



Spring 2009 Flight Simulation Conference Flight Simulation: Towards the Edge of the Envelope

Wednesday 3 – Thursday 4 June 2009

No.4 Hamilton Place, London W1J 7BQ, UK

Sponsored by:



Synopsis

As the aviation industry grows, the demands on safety throughout the operational envelope of aircraft also increase. Flight simulation today is primarily concerned with reproducing normal flight regimes. However, aircrew preparedness also requires being ready to deal with uncommon situations. These can extend well beyond the reproduction of system failures. Recent experience has shown that aircraft themselves may encounter unusual attitudes, requiring pilots to recognise and correct the airplane.

While both simulator and airframe manufacturers have attempted to provide media to train for these situations, the task remains challenging: acquiring data representative of abnormal flight envelopes, providing representative control forces, and presenting appropriate visual and motion cues are all part of the challenge. In military flight, familiarisation with the physiological effects of upset recovery, disorientation, high-g and high angle-of-attack operations is critical to survivability, and industry has reacted here as well with innovative approaches.

This informative and wide-ranging two-day Conference will bring together the users and developers of flight simulators used in training both the conventional and extended envelope of flight vehicles, including fixed and rotary wing. It will examine the issues from the perspectives of aircraft manufacturers and operators, makers and users of training systems, training providers, researchers, and regulators. The involvement of pilots who have dealt with operations outside the usual flight envelope boundaries, as well as those who prepare others for such encounters, will be a key element in defining the requirements during this Conference. The goal is to identify the training needs, technical solutions, and the regulatory challenges as simulation pushes the boundaries of virtual training, research and testing. The Conference has a very broad agenda and seeks both to ensure that appropriate work is taken forward and also to determine how the RAeS might best facilitate progress.

The papers, some of which will be novel and contentious, will be presented by leading experts in their fields. Delegates are expected from Europe, North and South America, the Middle East and Indian sub-continent, China and the Far East. The Conference provides a unique opportunity to become involved, discuss the issues and influence the work required to resolve them.

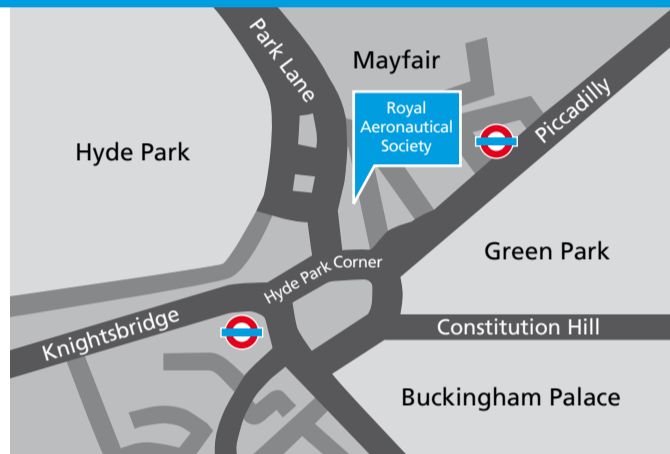
Register for the Conference today

- **Meet the experts in their fields**
Get your questions answered
- **Get the latest information on industry hot topics**
For your continued professional development
- **Meet a wide audience**
Make contacts for new business opportunities

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Royal Aeronautical Society

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www.aerosociety.com/conference

Proceedings

Proceedings from this event are free to delegates. If you are unable to attend and would like to purchase a copy, then additional copies can be purchased from the Royal Aeronautical Society or by completing the registration form below. Information on past conferences can be found at www.aerosociety.com/proceedings.

Sponsorship & Exhibition

Please contact the Conference & Events Department for details on exhibiting, sponsorship and insertion of information into delegate packs.

Disability Act 2004

The Royal Aeronautical Society is fully compliant with the above. Ramps are available to help delegates gain access to the building and the lecture theatre. A wheelchair access toilet is available on the ground floor.

Cancellations

Substitutions may be made up to the day of the conference - please notify the Conference & Events Department in writing of name changes as soon as possible. If no substitute can be found for the delegate unable to attend, cancellations must be notified in writing to the Conference & Events Department. The following fees will then apply:

- More than 14 days notice: 25% of registration fee (i.e. 75% refund)
- 14 days or less notice: 50% of registration fee (i.e. 50% refund)
- 5 days or less and Non-attendance: 100% of registration fee (i.e. no refund)

Take an active part in the aerospace community

Register Today

The Royal Aeronautical Society's unique ability to stimulate discussion and exchange ideas is becoming ever more relevant with the need to harness the diverse nature of the industry into a cohesive entity.

Why the RAeS?

- The RAeS is globally recognised as the only professional institution dedicated to the entire aerospace community
- As a not-for-profit organisation we are committed to reinvesting back into industry through scholarships, the National Aerospace Library and the only aerospace careers centre in the UK

Meet a wide audience

- RAeS conferences and events attract the highest calibre of industry professionals providing unrivalled networking opportunities

Reap the rewards

- Continued professional development
- Latest information on industry hot topics
- Meet the experts in their fields

Industry leaders

- Join the previous companies who have attended RAeS Conferences
- We have long-term sponsorship relationships with a number of companies at the forefront of the industry

Registration fee includes:

- Delegate place
- Refreshments & Lunch
- Conference proceedings

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- Discount for all Group Bookings
- Corporate Partner Group packages
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- Free places for RAeS Student Members

Register on-line at www.aerosociety.com/conference

2 Day Programme



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DAY 1 Wednesday 3 June 2009

- 08:30** Registration/Tea and Coffee
- 09:00** **Opening Remarks**
Dr Mike Steeden, President, Royal Aeronautical Society, UK
Dr Sunjoo Advani, Flight Simulation Group & Conference Chairman, Royal Aeronautical Society, UK
- 09:15** **Keynote Address 1: Upset Recovery Experience During a Scheduled Airline Flight**
Capt Dave Butler, Senior Instructor, Air Canada, Canada

Session 1: Aviation Safety – Mind Your Attitude

Chairman: Capt Ron Sarich, Manager, Simulator Program, Transport Canada Civil Aviation, Canada

- 09:55** **1 Upset Training: Improved Technological Capabilities, Elevated Threats and a Call for a Higher Standard of Training; The Perspective of the Line Pilot and the Airline Pilots Association**
Capt Bryan Burks, B-737/400/700/800/900, Alaska Airlines, USA
- 10:20** **2 The Risks to the Transport Aircraft Fleet of Loss of Control in Flight (LOC-I)**
Capt John M Cox, Chief Executive Officer, Safety Operating Systems, USA
- 10:45** **3 Upset Recovery Training: Lessons from Accidents and Incidents**
Dennis A Crider, Chief Technical Advisor, Vehicle Simulation, National Transportation Safety Board, USA
- 11:10** Tea and Coffee Networking Break
- 11:40** **4 Lessons Learned from Wake Flight Tests and In line Encounters of Wake Vortices**
Capt Etienne Tarnowski, Experimental Test Pilot, Airbus, France
- 12:05** **5 Simulator Upset Recovery Training**
Capt David Carbaugh, Chief Pilot – Flight Operations Safety, Boeing Commercial Airplanes, USA
Robert A Curnutt, Technical Fellow, Boeing Commercial Airplanes, USA
- 12:35** Discussion
- 12:55** Networking Lunch

Session 2: Research and Development – The Needs and Challenges Ahead

Chairman: Barry Tomlinson, Flight Simulation Group, Royal Aeronautical Society and Simulation Consultant, UK

- 13:55** **6 The Use of Pilot Models to Support Flight Simulation: The Sky is the Envelope**
Dr Ruud Hosman, Director, AMS Consult, The Netherlands
- 14:20** **7 Enhancing Pilot Performance to Mitigate Aircraft Upsets**
Dr Angus Rupert, Senior Scientist, US Army Aeromedical Research Laboratory, USA
- 14:45** **8 Upset Recovery Training Transfer**
Dr Rodney O Rogers, Professor of Aeronautical Science, Embry-Riddle Aeronautical University, USA
- 15:15** **9 Aerodynamics Modeling for Training on the Edge**
David Gingras, Vice President – Engineering, Bihrl Applied Research Inc, USA
John Ralston, President, Bihrl Applied Research Inc, USA
- 15:40** Discussion
- 15:55** Tea and Coffee Networking Break

Session 3: Pilot Training for Extreme Manoeuvres and Unusual Encounters

Chairman: Peter Barrett, Learned Society Board, Royal Aeronautical Society, UK

- 16:25** **10 Training Ab Initio Pilots for High Angle of Attack Flight: An Application of Flight Training Devices**
Nickolas “Dan” Macchiarella, Associate Professor, Embry-Riddle Aeronautical University, USA
- 16:50** **11 Wake Vortex Encounters in a Flight Simulator**
Prof David Allerton, Professor of Computer Systems Engineering, University of Sheffield, UK
- 17:15** **12 Avoidance of Spatial Disorientation Through Training in Flight Simulators**
Tracy Grimshaw, Senior Psychologist, QinetiQ Ltd, UK
- 17:45** Discussion
- 18:00** Evening Reception

DAY 2 Thursday 4 June 2009

- 08:30** Registration/Tea and Coffee
- 08:50** **Opening Remarks**
Dr Sunjoo Advani, Flight Simulation Group & Conference Chairman, Royal Aeronautical Society, UK
- 09:00** **Keynote Address 2: Simulation and Training for the Final Frontier**
Capt David Mackay, Chief Test Pilot, Virgin Galactic, UK

Session 4: Advanced Flight Training at the Edge of the Envelope

Chairman: Gp Capt Gordon Woolley OBE, Tactical Control Centre Manager, Medium Support Helicopter Aircrew Training Facility, Serco Defence Science & Technology, UK

- 09:20** **13 Advanced Flight Training in the Swedish Dynamic Flight Simulator**
Britta Levin, Competence Unit Systems Assessment, Swedish Defence Research Agency (FOI), Sweden
- 09:50** **14 Visualisation of the Brown Out Phenomenon, Integration and Test on a Helicopter Flight Simulator**
Torsten Gerlach, German Aerospace Center (DLR), Germany
- 10:15** **15 F-35 Simulation Testing to Achieve Safety of Flight Clearance Prior to First Flight**
Terry J Burrell, Lockheed Martin Fellow, Air Vehicle Modelling & Simulation, Lockheed Martin Aeronautics Company, USA
- 10:40** Tea and Coffee Networking Break
- 11:10** **16 Peculiarities of Simulation and Coincidence with Real Flight: High Angles of Attack, Stall, Spin & Supermaneuverability**
Dr Vladimir Shibaev, Director of the Certification Centre for FSTD, Central Aerohydrodynamic Institute (TsAGI), Russia
- 11:35** **17 Unusual Attitude Training: Integrated CBT / FFS / In-Flight Training Solutions**
Paul BJ Ransbury, President, APS Emergency Maneuver Training, USA
- 12:00** **18 All-attitude Recovery Training - Capabilities and Limitations of FSTDs**
Stéphane Clément, Leader of Aviation Industry Regulations, CAE Inc, Canada
Peter Jarvis, Chief Engineer, Civil Simulation Technologies, CAE Inc, Canada
- 12:25** Discussion
- 12:45** Networking Lunch

Session 5: Innovative Solutions – Extreme Engineering for Training Needs

Chairman: Ian Strachan MBE, Flight Simulation Group, Royal Aeronautical Society, UK

- 13:45** **19 Close-to-Reality Motion in Flight Simulation: Cost Effective ab-initio Hover Training**
Dipl-Ing Rolf Huhne, Manager Motion Simulation, AMST Systemtechnik GmbH, Austria
- 14:10** **20 Upset Recovery and Disorientation Training at NASTAR Center**
Keith A George, Chief Technology Officer, Environmental Tectonics Corporation-United Kingdom (ETC-UK), UK
- 14:40** **21 Ground-Based Simulation of Upset Recovery in Desdemona**
Dr Mark Wentink, Technical Manager Desdemona Simulator, TNO, The Netherlands
Dr Eric Groen, Research Scientist, TNO, The Netherlands
Dr Michael Mayrhofer, Technical Manager, AMST Systemtechnik GmbH, Austria
- 15:10** **22 NASA Ames Vertical Motion Simulator – A Facility Engineered for Realism**
Bimal Aponso, Chief, Aerospace Simulation Research & Development Branch, NASA, Ames Research Center, USA
- 15:35** Discussion
- 15:55** Tea and Coffee Networking Break

Session 8: The Way Ahead

Chairman: Dr Sunjoo Advani, Flight Simulation Group & Conference Chairman, Royal Aeronautical Society, UK

- 16:25** **Open Forum and Proposals for Resolutions for Further Collaborative Work**
Royal Aeronautical Society Panel
- 16:55** Close of Conference
- 17:00** *Flight Simulation Group Annual General Meeting*

Programme may be subject to change, see www.aerosociety.com/conference for the latest details

Complete and return the form below to:

Conference & Events Department, Royal Aeronautical Society, No.4 Hamilton Place, London W1J 7BQ
Or register on-line at www.aerosociety.com/conference

TITLE:	FIRST NAME:	SURNAME:
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ORGANISATION:		
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TEL NO:	FAX NO:	
EMAIL:	RAeS MEMBERSHIP NO:	

REGISTRATION FEES (include refreshments, lunch and a set of proceedings)	
Non-Member	£545.00 + VAT (£81.75) £626.75 <input type="checkbox"/>
RAeS Corporate Partner (inc. Armed Forces concession)	*£475.00 + VAT (£71.25) £546.25 <input type="checkbox"/>
RAeS / IET / IMechE Member	£395.00 + VAT (£59.25) £454.25 <input type="checkbox"/>
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RAeS Retired Member	£125.00 + VAT (£18.75) £143.75 <input type="checkbox"/>

One day registrations are available on request

*RAeS Corporate Partners are entitled to the special offer of five places for £1900 + VAT

RAeS Student Members may attend the conference free of charge subject to availability

Proceedings Only (Non members rate) **£135.00 + VAT** (Members rate) **£115.00 + VAT**

CREDIT CARD DETAILS: (The RAeS can accept payment on the following payment cards)

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Please include your CVC security code

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METHODS OF PAYMENTS

Payment must accompany registration and all payments should be made in Sterling (UK£).

Online: Registration and secure payment can be made on-line at www.aerosociety.com/conference

Cheque: Cheques should be made payable to the RAeS and enclosed with this registration form. Please add £15 if your cheque is not drawn on a UK bank to cover bank charges / currency exchange rates.

Bank Transfer: Payments can be made by bank transfer into Account No. 0615 2538, Sort Code 60 02 20, National Westminster Bank plc, Berkeley Square & Mayfair Branch, PO Box 2153, 1-4 Berkeley Sq, London W1A 1SN, UK. Please indicate on your registration form if you have paid your fees direct.

Signature

X

Reference: 597

