the Air Force, Sams accumulated more than 6,000 flying hours, including 700 combat hours in Vietnam. He retired from the Air Force in 1999 as commander of the 15th Air Force with the rank of lieutenant general.

Sams holds a bachelor's degree in history from The Citadel and a master's degree in personnel management from Central Michigan University. He is a graduate of Squadron Officer School and a distinguished graduate of both the Air Command and Staff College and the Air War College. He is also a graduate of the Emory University Advanced Management Program and the Advanced School for Government at Harvard University. Sams was born Nov. 22, 1945, in Charleston, S.C.

General Walter Kross, USAF (Ret.)

Walter Kross is a senior partner of Consolidated Air Support Systems, LLC (CASS) and serves as the Senior Advisor to CASS subsidiaries: Cass Professional Services Corp. (CPS); Allied Defense Services International, Inc. (ADSI); and Air Mobility Express (AMX) Inc., collectively doing business as CASS.

A retired Air Force four-star general, he brings 37 years of experience in global transportation - strategy, planning, operations, eBusiness, information systems, business process improvement, personnel programs, customer value management and financial matters to the Cass team. He served as President and Chief Executive Office of Flight Explorer, the world's leading provider of internet-based, real-time flight tracking information. He was a partner and managing director at KPMG.

Walter Kross served as commander-in-chief of the United States Transportation Command, providing all air, land, sea and intermodal transportation for the Department of Defense and other customers worldwide. In this capacity, he was responsible to the secretary of Defense and the President for all defense transportation matters.

During the Persian Gulf War, he served as chief operation officer of the U.S. Transportation Command, directing the largest transportation operation since WWII. He also held leadership and senior staff positions including that of commander of the U.S. Air Force's Air Mobility Command, director of the Joint Staff, and director of Operations for the United States Air Force.

General Kross was commissioned through Officer Training School in December 1964. His early career combined both fighter and airlift experience as he flew 157 F-4 combat missions, 100 over North Vietnam. He later transitioned to airlift, then senior executive and congressional pilot support. He was assigned to Headquarters U.S. Air Force from six years; part of that time in the Chief's Staff Group. He has served as commander of a C-5 wing and was Commander of the 15th Air Force.

Since leaving government service in 1998, he has led a number of notable efforts. He founded and served as chairman of the Secretary of Defense's CEO Panel, a group of 15 CEO's that advised the Secretary of Defense on how best to infuse cutting-edge commercial business practices into the Department of Defense. He served as chairman of OilGuard Environmental, Inc., a small company manufacturing automotive products for the global transportation industry. He was president of the Pathfinder Group, providing consulting services to the manufacturing, transportation and defense industries focusing on strategic planning, program management, market entry and acquisition.

Major General Robert E. Duignan

Major General Robert E. Duignan is Commander, 4th Air Force, Air Force Reserve Command, March Air Reserve Base, CA. The 4th Air Force has command supervision of the Reserve's long-range airlift and air refueling units located throughout the continental United States, Hawaii and Guam.

General Duignan entered the U.S. Air Force in 1973 as a graduate of the University of Washington ROTC program. He earned a Bachelor of Arts degree in business. General Duignan has commanded a group and wing, and prior to assuming his current position, served as Director of Plans and Programs at Headquarters AFRC. He is a command pilot with more than 5,000 flying hours.

General Duignan is an Air Reserve Technician, a full-time federal civil service employee serving in a selected position within a military unit. He was appointed to the Senior Executive Service in 2002.

Major General Mark A. Pillar

Major General Mark A. Pillar is the mobilization assistant to the Principal Deputy, Office of the Assistant Secretary of the Air Force for Acquisition, Headquarters U.S. Air Force, The Pentagon.

The general began his Air Force career in 1971 upon receiving his commission through the Reserve Officer Training Corps program. His first operational assignment was at Da Nang Air Base, Republic of South Vietnam, where he served as an EC-47 pilot and flew over 90 combat missions logging more than 600 combat hours. After completing that tour of duty at Nakhon Phanom Royal Thai Air Force Base, Thailand, he returned to the United States and began flying KC-135 refueling aircraft at Grissom Air Force Base, Indiana. In 1978, he transferred to the Air Force Reserve and held numerous positions within the 434th Air Refueling Wing to include being the first commander of the 74th Air Refueling Squadron and the commander of the 434th Air Refueling Group. His subsequent positions include vice commander of the 507th Air Refueling Wing, Tinker Air Force Base, OK, vice commander of the 4th Air Force, March Air Reserve Base, CA, mobilization assistant to the commander, 21st Air Force, McGuire Air Force Base, NJ and mobilization assistant to the commander United States Strategic Command Offutt Air Force Base, Nebraska. General Pillar flew missions in support of *Desert Shield*, *Desert Storm* and the Bosnia no fly zone. During *Operation Joint Force*, he was the vice commander of the 60th Air Expeditionary Wing (USAFE), Rhein-Main Air Base, Germany.

General Pillar is a command pilot with more than 5,300 hours in the C/EC-47, KC-135A/E/R, EC-135 and the E-8 J-STARS aircraft.

Major General (S) John M. Howlett

Major General (S) John M. Howlett is mobilization assistant to the commander, Headquarters Air Mobility Command, Scott Air Force Base, IL.

He serves as the principal advisor to the director of operations for the 43,000 Air Force Reservists that are part of the Total Force air mobility, operating combat delivery and strategic airlift, air refueling, aeromedical and special mission aircraft in support of national interests.

General Howlett was born in Roanoke, VA. In 1972, he earned a bachelor of arts degree in education from Harding University in Searcy, Arkansas. He was commissioned as a second lieutenant through Officer Training School in 1973. A command pilot with more than 7,000 hours supporting airlift and air refueling missions in the C-141 Starlifter and the KC-10 Extender, he is a veteran of *Operations Desert Shield* and *Desert Storm*.

His special assignments include serving as a facilitator for the Air Force Reserve Future Strategic Planning Initiative, as a reserve Crisis Action Team officer at 21st Air Force during *Operation Desert Shield* and reserve advisor to the commander of 21st Air Force.

In his civilian capacity, he is a pilot for U.S. Airways based in Philadelphia, PA.

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