

MEETING NO. 113

AGENDA

AEROSPACE CONTROL AND GUIDANCE SYSTEMS COMMITTEE

The Inverness Hotel and Conference Center
200 Inverness Drive West
Englewood CO 80112
303-799-5800

12-14 March 2014

Tuesday **1-DAY SHORT COURSE**
11-Mar-13 Location – Board Room 1
8:00am-5:00pm

"Aircraft Handling Quality Testing for the Practicing Engineer"
by Dave Klyde, Lou Knotts, Brian Lee, Dave Mitchell, Dick Newman

Tuesday **1.0 PLANNING ADVISORY BOARD MEETING**
11-Mar-13 Location – Conference Room E
6:00pm

Chairman	Lou Knotts
Vice-Chairman	Phil Hattis
Immediate Past Chairman	Dave Klyde
Treasurer	Stan Pszczolkowski
Secretary	Marge Draper-Donley

Board Members

Gary Balas	Sanjay Garg	Piero Miotto
Christine Belcastro	Irene Gregory	Dave Mitchell
Jan De Luca	Ron Hess	Dave Schmidt
Dave Doman	Steve Jacobson	Mark Tischler
Shawn Donley	Gavin Jenney	Marty Waszak
Dale Enns	Brian Lee	Kevin Wise
	Raman Mehra	

Wednesday **2.0 REGISTRATION AND BREAKFAST**
12-Mar-13 Location – Conference Room A
7:00am – 8:30am

8:30am – 9:00am **3.0 GENERAL BUSINESS MEETING**
Location – Conference Room A
Lou Knotts – Chairman

9:00am – 12:00pm

4.0 GENERAL COMMITTEE TECHNICAL SESSION

Christine Belcastro and Dale Enns Co-Chairs

4.1 Government Agencies Summary Reports

4.1.1 DLR – Oliver Brieger

4.1.2 DoD

4.1.2.1 Army – Tom Berger

4.1.3 NASA

4.1.3.1 Armstrong – Steve Jacobson

4.1.3.2 Langley – Carey Buttrill

4.2 Research Institutions, Industry, and University Reports

4.2.1 Research Institutions and Companies

4.2.1.1 Calspan – Lou Knotts

4.2.1.2 Mitchell Aerospace Research – Dave Mitchell

4.2.1.3 MUSYN – Gary Balas

4.2.1.4 Rockwell Collins – Darren Cofer

4.2.1.5 Scientific Systems Company – Raman Mehra

4.2.1.6 Systems Technology, Inc. – Dave Klyde

4.2.2 Universities

4.2.2.1 Moscow Aviation Institute – Alexander Efremov

4.2.2.2 University of Colorado, Colorado Springs - Dave Schmidt

4.2.2.3 University of Minnesota – Gary Balas

4.2.2.4 University of Washington – Anshu Narang-Siddarth

4.2.3 Technical Committee Liaison

4.2.3.1 SAE S-7 HQ Technical Committee – Dick Newman

Wednesday

12-Mar-13

12:00pm – 1:30pm

LUNCHEON – Conference Room F (Meet in Subcommittees)

Subcommittee chairs, members and attendees will meet for lunch and agenda planning for Meeting No. 112.

1:30pm – 3:30pm

5.0 SUBCOMMITTEE A – AERONAUTIC AND SURFACE VEHICLES

Steve Jacobson, Chair

Brian Lee and Dave Mitchell, Vice Chairs

5.1 “Aircraft Loss of Control (LOC) Event Analysis for Technology Development and Validation”, Christine Belcastro, NASA Langley Research Center

5.2 “Aerolastic Flight Research on the X-56A”, Brian Holm-Hanson, Lockheed Martin

5.3 “Full Scale Advanced Systems Testbed (FAST): Capabilities and Recent Flight Research, Chris Miller, NASA Armstrong Flight Research Center

3:30pm – 3:50pm

BREAK

3:50pm – 4:30pm

5.4 “Flight Testing DLR’s New High Altitude Long Range Research Aircraft HALO,” Kevin Raynor, DLR

Wednesday
12-Mar-13

6.0 SUBCOMMITTEE B – MISSILES AND SPACE
Piero Miotto, Chair
Kevin Wise, Vice Chair

4:30pm – 5:10pm 6.1 “Notes on Development Work and First Flights for the Antares Launch Vehicle”,
Mike Ruth, Orbital Science Corporation

5:30pm – 6:30pm **SOCIAL HOUR – ASPEN ROOM**

Thursday
13-Mar-13

7:00am – 8:00am **BREAKFAST – CONFERENCE ROOM A**

8:00am – 10:00am **6.0 SUBCOMMITTEE B – MISSILES AND SPACE**
Piero Miotto, Chair
Kevin Wise, Vice Chair

6.2 “X-47B Carrier Landings”, Todd Tilley, Northrop Grumman Corporation

6.3 “Optimal LQG Synthesis for Simplified Models and Model Replacement – Non-Separable Control and Estimation Algorithm Design”, David Geller, Utah State University

6.4 “Design of Launch Vehicle Flight Control Systems”, Abran Alaniz, Draper Laboratory

10:00am – 10:20am **BREAK**

10:20am – 12:20pm **7.0 SUBCOMMITTEE C – AVIONICS AND SYSTEM INTEGRATION**
Raman Mehra and Marty Waszak, Co-Chairs
Jan DeLuca, Vice Chair

Special Session on Certification Considerations for Adaptive Systems

7.1 Overview of the CCAS project and background on certification, Darren Cofer, Rockwell Collins

7.2 Adaptive/Intelligent algorithms for airborne and ground applications, David Musliner, SIFT

7.3 Discussion of adaptive/intelligent algorithms and certification challenges, moderated by Darren Cofer

12:30pm – 2:00pm **LUNCHEON – ASPEN ROOM (Spotted Dog for PAB)**
PAB will meet for lunch and agenda planning for Meeting No. 112.
Meeting attendees have open seating for lunch.

2:00pm – 2:40pm **7.0 SUBCOMMITTEE C – AVIONICS AND SYSTEM INTEGRATION**
Raman Mehra and Marty Waszak, Co-Chairs
Jan DeLuca, Vice Chair

7.4 “Duality theory as a tool of Convexification: From Theory to Applications”, Behcet Acikmese, University of Texas

Thursday 13-Mar-13	8.0 SUBCOMMITTEE D – DYNAMICS, COMPUTATIONS, AND ANALYSIS
2:40 pm–3:20 pm	Ron Hess and Dave Doman, Co-Chairs Dave Schmidt, Vice Chair 8.1 “An Historical Perspective of the Flying Qualities of Retired Navy Aircraft”, Marge Draper-Donley, NAVAIR
3:20 pm – 3:40 pm	BREAK
3:40 pm–5:00 pm	8.0 SUBCOMMITTEE D – DYNAMICS, COMPUTATIONS, AND ANALYSIS (cont) Ron Hess and Dave Doman, Co-Chairs Dave Schmidt, Vice Chair 8.2 Ron Hess’s Best Papers of the ‘80s. “A Pilot Modeling Technique for Handling Qualities Research,” AIAA Paper No. 1980-1624, Ron Hess, UC Davis. “Cross-Coupling in Pilot/Vehicle Systems,” AIAA Paper No. 1985-1787 8.3 “Adaptive Control of Evolving Systems for Fun and Profit” Mark Balas, Embry- Riddle Aeronautical University.
Friday 14-Mar-13	BREAKFAST – CONFERENCE ROOM A
7:00 am – 8:00 am	
8:00 am – 8:40 am	8.0 SUBCOMMITTEE D – DYNAMICS, COMPUTATIONS, AND ANALYSIS (cont) Ron Hess and Dave Doman, Co-Chairs Dave Schmidt, Vice Chair 8.4 “Automatic Design, Specification, and Synthesis of Reactive Control Protocols for Aircraft Electric Systems,” Prof. Huan (Mumu) Xu, University of Maryland
8:40 am – 9:20 am	9.0 SUBCOMMITTEE E – FLIGHT, PROPULSION, AND AUTONOMOUS VEHICLE CONTROL SYSTEMS (cont) Sanjay Garg and Irene Gregory, Co-Chairs 9.1 "Loss-of-Control Prevention: iReCoVeR Progress Status" by Enric Xargay, University of Illinois Urbana-Champaign
9:20 am – 9:40 am	BREAK
9:40 am – 11:20 am	9.0 SUBCOMMITTEE E – FLIGHT, PROPULSION, AND AUTONOMOUS VEHICLE CONTROL SYSTEMS (cont) Sanjay Garg and Irene Gregory, Co-Chairs 9.2 “Piloted Simulation of a Model-Predictive Automated Recovery System,” by James Liu, N&R Engineering/NASA Glenn Research Center 9.3 "Learn-To-Fly Project Overview: Nonlinear Aerodynamic Modeling," by Jay Brandon, NASA Langley Research Center 9.4 “Lateral/Directional Control Law Design and Handling Qualities Optimization for a Business Jet Flight Control System”, Tom Berger, UC Santa Cruz & NASA Ames & Steve Hagerott, Cessna