

## **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

### **CONFERENCE SYNOPSIS**

**The Royal Aeronautical Society Spring Flight Simulation Conference is a well established and highly successful annual event. The 2009 Conference will examine and progress the issues raised by the changes posed in training and simulating flight near the boundaries of the flight envelope. The Conference will be held at the Headquarters of the Royal Aeronautical Society in London on Wednesday 3 and Thursday 4 June 2009.**

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 fixed-wing and rotary-wing 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 and some 150 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.**

### **SPONSORSHIP & EXHIBITION SPACE**

Various sponsorship, exhibition and corporate profiling opportunities are available in connection with this Conference. For more information or to discuss these packages, please contact Emma Brown in the Conference & Events Department on 020 7670 4372 or email [emma.brown@aerosociety.com](mailto:emma.brown@aerosociety.com).

### **REGISTRATION**

The full Programme for this event will be available in the near future on our website: [www.aerosociety.com/conference](http://www.aerosociety.com/conference). Secure on-line registration will be available. If you would prefer a paper registration form please contact the Royal Aeronautical Society's Conference & Events Department at:

#### **Conference & Events Department (Ref 597)**

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## CONFERENCE SESSIONS

### Wednesday 3 June 2009

#### Keynote Addresses 1: Upset Recovery Experience During a Scheduled Airline Flight

Capt Dave Butler, Air Canada, Canada

#### Session 1: Aviation Safety – Mind Your Attitude

Being prepared for upset recoveries requires an understanding of the causes of such incidents. Preparedness for the usual and also the uncommon situations is truly the greatest benefit of ground-based training. In this session, the leaders of our training industry will kick off discussions on the problems with current training methodologies, and the need for higher standards in training. Risks to operational safety will also be discussed. Presenters will represent organisations responsible for aviation safety, pilot associations, and the major airframe manufacturers.

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

Addressing the fundamental technical disciplines, from pilot modelling, aerodynamics and evaluations of current technologies, is the focus of this session. Speakers in this session will express their contributions to understanding, modelling and evaluating simulation technology in situations representing extreme manoeuvring and aircraft upsets.

#### Session 3: Pilot Training for Extreme Manoeuvres and Unusual Encounters

The end product of simulation is pilot training. The effectiveness of various solutions needs to be understood in order to define appropriate standards, and to define the edge of the simulation boundaries. This session will engage discussions with specialists involved in evaluating training systems and their applicability to extreme conditions.

### Thursday 4 June 2009

#### Keynote Addresses 2: Simulation and Training for the Final Frontier

Capt David Mackay, Chief Test Pilot, Virgin Galactic, UK

#### Session 4: Advanced Flight Training for Operational Readiness

Operating at the edge of the envelope is often encountered in military operations. With increasing economic pressures, and an increasing variety of roles and expectations on the aircrew, ground-based training is becoming increasingly encouraged. This session will bring together leaders in the development and use of military training simulators that address basic training, high-g training, disorientation, stall/spin-recovery training, and flight testing in simulation devices. Both helicopters and fixed-wing aircraft will be discussed here.

#### Session 5: Innovative Solutions – Extreme Engineering for Training Needs

Recently, new initiatives to develop leading-edge devices to evaluate, demonstrate and train unusual attitudes and extreme manoeuvres in ground-based environments have been developed. These facilities will be described by their developers and operators in this session. The challenges of design of the hardware and software will also be explained. These apply to both civil and military applications.

#### Session 6: The Way Ahead

Open Forum and Proposals for Resolutions for Further Collaborative Work, Royal Aeronautical Society Panel

## Organising Committee

This conference is being organised by the Royal Aeronautical Society's Flight Simulation Group. The Conference Committee responsible for planning the programme comprises:

- Dr Sunjoo Advani, MRaES - Chairman
- Stefan Sandberg, MRaES
- Gp Capt Gordon Woolley, OBE, AFC, FRAeS
- Prof David Allerton, BSc, PhD, CEng, FRAeS
- Capt Hugh Dibley, FRIN, FRAeS
- Ian Strachan, FRAeS

For more information visit [www.aerosociety.com/conference](http://www.aerosociety.com/conference)