

## **SAE COMMITTEE A-6**

### **AEROSPACE ACTUATION, CONTROL AND FLUID POWER SYSTEMS**

**AGENDA FOR MEETING 154  
MAY 6-9, 2013**

**MILWAUKEE, WI, USA**

*Home of The Fluid Power Institute  
at The Milwaukee School Of Engineering  
and of The National Fluid Power Association*

#### **InterContinental Milwaukee**

139 E. Kilbourn  
Milwaukee, WI 53202

The main features of this agenda are:

- Working sessions taking place on Monday, with most of the panels involved.
- Symposium "Advances in fluid power systems" taking place on Tuesday, followed by a tour of the hydraulic research labs of the the Fluid Power Institute at The Milwaukee School Of Engineering
- Panel and A-6 meetings taking place on Wednesday and Thursday.
- The training classes EHSV, "Tubing Systems" and "EHA" are postponed to the Fall meeting due to the lack of registrations ahead of time.

**AEROSPACE ACTUATION, CONTROL  
AND FLUID POWER SYSTEMS  
SAE COMMITTEE A-6**

Meeting 152  
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# AEROSPACE ACTUATION, CONTROL AND FLUID POWER SYSTEMS SAE COMMITTEE A-6

Meeting 154

## Agenda Overview

COMMITTEE/ SUBCOMMITTEE/ PANEL	SU 5	MON 6								TUES 7								WED 8								THRS 9																						
	6-9PM	1	2	3	4	L	5	6	7	8	N	R	1	2	3	4	L	5	6	7	8	1	2	3	4	L	5	6	7	8	1	2	3	4	L	5	6	7	8									
<b>COMMITTEE A-6</b>																																																
Steering Council (1)	X																																															
Welcome, opening remarks (8:00 - 8:30 AM)		X																																														
Symposium: Advances in fluid power systems												X	X	X	X																																	
Newcomers Welcome																																																
A-6 Reception																																																
A-6 Meeting																																																
Tour of the Fluid Power Institute research labs																																																
<b>A-6A: SYSTEM/SUBSYSTEM INTEGRATION.</b>																																																
Commercial Aircraft																								X	X																							
Military Aircraft												X	X	X	X	X	X																															
Flight Control Systems (panel meeting ends at 4:00)												X	X	X	X	X	X																															
Utility Control Systems (panel meeting starts at 4:00)																																																
<b>A-6B: ACTUATION &amp; CONTROL</b>																																																
Hydraulic Servo Actuation												X	X	X	X																																	
EHA												X	X	X																																		
Mechanical and electromechanical actuation systems												X	X	X	X	X	X																															
<b>A-6C: POWER GENERATION &amp; DISTRIBUTION</b>																																																
Contamination/Filtration												X	X	X																																		
Seals												X	X	X																																		
Fluids												X	X																																			
Tubing Systems																																																
Components																																																
Power Sources												X	X	X																																		
<b>TUTORIALS (2)</b>																																																
EHSV: Postponed to the Fall meeting																																																
Tubing systems: Postponed to the Fall meeting																																																
EHA: Postponed to the Fall meeting																																																

NOTES: L = 12:00 AM - 1:30 PM  
R = Reception 6:00 - 8:00 PM  
N= Newcomers Welcome 5:30 - 6:00 PM  
Times: 1 - 4 = One hour blocks 8:00 - 12:00 AM with 15 minute breaks every 2 hours  
Times: 5 - 8 = One hour blocks 1:30 - 5:30 PM with 15 minute breaks every 2 hours  
(1) = Attendance by invitation only.  
(2) = Attendance requires specific registration

X X Break out sessions  
X X Panel & A-6 meetings

**FOR INFORMATION :**

AMS-CE Elastomer workshop			X	X	X	X		X	X	X	X																																			
AMS-CE Elastomer meeting												X	X	X	X								X	X	X	X																				
AMS-P Polymer meeting																																			X	X	X	X								

# STEERING COUNCIL

Meeting No. 92

Sunday, May 5

6:00 - 9:00 PM

Salon C

& Wednesday, May 8

12:00 – 1:30 PM

Salon C

- S1            Introduction, Attendance, Meeting 90 Minutes Approval  
Chairman Jeffery, Secretary Wes Burandt
- S2            Operational and Organization Issues
- S2.1 Symposium
    - S2.1.2 Spring 2013 symposium
    - S2.1.2 Fall 2013 symposium
  - S2.2 Review and Action on Current Issues
    - S2.2.1 Inconsistent Requirements Across Specs
    - S2.2.2 Joint Projects with A-5 and AE-7 (All)
    - S2.2.3 Short courses (All)
  - S2.3 Committee A-6 Structure, Appointees, and Membership
    - S2.3.1 Structure (All)
    - S2.3.2 Appointees (All)
    - S2.3.3 Membership (All)
    - S2.3.4 Addition of new attendees to the Roster (Alan)
  - S2.4 Leadership
  - S2.5 Communication
  - S2.6 Performance Recognition (Curt)
  - S2.7 SAE Staff Report – Ms. Dorothy Lloyd
  - S2.8 Academia
  - S2.9 ISO Liaison (Ron)
  - S2.10 Agenda (Dominique)
  - S2.11 Policies & Procedures (Ron)
  - S2.12 Subcommittee Reports
    - S2.12.1 A-6A System/Subsystem Integration (Ian)
    - S2.12.2 A-6B Actuation and Control (Scott)
    - S2.12.3 A-6C Power Generation and Control (Ron)
  - S2.13 New Projects
  - S2.14 Document Status
  - S2.15 Future Meetings - Ms. Dorothy Lloyd
- S3            Strategic Issues
- S3.1            Strategic Objectives
  - S3.2            Focus - Near/Long Term
- S4            Other Business
- S4.1            Please contact Chairman Jeffery to request additions to this agenda.

**AEROSPACE ACTUATION, CONTROL  
AND FLUID POWER SYSTEMS  
SAE COMMITTEE A-6**

**Welcome and Introduction To Committee A-6**

Meeting 153  
Monday, May 6  
8:00 - 8:30 AM  
Grand Salon 1&2  
Chairman Jon Jeffery

- Role and Mission of A-6
- Committee A-6 Structure and Leadership:  
Organization and responsibilities of the Subcommittees and Panels.
- Summary of Meeting Agenda and Logistics
- Focus on Lessons Learned
- Social Events
- Upcoming meetings

**AEROSPACE ACTUATION, CONTROL  
AND FLUID POWER SYSTEMS  
SAE COMMITTEE A-6**

**New Comer Welcome**

and Introduction to Committee A-6 Steering Council  
Monday, May 6  
5:30 PM -6:00 PM  
Grand Salon 3

**A-6 Reception**

Monday , May 6  
6:00 PM - 8:00 PM  
Lobby Salon

# SAE A-6 AEROSPACE ACTUATION, CONTROL AND FLUID POWER SYSTEMS

## SYMPOSIUM

Tuesday May 7  
Grand Salon 1&2  
8 AM – 3:30 PM

Symposium Organizer : Joe Lundquist

### ADVANCES IN FLUID POWER SYSTEMS.

	<b>Introduction</b> by Joe Lundquist
1	<b>Center for Compact and Efficient Fluid Power Organization and Research Overview</b> , Prof. Kim Stelson, University of Minnesota
2	<b>Micro- and Nano-Texturing for Low-Friction Fluid Power Systems</b> , Prof. Bill King, University of Illinois at Urbana-Champaign
3	<b>Passive Noise Control in Fluid Power</b> , Prof. Ken Cunefare, Georgia Institute of Technology
4	<b>Leakage Reduction in Fluid Power Systems</b> , Prof. Richard Salant, Georgia Institute of Technology
5	<b>Improved Seal Design Based on Adaptive Materials</b> , Prof. Barney Klamecki, University of Minnesota
6	<b>Engineering Leadership Development in the SAE Chapter at MSOE</b> , Dr. Christopher Damm, Assoc Professor of Mechanical Engineering, SAE Chapter Faculty Advisor
7	<b>SAE Formula Hybrid Team</b> Rob Runte, Mechanical Engineering Major, Team Faculty Advisors: Dr. Matt Anderson and Dr. Luis Rodriguez
8	<b>SAE Aero Design Team</b> Sam Miller, Mechanical Engineering Major, Team Faculty Advisor: Dr. Bob Kern
9	<b>SAE Baja Vehicle Design Team</b> Matt Moseman, Mechanical Engineering Major, Team Faculty Advisor: Dr. Matt Schaefer
10	<b>Supermileage Vehicle Design Team</b> Charlie Scanlon, Mechanical Engineering Major, Team Faculty Advisor: Dr. Chris Damm
11	<b>Non-SAE, but Fluid Power Vehicle Project; The Parker Chainless Challenge</b> Justin Martin, Mechanical Engineering Major, Team Faculty Advisor: Dr. Vincent Prantil
12	<b>Fluid Power Programs at MSOE</b> Thomas Wanke, CFPE, Director MSOE Fluid Power Institute
	<b>Wrap-up</b> by Joe Lundquist

Tuesday May 7  
3:30 PM-5:30 PM

**Tour of the hydraulic research labs of the The Fluid Power Institute at The Milwaukee School Of Engineering**

(The labs are within walking distance)





## BREAKOUT AGENDAS

### COMMERCIAL AIRCRAFT ~ PANEL A-6A1

Monday May 6  
8:30 AM – 5:30 PM  
Salon B

Document #	Title	Sponsors	Scheduled Time
	No break-out session planned		

### MILITARY AIRCRAFT ~ PANEL A-6A2

Monday May 6  
8:30 AM – 5:30 PM  
Salon C

Document #	Title	Sponsor	Scheduled Time
AS5440B	Design and Installation Requirements for Aircraft Hydraulic Systems	Mr. Rieder	8:30 – 5:30

### FLIGHT CONTROL SYSTEMS ~ PANEL A-6A3

Monday May 6  
8:30 AM – 5:30 PM  
Room TBD

Document #	Title	Sponsor	Scheduled Time
ARP94900	<u>Aerospace - Flight Control Systems - Design, Installation and Test of Piloted Military Aircraft, General Specification</u>	David Flavell and Ian Halley	8:30 – 9:30
AIRXXX	<u>Aircraft Thrust Vectoring Flight Control</u>	Keith Wooddell	9:30 – 10:30
AIR4543/2	Aerospace Hydraulics and Actuation Lessons Learned	Steve Krane	11:00 – 12:00
ARP5769	<u>Dielectric Strength and Insulation Resistance Testing of Flight and Utility Control Systems and Components</u>	Darryll Stachniak and George Fuchs	1:30 – 3:00
ARP6265	<u>Aerospace - Rudder and Brake Pedal Unit General Requirements for Fly by Wire Transport and Business Aircraft</u>	Pierre Bettini	3:30 – 5:30

## UTILITY ACTUATION SYSTEMS ~ PANEL A-6A4

Monday May 6  
2:00 PM – 4:00 PM  
Salon B

Document #	Title	Sponsor	Scheduled Time
A5B-08-01	ARP5569 Gear Extend / Retract System Design	A-5 (Richard Juergens)	2:00-4:00

## HYDRAULIC SERVO ACTUATION ~ PANEL A-6B1

Monday May 6  
8:30 AM – 2:30 PM  
Salon D

Document #	Title	Sponsor	Scheduled Time
ARP5554	Guidelines for Specifying LVDTs and RVDTs.	R. Einarsson/ S. Schaefer	8:30-12:00
ARPXXXX	Hydraulic Damping Control of Power Steering Servo Systems	M. Besliu	1:30-2:30

## EHA/IAP ~ PANEL A-6B2

Monday May 6  
8:30 AM – 11:30 AM  
Lobby Salon

Document #	Title	Sponsor	Scheduled Time
ARPXXXX	Electrohydrostatic Module (EHM)	J. Socheleau	8:30-9:00
ARP6025	Duty Cycle Considerations for EHAs	R. Bringas	9:00-9:30
ARP5772	EHA Reservoirs	J. Perry	9:30-10:00
AIRXXXX	EHA/EBHA Application on Aircraft Programs	B. Barker	10:00-10:30
ARP XXXX	EHA Thermal Management	S. Nist	10:30-11:00
ARP XXXX	Sizing Considerations for EHA Pumps and Motors	B. Barker	11:00-11:30

**MECHANICAL AND ELECTROMECHANICAL ACTUATION SYSTEMS ~  
PANEL A-6B3**

Monday May 6  
8:30 AM – 5:30 PM  
Boardroom

Document #	Title	Sponsor	Scheduled Time
ARP5384	Aircraft Power Driver Unit (PDU) General Specification For	M. Besliu E. Zatlhoff	8:30 – 9:30
ARP6131	Maintenance and Inspection Procedures for Rotary and Linear Actuators	J. Babinski	9:30 – 10:30
AIRXXXX	THSA primary load path integrity monitoring principles	D van den Bossche	10:30 - 11:30
ARP5754	Electromechanical Actuator General Description For	J. Baker	1:30 – 2:30
AIR6016	High Lift Systems Description	U. Perrin	2:30 – 3:30
ARP5724	Testing of Electro-mechanical Actuators, General Guideline For.	E. Polcuch	3:30 – 4:30
AIR6074	Material Selection and Design Practices for Gear and Jacksc Systems.”	N. Borgarelli	4:30 - 5:30

**CONTAMINATION AND FILTRATION ~ PANEL A-6C1**

Monday May 6  
8:30 AM – 12:00 PM  
Grand Salon 4

Document #	Title	Sponsor	Scheduled Time
ARP219	Procedure and Method for Conducting Test of Hydraulic Components in Contamination Controlled System	J. Mothersbaug	8:30 – 10:30
AS4059	Aerospace Fluid Power - Cleanliness Classification for Hydraulic Fluids	N. Brown	10:40 – 12:00

**SEALS ~ PANEL A-6C2**

Monday May 6  
8:30 AM – 3:00 PM  
Grand Salon 3

Document #	Title	Sponsor	Scheduled Time
AIR6010	Recommended Surface Finishes for Seals	Garcia	8:30 – 9:45
ARP5555	Information on Installation of Seals in Standard Glands	Gilbert	10:00 – 10:45
ARP1802	Selection of PTFE Back-up Rings	Andersen	11:00 – 11:30
ARP5312	Scraper Comparative Test Method	Rao	11:30 – 12:00
AS27194	Seal, Plain, Synthetic Oil Resistant, Oils, (-65 to +275Mdf Fuel Resis	Freeman	1:30 – 2:00
AS27195	in Groove Seal, Plain Rubber (-65 to +275Mdf Fuel Resistant), -Mold Seal, Plain Rubber (-65 to +275Mdf Fuel Resistant), -Mold in Groove	Freeman	
AS27196 AS27197 AS27198	) )Molded Plate Gaskets )	Freeman	2:00 – 2:30
ARPXXXX	Project A6C2-00-2 Groove Dimensions and Recommended Seal Design for face Mounted Applications	Kholeefa	2:30-3:00

## FLUIDS ~ PANEL A-6C3

Monday May 6  
1:30 PM – 3:30 PM  
Grand Salon 4

Document #	Title	Sponsor	Scheduled Time
AS1241	"Fire Resistant Phosphate Ester Hydraulic Fluid For Aircraft"	Steve Millett	1:30 - 3:30

## TUBING SYSTEMS ~ PANEL A-6C4

Monday May 6  
8:30 AM – 5:30 PM  
Grand Salon 4

Document #	Title	Sponsor	Scheduled Time
	No breakout session planned		

## COMPONENTS ~ PANEL A-6C5

Monday May 6  
1:30 PM – 3:30 PM  
Grand Salon 4

Document #	Title	Sponsor	Scheduled Time
AS4835	Aerospace Hydraulic Expansion Relief Valves	Jeff Dickey	1:30 – 2:00
ARP4946	Aerospace Valves Check	Jordan Wadswor	2:00 – 2:30
ARP4763	Pressure Relief Valves	Gerry Loftis	2:30 - 3:00
ARP8775	Hydraulic System Components	Keith Russell	3:00 - 3:30

## POWER SOURCES ~ PANEL A-6C6

Monday May 6  
8:30 AM – 3:15 PM  
Salon E

Document #	Title	Sponsor	Scheduled Time
AIR4940	High Pressure/Performance Hydraulic Motors for Aerospace/Defense Applications	Stricker / Olthof / Orgnon	8:30 – 9:30
AS19692A	Pumps, Hydraulic, Variable Flow, General Specification for	Skinner	9:30 – 10:30
AS5994	Pump Units, Hydraulic, Electric Motor Driven, Variable Delivery, General Specification for	Juergens / Hastings	10:30 – 11:30
New	Determining Inlet Characteristics of Hydraulic Pumps	Devan / Kandil	11:30 – 12:15
AS7997	Motors, Aircraft Hydraulic, Constant Displacement, General Specification For: Recommend disposition only	R. Fisher / Devan	1:30 – 2:00
AIR 1343	Liquid Propellant Gas Generation Systems, 5 Year review, make recommendation	Jeffery	2:00 – 2:15
ARP719	Gas Motor 5 Year review, make recommendation	Jeffery	2:15 – 2:30
AIR4994	High Pressure Pneumatic Compressors Users Guide for Aerospace Applications, 5 Year review, make recommendation	Jeffery	2:30 – 2:45
AIR560	Missile Hydraulic Pumps, 5 Year review, make recommendation	Galloway	2:45 – 3:00
ARP4379	Aerospace-Accumulator, Hydraulic, Cylindrical, Piston Separated, 5 Year review, make recommendation	Loftis	3:00 - 3:15

# COMMERCIAL AIRCRAFT ~ PANEL A-6A1

Wednesday May 8

8:00 – 10:00 AM

Grand Salon 1&2

A1.1 Opening Remarks – Chairman P. Keenan

A1.2 New Secretary – A volunteer is requested to be the secretary of the panel

A1.3 Attendance and Membership Review – The secretary will conduct the roll call and new attendees will be asked to introduce themselves. Chairman P. Keenan will report on the panel membership.

A1.4 Approval of Previous Meeting Minutes

A.1.5 Project Charter  
Review of current charter

A1.6 Project Status – Works in Progress

A1.6.1 Project A6A1-08-01: AIR6034 - Airborne Monitoring of Commercial Transport Aircraft, Fluid System and Equipment Performance – V. Baumbach/R. Juergens

A1.6.2 Project A6A1-08-02: ARP6175 - Definition, Recognition, Troubleshooting and Repair of Hydraulic System Leakage – S. Nist

A1.6.3 Project A6A1-08-03: ARP4925B - Aerospace Design and Installation of Commercial Transport Helicopter Hydraulic Systems - J. Pongratz

A.1.6.4 Project A6A1-11-02: ARP6200 -Test Requirements and Methods for Commercial Aircraft Hydraulic Systems - D. Heer

A1.6.5 Project A6A1-11-01: AIR6185 - Lightning Effects on Hydraulic Transport Elements on Composite Aircraft – Liaison with AE-2 - N. Novakovic

A1.7 Project Status – New Projects

A1.7.1 Project A6A1-11-03: ARPYYY - Sizing of Hydraulic Systems - R. Fisher/R. Juergens

A1.8 5 Year Document Review

A1.8.1 ARP4752A - Aerospace - Design and Installation of Commercial Transport Aircraft Hydraulic Systems – P. Keenan

A1.8.2 AIR5696 - Aerospace Fluid Power - FAA Regulatory History - Transport Airplane Hydraulic System

A1.9 Lessons Learned  
Panel members are invited to present new Lessons Learned - Validation of any new Lessons Learned

A1.10 Liaison Reports

A1.10.1 Aircraft Manufacturer Updates – Representatives from Aircraft and Helicopter manufacturers.

A.1.11 Presentations – Wheel/tire threat presentation – R. Juergens

A1.12 New Business

A1.13 Adjournment

# MILITARY AIRCRAFT ~ PANEL A-6A2

Wednesday May 8  
10:00 AM– 12:00 PM  
Grand Salon 1&2

## A2.1 Opening Remarks, Attendance and Membership Review

Chairman Levek will open the meeting and Secretary Rieder will conduct a roll call. New attendees will be asked to introduce themselves. He will request if there are any comments on the previous Panel minutes and ask for a vote to approve the minutes.

## A2.2 Lessons Learned

A2.2.1 Vice Chairman Anderson will report the status of the Panel Lessons Learned.

A2.2.2 Presentation and validation of new Lessons Learned

## A2.3 Document Project Status and Voting

A2.3.1 AS5440B “Design and Installation Requirements for Aircraft Hydraulic Systems”, Mr. Rieder

A2.3.2 AIR 1899A (Project A6A2-07-1), “Aerospace Military Aircraft Hydraulic System Characteristics”, Mr. Neff.

A2.3.3 ARP 1383B (Project A6A2-08-2), “Impulse Testing of Aerospace Hydraulic Actuators, Valves, Pressure Containers and Similar Fluid System Components”, Mr. Keenan

A2.3.4 AIR1657B (Project A6A2-08-3), “Handbook of Hydraulic Metric Calculations”, Mr. Garnick and Mr. Nist.

## A2.4 Five Year Review

A2.4.1 ARP1625A “Cold Gas Systems, Missile Or Projectiles Design, Installation, Tests and Requirements For”, Mr. Halley will report on the status of this document.

A2.4.2 AIR4725, “Long-Term Storage Reliability of High Pressure Gas Containers for Pneumatic Actuation Systems”, Mr. F. Fazi will report on the status of this document.

A2.4.3 ARP24D, “Determination of Hydraulic Pressure Drop”, Mr. S. Lohe will report on the status of this document.

A2.4.4 AIR4002, “8000 Psi Hydraulic Systems: Experience and Test Results” Mr. I Halley will report on the status of this document.

A2.4.5 ARP5891, “Achieving Cleanliness Standards for Aircraft Hydraulic Systems During Manufacture” Issued Jan 07, 2008

A2.4.6 AIR974A, “Long-Term Storage of Missile Hydraulic Systems” Reaffirmed Nov 6, 2008

## A2.5 New Projects

A2.5.1 Vice-Chairman’s Report - Vice Chairman Anderson

A2.5.2 Liaison Reports

A2.5.3 Presentations – None Planned.

A2.5.4 New Business - Panel members are requested to identify other items for discussion and action.

## FLIGHT CONTROL SYSTEMS ~ PANEL A-6A3

Wednesday May 8  
1:30 PM– 4:00 PM  
Grand Salon 1&2

- A3.1 Opening Remarks - Chairman Fazi
- A3.2 Attendance and Membership Review - Secretary Pongratz will call the roll and new attendees will be asked to introduce themselves. Chairman Flavell will review the panel charter and report on recent changes to panel membership.
- A3.3 Review and Approval of Minutes from Meeting of Oct 23 – Secretary Pongratz will call upon members to approve the published minutes of the Oct 23 meeting in Memphis.
- A3.4 Project Status
- A3.4.1 AIR4094A (Project A6A3-94-2) "Aircraft Flight Control System Description" Sponsors Levek and Fuchs will report on the status of the 5-year update of this document.
- A3.4.2 ARP5769 (Project A6A3-07-01) "Dielectric Strength and Insulation Resistance Testing of Flight and Utility Control Systems and Components" Sponsor Mr. Stachniak and Mr. Fuchs will report on the status of this new document.
- A3.4.3 ARP5775 (Project A6A3-07-03) "Skew and Disconnect Detection in High Lift Systems" Sponsor Perrin and Mr. Harang will report on the status of this new project.
- A3.4.4 A4386D (Project A6A3-11-01) "Terminology and Definitions for Aerospace Fluid Power, Actuation and Control Technologies" Sponsor Runkel will report on the initiation of work on this document revision.
- A3.4.5 AIR4543/2 (Project A6A3-12-01) "Aerospace Hydraulics and Actuation Lessons Learned" Sponsor Krane will report on the preparation of the material for this new document.
- A3.4.6 AS94900 (Project A6A3-12-02) "Aerospace - Flight Control Systems - Design, Installation and Test of Piloted Military Aircraft, General Specification." Mr.Flavell and Subcommittee Chair Halley will report on the status of the 5-year update of this document.
- A3.4.8 AIR5273A (Project A6A3-12-04) "Actuation System Failure Detection Methods" Mr. Perrin and Mr. Harang will report on the status of this revision.
- A3.4.9 ARP6265 (Project A6A3-13-XX) "Aerospace - Rudder and Brake Pedal Unit General Requirements for Fly by Wire Transport and Business Aircraft" Sponsor Bettini will report on the scope and plan for this new document.
- A3.4.10 AIRXXXX (Project A6A3-13-XX) "Aircraft Thrust Vectoring Flight Control" Sponsor Wooddell will report on the scope and plan for this new document.
- A3.5 Lessons Learned
- A3.5.1 Many ideas have been suggested, but we need people to offer up complete lessons learned.
- A3.6 Five Year Review
- A3.6.1 There is one document that became due for a 5-year review at an earlier meeting. ARP4895A – "Flight Control Actuators - Dynamic Seals, Collection of Duty Cycle Data" Mr. Halley will report on his review of this document.

(Continued next page)

(Continued)

## **FLIGHT CONTROL SYSTEMS ~ PANEL A-6A3**

Wednesday May 8

1:30 PM– 4:00 PM

Grand Salon 1&2

A3.7 Liaison Reports

A3.7.1 Government Agencies  
No reports planned.

A3.7.2 SAE ASG - Avionic Systems Group, Mr. Fazi  
Vice Chairman Fazi will provide an overview of activities in the Avionic Systems Group of committees: AS-1 Aircraft Systems and Systems Integration, AS-2 Embedded Computing Systems Committee, AS-3 Fiber Optics and Applied Photonics Committee, AS-4: Unmanned Systems Technical Committee.

A3.8 Vice Chairman Report

Vice Chairman Clements will discuss upcoming document reviews, new technology trends, ideas for technical presentation for next panel meeting, and potential new projects for panel consideration.

A3.9 New Business

No new business yet scheduled.

A3.10 Presentations

"Certification Challenges For Flight Controls" by Mr. David McLaughlin Flight Control Systems Chief Engineer at Parker Aerospace.



# UTILITY CONTROL SYSTEMS ~ PANEL A-6A4

Wednesday May 8

4:00 – 5:00 PM

Grand Salon 1&2

- A4.1 Opening Remarks - Chairman Tim Neff
- A4.2 Attendance and Membership Review – The will call the roll and new attendees will be asked to introduce themselves. Chairman Neff will review the panel charter and report on recent changes to panel membership. The minutes from previous meeting will be reviewed for approval by panel.
- A4.3 Project Status -
  - A4.3.1 AIRXXX (Project A6A4-94-01) “Air Vehicle Utility Actuation Systems Description” Mr. David Dolezel will report on the status of this new document.
  - A4.3.2 ARP5569 (Project A5B-08-01) “Landing Gear Extend / Retract System Design” Mr. Richard Juergens will report on the status of this new document being developed in conjunction with the A-5 committee.
- A4.4 Lessons Learned  
Presentation and validation of new Lessons Learned.
- A4.5 Five Year Review
  - A4.5.1 AIR 5428 “Utility System Characterization, An Overview”- Was recently added to A6A4 panel as reported in Anchorage.
- A4.6 Liaison Reports
  - A4.6.1 U.S. Air Force
  - A4.6.2 U.S. Navy:
  - A4.6.3 U.S. Army
  - A4.6.4 SAE A-5
- A4.7 New Business  
Panel attendants are encouraged to present additional Lessons Learned and matters pertinent to Utility Control Systems technologies. Ideas for potential new documents will be discussed.
- A4.8 Presentations  
No presentations are currently scheduled

# HYDRAULIC SERVO ACTUATION ~ PANEL A-6B1

Thursday May 9  
8:00 - 10:00 AM  
Grand Salon 1&2

- B1.1 Opening Remarks – Chairman Dan Zierten
- B1.2 Attendance and Membership Review – Secretary Roman Simkin
- B1.3 Project Status
- B1.3.1 ARP5796 (Project A6B1-06-01), "ARP on Critical Flight Control Valves." Mr. Dan Zierten will provide the status of this new document.
  - B1.3.2 Project A6B1-06-02, "Hydraulic Damping Control of Steering Servo Systems." Mr. Marin Besliu will present the status of this new document.
  - B1.3.3 ARP 4493B, "Aerospace – Direct Drive Servovalves." Ori Chen-Zion will report the status of the revision to this document.
  - B1.3.4 ARP5554 (Project A6B1-07-01), "Guidelines for Specifying LVDTs and RVDTs." Mr. Rikk Einarsson or Mr. Scott Schaefer will present and discuss the status of this new document.
  - B1.3.5 ARP1281, Rev D (Project A6B1-07-02), "Actuators, Aircraft Flight Controls, Power Operated, Hydraulic, General Specification for." Mr. Ian Halley will report the status of the revision to this document.
  - B1.3.6 ARP988, Rev B (Project A6B1-XX-XX) "Electrohydraulic Mechanical Feedback Servoactuator." Mr. Manni Runkel will report the status of the revision to this document.
  - B1.3.7 AIR1855A (Project A6B1-XX-XX) "Actuation System Data Summary for Missiles and Launch Vehicles" Mr. K.Wooddell will report the status of the revision to this document.
- B1.4 Lessons Learned
- Presentation and validation of new Lessons Learned
- B1.5 5-Year Document Review Status
- B1.5.1 AIR4066B "Aerospace Fluid Power - Materials and Characteristics of Flight Control Servoactuators of Various Aircraft" Mr. Scott Schaefer will report on update recommendations for this document.
  - B1.5.2 ARP490F "Electrohydraulic Servovalves" revised Feb 8, 2008
  - B1.5.3 ARP5941 "Aerospace Fluid Power – Contamination Sensitivity –Considerations for Establishing Test Procedures for Flight Control Actuators" issued Mar 18, 2008

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## HYDRAULIC SERVO ACTUATION ~ PANEL A-6B1

Thursday May 9  
8:00 - 10:00 AM  
Grand Salon 1&2

B1.6 Liaison Report

- B1.6.1 NAVAIR Pax River
- B1.6.2 U.S. Army Aviation Engineering

B1.7 Presentations

No presentations are planned for this panel meeting.

B1.8 Vice Chairman Report

Vice Chairman will emphasize and discuss potential Hydraulic Servo Actuation topics for the panel consideration.

B1.9 New Business

Panel attendants are encouraged to present specific matters pertinent to Hydraulic Servo Actuation technologies.

## EHA ~ PANEL A-6B2

Thursday May 9  
10:00 AM- 12:00 PM  
Grand Salon 1&2

- B2.1 Opening Remarks - Chairman Brian Barker
- B2.2 Attendance and Membership review - Secretary Uwe Perrin
- B2.3 Fall '12 meeting minutes review and approval - Secretary Uwe Perrin
- B2.4 Lessons Learned - Vice Chairman J. Socheleau  
Presentation and validation of new Lessons Learned
- B2.4.1 Chairman B. Barker will discuss the conversion of Lessons Learned presentations from the Fall 2012 meeting into approved Lessons Learned.
- B2.5 Project Status
- B2.5.1 Review of and comments for ISO 22072 "EHA Characteristics to be defined in procurement specifications" Mr. G. Zwicker or Chairman B. Barker will report the status of this activity.
- B2.5.2 Project A6B2-03-3 "Electrohydrostatic Module (EHM)" Mr. J. Socheleau will report the status of this activity.
- B2.5.3 Project A6B2-07-1, ARP 5772 "EHA Reservoirs" Mr. J. Perry will report the status of this activity.
- B2.5.4 Project A6B2-08-1, ARP 6025 "Duty Cycle Considerations for EHAs" Mr. R. Bringas will report the status of this activity.
- B2.5.5 Project A6B2-XX-X ARP XXXX "EHA Thermal Management" – Mr. S. Nist will report the status of this activity.
- B2.5.6 Project A6B2-XX-X ARP XXXX "Sizing Considerations for EHA Pumps and Motors" – Chairman B. Barker will report the status of this activity.
- B2.5.7 Project A6B2-XX-X AIR XXXX "EHA/EBHA Applications on Aircraft Programs" – Chairman B. Barker will report the status of this activity.
- B2.6 EHA Activity Update
- B2.6.1 Airbus: Mr. Michel Todeschi
- B2.6.2 Goodrich: Mr. Jérôme Socheleau
- B2.6.3 Liebherr: Mr. Uwe Perrin
- B2.6.4 Moog: Mr. R. Anderson/Mr. B. Barker
- B2.6.5 Parker: Mr. Glenn Zwicker
- B2.6.6 F-35 JSF: Mr. Floyd Fazi (Lockheed) or Mr. R. Borgas (Navair)
- B2.6.7 Gulfstream: Mr. S. Nist
- B2.6.8 Any other updates by meeting attendees

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## **EHA ~ PANEL A-6B2**

Thursday May 9  
10:00 AM- 12:00 PM  
Grand Salon 1&2

### B2.7 New Business

B.2.7.1 Panel attendees are invited to discuss or present items related to EHA/IAP technologies and ongoing projects or programs.

### B2.8 Vice Chairman Report

Vice Chairman J. Socheleau will lead a discussion on other specific matters pertinent to EHA technologies and invite input from the panel attendees on the future activity of the panel.

# MECHANICAL AND ELECTROMECHANICAL ACTUATION SYSTEMS ~ PANEL A-6B3

Thursday May 9  
1:30 PM- 3:30 PM  
Grand Salon 1&2

- B3.1 Opening Remarks – Chairman Marin Besliu
- B3.2 Attendance and Membership Review – Secretary Jim Babinski
- B3.2.1 April '11 meeting minutes review and approval - Jim Babinski
- B3.3 Project Status
- Projects workshop summary – Vice Chairman Errol Zatloff
- B3.3.1 ARP 5384 (Project A6B3-87-1)  
“Aircraft Power Driver Unit (PDU) General Specification For”  
Mr. Besliu and Mr. Zatloff will report on status of this project.
- B3.3.2 ARP6131 (Project A6B3-02-1)  
“Maintenance and Inspection Procedures for Rotary and Linear Mechanical Actuators”  
Mr. Babinski will report on this project..
- B3.3.3 AIR6074 (Project A6B3-02-2)  
“Material Selection and Design Practices for Gear and Jackscrew Actuation Systems.”  
Mr. Borgarelli will report.
- B3.3.4 ARP (TBD), (Project A6B3-05-2)  
“System Safety Assessment Methodology As It applies to Mechanical Systems”  
Mr. Besliu will report.
- B3.3.5 AIR6226 (Project A6B3-11-X)  
“THSA Primary Load Path Integrity Monitoring Principles”  
Mr. Van den Bossche will report.
- B3.3.6 ARP5724, (Project A6B3-05-3)  
“Testing Of Electromechanical Actuators, General Guideline For”  
Mr. Polcuch will report
- B3.4.7 AIR6016, (Project A6B3-06-1)  
“High Lift Systems Description”  
Mr. Perrin and Mr. Anderson will report.
- B3.3.8 ARP5754 (Project A6B3-06-3)  
“Electromechanical Actuator General Description For”  
Mr. Baker will report
- B3.4 Lessons Learned - Vice Chairman Errol Zatloff  
Presentation and validation of new Lessons Learned

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## **MECHANICAL AND ELECTROMECHANICAL ACTUATION SYSTEMS ~ PANEL A-6B3**

Thursday May 9  
1:30 PM- 3:30 PM  
Grand Salon 1&2

B3.5 Liaison Reports – Mr. Besliu to invite reports as applicable from:

B3.3.1 Hydraulic Pump/Motor Panel – Mr. Peter Stricker

B3.3.2 Flight Controls Panel – Mr. Dave Flavell

B3.3.3 EHA/IAP Panel – Mr. Brian Barker

B3.3.4 Academia and Research - Prof. Giovanni Jacazio

-Summary of the INSA Conference in Toulouse June 2012

-Summary of the PHM Society Conference in Dresden Germany July 2012

B3.6 Panel Presentations

“Weapon Bay Door Actuation and Retaining System for the Neuron UCAV” by Giovanni Jacazio (Politecnico di Torino), presenter, Giuseppe Musso and Dario Savino (UTC Aerospace Systems - Microtecnica)

B3.7 New Business

B3.7.1 Review of documents up for 5 year review. ARP4058A – Mr. Besliu

B3.7.2 Discussion of EMA Prognostics and Health Monitoring – Mr. Besliu and Mr. Alexander

- Liaison with the SAE IVHM Steering Group for direct work on the EMA PHM.

B3.7.3 Discussion of Volcanic Ash on Flight Safety– Mr. Besliu

-Request from the SAE Aerospace Standards to technically address the volcanic ash effects on mechanical and electro-mechanical systems and components.

B3.7.4 Control of environment inside closed housings of equipment – Possible AIR.

B3.7.5 Open forum for new discussion items.

## FILTRATION ~ PANEL A-6C1

Wednesday May 8  
3:30 PM- 5:30 PM  
Grand Salon 1&2

- C1.1 Opening Remarks and Membership Review – Chairman Mothersbaugh
- C1.2 Attendance and Roll Call and Approval of Previous Minutes - Secretary Ellis
- C1.3 Project Status
  - C1.3.1 MIL-F-8815 (Project A6C1-94-3)  
“Filter Housings and Elements”  
Mr. Lundquist to advise on US Navy updating MIL-F-8815 per SAE recommendations.
  - C1.3.2 ARP785A  
“Procedure for the Determination of Particulate Contamination in Hydraulic Fluids by the Control Filter Gravimetric Procedure”  
Mr. Rao will report on the progress of this document
  - C1.3.3 ARP 901  
“Bubble Point Test Method”  
Mr. Luther will report on evaluation of this document.
  - C1.3.4 ARP1302  
“Filter Patch Testing Procedure for Aerospace Hydraulic Non-Rotating Equipment”  
Mr.Cherry will report on evaluation of this document.
  - C1.3.5 ARP219  
“Procedure and Methods for Conducting Test of Hydraulic Components in Contamination Controlled System”  
Mr. Mothersbaugh will report on evaluation of this document.
  - C1.3.6 ARP4205  
“Hydraulic Filter Elements – Method for Evaluating Dynamic Efficiency with Cyclic Flow”  
Mr Bensch will report on evaluation of this document.
  - C1.3.7 AS4059  
Aerospace Fluid Power - Cleanliness Classification for Hydraulic Fluids  
Mr. Brown will report on the progress of this document.
- C1.4 Lessons Learned  
Presentation and validation of new Lessons Learned
- C1.5 NFPA/ISO Reports  
Chairman Mothersbaugh to provide updates on NFPA and ISO documents.
- C1.6 Vice Chairman Report  
Vice Chairman Brown will update the panel on the status of new lessons learned.
- C1.7 Presentations
- C1.8 New Business  
Chairman Mothersbaugh will call for new business items.



## SEALS ~ PANEL A-6C2

Thursday May 9  
1:30 PM- 3:30 PM  
Grand Salon 3&4

- C2.1 Opening Remarks - Chairman Torben Andersen
- C2.2 Roll Call - Vice-Chairman Magdy Kandil
- C2.3 Approval of Minutes – Secretary Morgan Gilbert
- C2.4 Project Status
- C2.4.1 AIR1244 (Project A6C2-94-4) “Selection of Slipper Seals for Hydraulic-Pneumatic Fluid Power Applications” Mr Andersen will report on the document status.
- C2.4.2 ARP5312 (Project A6C2-95-1) “Scraper Comparative Test Method” Mr. Rao will report on the document status.
- C2.4.3 ARP1802 (Project A6C2-00-1) “Selection of PTFE Back-up Rings” Mr. Andersen will report on the document status.
- C2.4.4 ASXXXX (Project A6C2-00-2) “Groove Dimensions and Recommended Seal Design Practices for face Mounted Applications” Mr. Kholeefa will report on document status.
- C2.4.5 ASXXXX (Project A6C2-04-01) “O-Ring Size Standard for AMS-R-83485 Elastomer” Mr. Shaw will report on the document status.
- C2.4.6 AS27196 / 27197 / 27198 (Project A6C2-05-01) “Molded Plate Gaskets” Mr. Freeman will report on the document status.
- C2.4.7 ARP5555 (Project A6C2-06-03) “Information on Installation of Seals in Standard Glands” Document to capture useful information from MIL-G-5514 (cancelled) as a supplement to AS4716. Mr. Gilbert will report on the document status.
- C2.4.8 ARP 6010 (Project A6C2-07-01) Proposed Project to develop a document “Surface Finish Guidelines for Sealing Systems” Mr Garcia will report on the document status.
- C2.4.9 AS27195 (Project A6C2-07-09) “Seal, Plain Rubber (-65 to +275Mdf Fuel Resistant), -Mold in Groove” Mr. Freeman will report on the document status.
- C2.4.10 AS27194 (Project A6C2-07-10) “Seal, Plain, Synthetic Oil Resistant, Oils, (-65 to +275Mdf Fuel Resistant), -Mold in Groove” Mr. Freeman will report on the document status.
- C2.4.11 AS5616 (Project A6C2 ?????) “O-RINGS MOLDED FROM AMSXXX \_\_\_\_\_ MATERIAL”, Mr Fletcher to report on the document status.
- C2.5 Lessons Learned  
Presentation and validation of new Lessons Learned:
- C2.5.1 Testing of EP elastomers in Mixes of Type 4 & 5 Phosphate Ester fluids. T Andersen
- C2.5.2 Testing of EP elastomers in fluid changed between different brands of Type 4 & 5 Phosphate Ester fluids. T Andersen

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## SEALS ~ PANEL A-6C2

Thursday May 9  
1:30 PM- 3:30 PM  
Grand Salon 3&4

- C2.6 Five years reviews
- C2.6.1 AIR1244A Selecting Slipper Seals for Hydraulic-Pneumatic Fluid Power Applications  
Mr Andersen to report
- C2.6.2 ARP1802A Selection and Application of Polytetrafluoroethylene (PTFE or TFE) Backup Rings for Hydraulic and Pneumatic Fluid Power Applications  
Mr Andersen to report
- C2.6.3 AMSR83248/2 Rubber, Fluorocarbon Elastomer, High Temperature, Fluid and Compression Set Resistant (O-Rings, Class 2, 90 Hardness)  
Dr Zielinski propose to ballot for cancellation
- C2.6.4 AS27195 Seal, Plain, Rubber, (-65 to +275Mdf Fuel Resistant), -Mold in Groove  
Mr Freeman to report
- C2.6.5 AMSR83485/1 Rubber, Fluorocarbon Elastomer, Improved Performance at Low Temperatures, O-Rings, Sizes and tolerances  
Mr Shaw reported at last meeting that this document was being cancelled.
- C2.6.6 AS27194 Seal, Plain, Rubber, Synthetic Oil Resistant, Oils,-(-65 to +275Mdf), Mold in Groove  
Mr Freeman to report
- C2.6.7 AS5781 Retainers (Backup Rings), Hydraulic and Pneumatic, Polytetrafluoroethylene Resin, Single Turn, Scarf-Cut, for Use in AS4716 Glands  
Mr Andersen propose to stabilize this document
- C2.6.13 ARP820 Physical & Performance Tests for Type II(-65 to 275F) O-Ring Packings, 3000psi Hydraulic Service  
Mr. Andersen proposed to stabilize this document.
- C2.6.8 AS5782 Retainers (Backup Rings), Hydraulic and Pneumatic, Polytetrafluoroethylene Resin, Single Turn, Solid, Un-cut for Use in AS4716 Glands  
Mr Andersen propose to stabilize this document
- C2.6.9 AS27198A Seal, Plain, Rubber, (-65 to +275F Fuel Resistant), Mold in Groove  
Mr Freeman to report
- C2.6.10 AS27197A Seal, Plain, Rubber, (Hot Air Resistant 400F), Mold in Groove  
Mr Freeman to report

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## **SEALS ~ PANEL A-6C2**

Thursday May 9  
1:30 PM- 3:30 PM  
Grand Salon 3&4

- C2.6.11 AS27196A Gasket Rubber, Fluid Resistant, Oils, Synthetic Oils and Fuels (-65 to +400F), Mold in Groove  
Mr Freeman to report
- C2.6.12 ARP4727A Gland Design, Computation of Seal Squeeze and Gland Volume  
Needs sponsor
- C2.7 Liaison Reports.
- C2.7.1 ISO Liaison Report.  
ISO/TC20/SC10 – WG1 Liaison Report.
- C2.8 Presentations
- C2.9 New Business

## FLUIDS ~ PANEL A-6C3

Wednesday May 8

1:30 PM- 3:30 PM

Grand Salon 3&4

- C3.1 Opening Remarks
- C3.2 Review and Approval of the Minutes from Phoenix
- C3.3 Roll Call and Membership Review
- C3.4 Lessons Learned Presentations  
Presentation and validation of new Lessons Learned
- C3.5 Project Status –
  - C3.5.1 AS1241 (Project A6C3-98-1) “Fire Resistant Phosphate Ester Hydraulic Fluids for Aircraft”
  - C3.5.2 AIR810D “Degradation Limits of Hydrocarbon-Based Hydraulic Fluids, MIL-PRF-5606, MIL-PRF-83282, MIL-PRF-87257 Used in Hydraulic test Stands”
  - C3.5.3 AIR1362C “Aerospace Hydraulic Fluids Physical Properties”
- C3.6 Five Year Review
- C3.7 Old Business
- C3.8 New Business  
Next Meeting

## TUBING SYSTEMS ~ PANEL A-6C4

Wednesday May 8  
11:00 AM- 12:00 PM  
Grand Salon 3&4

C4.1 Opening Remarks David Heer

C4.2 Membership Review Tim Neff

C4.3 Approval of Previous Minutes Tim Neff

C4.4 Liaison Report From Committee G-3

Briefing by Perry Freeman

C4.5 Project Status

C4.5.1 No open projects

C4.6 New Business

C4.6.1 ARP994B, requested by Tim Neff

ARP994 Scope, References, Definitions, and Notes

ARP994/1 Tubing, Fitting, Material Selection, and Line Sizing

ARP994/2 Routing, Provisions for Flexure, Supports, and Clamping

ARP994/4 Dimensional Accuracy, Stress Considerations, Defects and Repair, and Contamination Control

ARP994/4 Protective Coatings, Identification, Mock-ups, Inspections, and Test Procedures

C4.6.2 Proposal for new ARP or AS for marking and identification of fluid tubes, requested by Tim Neff

C4.7 Lessons Learned

Presentation and validation of new Lessons Learned

C4.8 Five-Year Document Review

C4.8.1 Currently no five-year review items

C4.9 Meeting adjournment

## COMPONENTS ~ PANEL A-6C5

Thursday May 9  
10:00 AM- 12:00 PM  
Grand Salon 3&4

C5.1 Opening Remarks – Chairman Jeff Dickey

C5.2 Attendance and Membership Review – Secretary Dan Novak

C5.3 Fall 2012 (meeting 153) minutes review and approval – Secretary Dan Novak

C5.4 Project Status

C5.4.1 ARP 4763 (Project A6C5-91-4) “Pressure Relief Valves”  
Mr. Gerry Loftis will present the status of this document.

C5.4.2 ARP 4987 (Project A6C5-91-1) “Shuttle Valves”  
Mr. Jeff Dickey will present the status of this document.

C5.4.3 AS 5467 (Project A6C5-97-2) “Fuse Hydraulic Flow Rate Measuring”  
Mr. Tracy Tschauner will present status of this document.

C5.4.4 AS 8775 (Project A6C5-09-1) “Hydraulic System Components, Aircraft and Missiles, General Specification For”  
Mr. Keith Russell will report on the status of this document.

C5.5 Five Year Reviews

C5.5.1 ARP4946 “Aerospace-Valves, Check, Hydraulic, Aircraft and Missile”  
Mr. Jordan Wadsworth will report on the status this document.

C5.5.2 AS6026 “Control Unit, Pressure Generating, Manually Operated, Aircraft Hydraulic Brake System”  
Mr. Richard Juergens will report on his review of this document.

C5.5.3 AS4835 “Aerospace Fluid Power – Hydraulic Thermal Expansion Relief Valves”  
Mr. Jeff Dickey will report on the status of this document.

C5.5.4 AS5586 “Aerospace-General Requirements for Hydraulic System Reservoirs”  
Mr. Peter Keenan and Mr. David Scranton will report on the status of this document.

C5.5.5 AS4941 “General Requirements for Commercial Aircraft Hydraulic Components”  
Mr. Peter Keenan will report on his review of this document

C5.5.6 AS 4741 “Aerospace – Hydraulic Switching Valve, Pressure or Pilot Operated”  
Mr. Mark Garnick will report on his review of this document

C5.6 Lessons Learned

Members and participants are encouraged to submit new lessons learned.

C5.7 New Business

Panel members and guests are encouraged to introduce items of general interest for panel action.

C5.7.1 AS28889      Gas Charging Valve Correspondence

## POWER SOURCES ~ PANEL A-6C6

Thursday May 9  
8:00 AM- 10:00 AM  
Grand Salon 3&4

C6.1 Opening remarks & membership review  
Chairman G. Warner

C6.2 Attendance and membership review  
Secretary T. Olthoff

C6.3 Approval of minutes from last meeting  
Secretary T. Olthoff

C6.4 Project status

C6.4.1 AIR4940 (Project A6C6-88-1), “High Pressure/Performance Hydraulic Motors for Aerospace/Defense Applications” Messrs. Stricker, Olthoff and Orgnon to report.

C6.4.3 AS19692A (Project A6C6-03-01) “Pumps, Hydraulic, Variable Flow, General Specification for.” Mr. Skinner to report.

C6.4.4 AS5994 (Project A6C6-05-04) “Pump Units, Hydraulic, Electric Motor Driven, Variable Delivery, General Specification for” Messrs. Hastings, Orgnon, Skinner, and Galloway to report.

C6.4.5 AIR xxxxx (New Project) “Determining Inlet Characteristics of Hydraulic Pumps” Messrs. Devan and Kandil to report.

C6.4.6 AS7997 “Motors, Aircraft Hydraulic, Constant Displacement, General Specification For” Mr. R. Fisher to report on disposition.

C6.4 Lessons learned

Aircraft Hose for Iron Bird Testing – Steve Krane to present

C6.6 Liaison reports

C6.6.1 AE-6

C6.6.2 ISO – Mr. Peter Keenan

C6.6.3 USAF, Navy, FAA, etc.

C6.7 Old business

C6.8 New business

C6.8.1 New 5-Year Reviews

C6.8.1.1 AIR1343 “Liquid Propellant Gas Generation Systems” – 5 Year review, Mr. Jeffery to make recommendation.

C6.8.1.2 ARP719 “Gas Motor” – 5 Year review, Mr. Jeffery to make recommendation

C6.8.1.3 AIR4994 “High Pressure Pneumatic Compressors Users Guide for Aerospace Applications” – 5 Year review, Mr. Jeffery to make recommendation.

C6.8.1.4 AIR560 “Missile Hydraulic Pumps” – 5 Year Review, Mr. Galloway to make recommendation

C6.8.1.5 ARP4379 “Aerospace-Accumulator, Hydraulic, Cylindrical, Piston Separated” – 5 Year Review, Mr. Loftis to make recommendation.

C6.8.2 Other New Business

**AEROSPACE ACTUATION, CONTROL  
AND FLUID POWER SYSTEMS  
SAE COMMITTEE A-6**

Meeting 154  
Thursday May 9  
3:30 – 5:30 PM  
Grand Salon 3&4

1. Welcome and Introduction To All A-6 Members and Guests  
Chairman Jon Jeffery.
  - 1.1 Committee A-6 Structure and Leadership  
Chairman Jon Jeffery will describe the A-6 organization and responsibilities of the Subcommittees and Panels.
2. Committee A-6 Roll Call and Review of Membership  
Secretary Wes Burandt
3. Approval of Minutes of Meeting No. 145  
Secretary Wes Burandt
4. Membership Changes  
Chairman Jon Jeffery
5. Steering Council Summary Report  
Secretary Wes Burandt
6. SAE Report  
Ms. Lloyd will report. There will be information on arrangements in progress for future meeting.
7. Liaison Reports
  - 7.1 EASA
  - 7.2 FAA
  - 7.3 Military Services
  - 7.4 Other SAE Committees
  - 7.5 Other Technical Committees
8. Recognition/Awards  
Chairman Jon Jeffery

Fall 2011 Lessons Learned Award :

  - Lessons Learned Award criteria : Vice Chairman Dominique van den Bossche
  - Presentation of the Fall 2011 winning Lesson Learned by the Award winner
9. Panel presentations  
  
Panel presentations of special or general interest :
10. New Business/Chairman's Summary



## TUTORIALS

Because of the lack of registrations, the following short courses, originally scheduled for this meeting, will be proposed at the next Fall meeting,.

**Electrohydrostatic Actuators (EHA)** Instructors Brian Barker, Dominique van den Bossche

**Tubing Systems** Instructor Tim Neff

**Electrohydraulic servovalves** Instructor Roman Simkin