

**MEETING NO. 111**

**AEROSPACE CONTROL AND GUIDANCE SYSTEMS COMMITTEE**

Atlantis Casino Resort and Spa  
3800 South Virginia Street  
Reno NV 89502  
775.825.4700

**5-8 March 2013**

**Tuesday**                    **1-DAY SHORT COURSE**  
5-Mar-13                    Location – Treasures D Conference Room  
8:00am-5:00pm  
  
“L1 Adaptive Control and its Transition to Aerospace Applications”  
by Naira Hovakimyan

**Tuesday**                    **1.0 PLANNING ADVISORY BOARD MEETING**  
5-Mar-13                    Location – Treasures A Conference Room  
6:00pm

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

**Board Members**

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

**Wednesday**                **2.0 REGISTRATION AND BREAKFAST**  
6-Mar-13                    Location – Treasures AB Room  
7:00am – 8:30am

**Wednesday**                **3.0 GENERAL BUSINESS MEETING**  
6-Mar-13                    Location – Treasures AB Room  
8:30am – 9:00am        Lou Knotts – Chairman

**Wednesday**                **4.0 GENERAL COMMITTEE TECHNICAL SESSION**  
6-Mar-13                    Christine Belcastro and Dale Enns Co-Chairs  
9:00am – 12:00pm

#### **4.1 Government Agencies Summary Reports**

4.1.1 DLR – Klaus Uwe Hahn

4.1.2 NASA

4.1.2.1 Dryden – Steve Jacobson

4.1.2.2 Engineering and Safety Center – Neil Dennehy

4.1.2.3 Glenn – Sanjay Garg

4.1.2.4 Langley – Carey Buttrill

4.1.3 DoD

4.1.3.1 AFRL – Dave Doman

#### **4.2 Research Institutions, Industry, and University Reports**

4.2.1 Research Institutions and Companies

4.2.1.1 Aurora Flight Sciences – Jim Paduano

4.2.1.2 Barron Associates – John Schierman

4.2.1.3 Calspan – Lou Knotts

4.2.1.4 Draper Lab – Piero Miotto

4.2.1.5 Heffley Engineering – Robert Heffley

4.2.1.6 Mitchell Aerospace Research – Dave Mitchell

4.2.1.7 Scientific Systems Company – Raman Mehra

4.2.1.8 Systems Technology, Inc. – Dave Klyde

4.2.2 Universities

4.2.2.1 University of Hamburg – Frank Thielecke

4.2.2.2 University of Illinois at Urbana-Champaign – Enric Xargay

4.2.2.3 Texas A&M – Jonathan Rogers

**Wednesday**

6-Mar-13

12:00pm – 1:30pm

#### **LUNCHEON – TREASURES CD ROOM (Meet in Subcommittees)**

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

**Wednesday**

6-Mar-13

1:30pm – 3:30pm

#### **5.0 SUBCOMMITTEE C – AVIONICS AND SYSTEM INTEGRATION**

Raman Mehra and Marty Waszak, Co-Chairs

Jan DeLuca, Vice Chair

5.1 “MIDCAS: European Midair Collision Avoidance project for RPAS”, Bengt-Göran Sundqvist, Saab Aircraft.

5.2 “NextGen Navigation”, Bill Wanner, FAA Technical Center

5.3 “Verifiable Real-time Convex Optimization of Autonomous Vehicles with Application to Mars Entry, Descent, and Landing”, Behcet Acikmese, University of Texas.

**Wednesday**

6-Mar-13

3:30pm – 3:50pm

#### **BREAK**

5.4 “NASA Max Launch Abort System (M-LAS)”, Mike Gilbert, NASA Engineering and Safety Center.

<p><b>Wednesday</b> 6-Mar-13 4:30pm – 5:10pm</p>	<p><b>6.0 SUBCOMMITTEE D – DYNAMICS, COMPUTATIONS, AND ANALYSIS</b> Ron Hess and Dave Doman, Co-Chairs Dave Schmidt, Vice Chair  6.1 “NASA X-56 Multi-Use Technology Testbed” Brian Holm-Hansen, Lockheed-Martin Aeronautics</p>
<p><b>Wednesday</b> 6-Mar-13 6:00pm – 7:00pm</p>	<p><b>SOCIAL HOUR – TREASURES CD ROOM</b></p>
<p><b>Thursday</b> 7-Mar-13 7:00am – 8:00am</p>	<p><b>BREAKFAST – TREASURES AB ROOM</b></p>
<p><b>Thursday</b> 7-Mar-13 8:00am – 10:00am</p>	<p><b>6.0 SUBCOMMITTEE D – DYNAMICS, COMPUTATIONS, AND ANALYSIS (cont)</b> Ron Hess and Dave Doman, Co-Chairs Dave Schmidt, Vice Chair  6.2 “Bifurcation Analysis for Subscale Aircraft,” Mark Lowenberg, Bristol University  6.3 “Pilot Gain and the Workload Buildup Flight Test Technique,” Ina Niewind, DLR Institute of Flight Systems  6.4 “Flight Investigation of Helicopter Low-Speed Response Characteristics,” (One of the AFM “Most Influential Papers of the 1980’s), Dave Mitchell, Handling Qualities Research</p>
<p><b>Thursday</b> 7-Mar-13 10:00am – 10:20am</p>	<p><b>BREAK</b></p>
<p><b>Thursday</b> 7-Mar-13 10:20am – 12:20pm</p>	<p><b>7.0 SUBCOMMITTEE E – FLIGHT, PROPULSION, AND AUTONOMOUS VEHICLE CONTROL SYSTEMS</b> Sanjay Garg and Irene Gregory, Co-Chairs  7.1 “DARPA Autonomous Refueling with Global Hawks” NGC PoC 7.2 “Condor Retrospective” Tony Lambregts 7.3 “Technologies and Challenges for Autonomous Civil Aircraft” David Voss, Rockwell Avionics</p>
<p><b>Thursday</b> 7-Mar-13 12:30pm – 2:00pm</p>	<p><b>LUNCHEON – TREASURES CD ROOM</b> PAB will meet for lunch and agenda planning for Meeting No. 111. Meeting attendees have open seating for lunch.</p>
<p><b>Thursday</b> 7-Mar-13 2:00pm – 2:40pm</p>	<p><b>7.0 SUBCOMMITTEE E – FLIGHT, PROPULSION, AND AUTONOMOUS VEHICLE CONTROL SYSTEMS</b> Sanjay Garg and Irene Gregory, Co-Chairs</p>

7.4 "A Systems Level Perspective on Engine Ice Accretion" Ryan May, Vantage Partners LLC, NASA GRC

**Thursday**  
7-Mar-13  
2:40 pm–3:20 pm

**8.0 SUBCOMMITTEE A – AERONAUTIC AND SURFACE VEHICLES**

Steve Jacobson, Chair  
Brian Lee and Dave Mitchell, Vice Chairs

8.1 "An Overview of the Embraer Legacy Flight Control and Flight Test", Cleiton Silva, Embraer

**Thursday**  
7-Mar-13  
3:20 pm – 3:40 pm

**BREAK**

**Thursday**  
7-Mar-13  
3:40 pm–5:00 pm  
4:20 pm – 5:00 pm

**8.0 SUBCOMMITTEE A – AERONAUTIC AND SURFACE VEHICLES**

Steve Jacobson, Chair  
Brian Lee and Dave Mitchell, Vice Chairs

8.2 "Boundary Avoidance Testing", Bill Gray, USAF Test Pilot School

8.3 "Unmanned Submarines for Oil Rig Inspection", Sekhar Tangirala, Lockheed-Martin

**Friday**  
8-Mar-13  
7:00 am – 8:00 am

**BREAKFAST – TREASURES AB ROOM**

**Friday**  
8-Mar-13  
8:00 am – 8:40 am  
8:00 am – 8:40 am

**8.0 SUBCOMMITTEE A – AERONAUTIC AND SURFACE VEHICLES (cont)**

Steve Jacobson, Chair  
Brian Lee and Dave Mitchell, Vice Chairs  
8.4 "F-35B", Greg Walker, Lockheed Martin.

**Friday**  
8-Mar-13  
8:40 am – 10:00 am

**9.0 SUBCOMMITTEE B – MISSILES AND SPACE**

Piero Miotto, Chair  
John Weyrauch and Kevin Wise, Vice Chairs  
9.1 "QF-16 Full Scale Aerial Target" Kevin A. Wise  
9.2 "AR&D Lidar Sensor Evaluation" Cornelius J. Dennehy

**Friday**  
8-Mar-13  
10:00 am – 10:20 am

**BREAK**

**Friday**  
8-Mar-13  
10:20 am – 11:40 am

**9.0 SUBCOMMITTEE B – MISSILES AND SPACE**

Piero Miotto, Chair  
John Weyrauch and Kevin Wise, Vice Chairs

9.3 “The Design of the Orion GN&C” Mark C. Jackson

9.4 “History of Lifting Bodies” Russell Howard