



**ROYAL  
AERONAUTICAL  
SOCIETY**

AUSTRALIAN DIVISION  
SYDNEY BRANCH INC

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# NEWSLETTER

FEBRUARY 2013

Date: **Wednesday, 27<sup>th</sup> February 2013**

Time: **18:00 for 18:30 hours**

Eminent Speaker: **John Faulkner AM, FRAeS  
Adjunct Associate Professor**

**Department of Aviation,**

**The University of New South Wales**

Topic: **'A new synthesis in aviation safety'**

Venue: **Rupert Myers Theatre**

**The University of New South Wales, Kensington**

Refreshments will be available prior to the commencement of the meeting

Our first lecture this year is a must attend event for anyone interested in a realistic view of airworthiness and aviation safety and especially those involved in aviation safety or risk activities or engineering in passenger transport. We are fortunate to have John Faulkner to present a lecture he recently gave to the Farnborough Branch UK as their named 'Roger Green Lecture'.

### Speaker Profile



After service as a pilot in the Royal Navy, John joined Qantas in 1967. He retired as Manager Flight Safety and Deputy Head of Safety of Qantas Airways in 1994.

He was appointed Deputy Chairman of the Board of the Australian Air Traffic System from 1995 until 2000. In 1998 he was a member of a Committee to examine Flight Safety Management

throughout the Australian Defence Forces. He is currently a Senior Visiting Fellow at the University of New South Wales, lecturing in Aviation Safety subjects.

In the 2003 Queen's Birthday Honours he was made a Member of the Order of Australia for services to flight safety and tertiary education. He is a Past President of the Australian Division of the Royal Aeronautical Society and currently is a member of the Society Council and the Learned Society Board.

### Synopsis

This paper attempts to combine two major approaches to the analysis of the causes of aircraft accidents and from this synthesis to argue the need for new priorities in addressing the problems associated with these accidents. The first part of the paper maintains that every accident has as a contributory cause "Human Error". The second part looks at the effect that the theories of Risk Homeostasis have on measures to improve safety. It is concluded that the individual "thermostat" of risk acceptance makes safety programs inherently self-defeating.

The synthesis of these two concepts points to the conclusion that attempts to achieve zero risk and its corollary, zero accidents are not achievable. It is the combination of human error and risk homeostasis that makes the prevention of all accidents impossible. The consequences of this hypothesis call for a review of safety management priorities. If all accidents cannot be prevented, then it is incumbent on the industry to make a greater effort to ameliorate and mitigate the effects of those accidents

that will inevitably occur. This will require a greater emphasis on so-called Secondary Safety.

\* The late Dr Roger G. Green was Chief Scientist (Psychology) at the DERA Centre for the Human Sciences, Farnborough, UK. He was also Chairman of the Air Safety Working Party of the European Transport Safety Council. For further details refer: <http://www.ashgate.com/isbn/9780291398277>

**PARKING:** Limited parking is available in surrounding streets with paid parking within the University of NSW car park tower, entry from Barker Street. Please observe parking restrictions and allow time to drive to the University of NSW, park and walk to the venue. (Refer map).



**DINNER:** After the presentation John and his wife Sandra will join us for dinner as guests of the committee. Members and visitors are invited to attend the dinner to be held at Giovanna Italian Restaurant, 285 Anzac Parade, Kingsford. (approx \$35 pp including soft drink & wine.) **RSVP:** Attendance registration for the Presentation & Dinner afterwards is essential. Please register by clicking on this link: or email by lunchtime Wednesday 27<sup>th</sup> February to: [sydneybranch@raes.org.au](mailto:sydneybranch@raes.org.au)

### Advanced notice for March Meeting

Date: **Tuesday, 5<sup>th</sup> March 2013**

Time: **18:00 for 18:30 hours**

Eminent Speaker: **Professor Takashi Ishikawa**

**Professor, Aerospace Department  
Graduate School of Engineering**

**Nagoya University and Director of National Composite  
Center in Japan, Nagoya University**

Topic: **'An Overview of the**

**Aerospace Technical Program at the  
Japan Aerospace Exploration Agency'**

Venue: **Engineers Australia Sydney  
Division, Level 3**

**8 Thomas Street, Chatswood**



**ENGINEERS  
AUSTRALIA**

Hosted by: The Joint Board for Aerospace  
Engineering, Engineers Australia and the Royal  
Aeronautical Society, Australian Division

### Chairman's Message for 2013

I hope you all managed to have a good break over Christmas and on behalf of the committee I would like to wish you the best for the New Year. Next item in the newsletter you will see the results of the AGM and when the committee meets next we will finalise the positions and duties for 2013. The lecture subcommittee has already been meeting to plan the various events for the year. Over the Christmas break a large contingent of the committee visited HARS down in the Illawarra. If you are not already a supporter of this fabulous endeavour I would urge you to pay a visit and get behind it. In particular they are in need of help with the restoration of the Southern Cross replica. The total amount of funds required is actually quite small by aviation standards and

if you or anyone you know can assist then please get in touch. It would be great to see this link with Australian most famous flyer back in the air. Expect us to be passing the hat around at this year's Kingsford Smith lecture if they haven't hit the target before then! I look forward to catching up with you at one of our lectures through the year so please come up and say hello. The committee and I are always keen to get your feedback either personally or via email. David Cox, Chairman.

### AGM held 5<sup>th</sup> December, 2012 - Election results

Bradley Hayward, Honorary Assistant Secretary, reported the results of the annual elections for the 2013 Committee. No postal ballot was required as the number of nominations did not exceed the number of vacancies in any class. The following members were nominated: *Chairman (1 vacancy)* - David Cox  
*Ordinary Committee Members (11 vacancies)* - 1. Jeffrey Lock, 2. Peter Marosszeky, 3. David Adkins, 4. John Burleigh, 5. John Vincent, 6. Bradley Hayward, 7. Constantine Hela, 8. Nachiket Alur, 9. David Kelly, 10. Ross Barkla, 11. VACANT.

(Peter Lyons advised that due to technical issues with his PC his committee nomination missed the closing date. He wishes to continue on the committee and it is expected that this will be confirmed at the first committee in 2013.)

*Student Representatives (2 vacancies)* - 1. Sophaelia Hofseth-Ronsen (Uni of NSW), 2. Abhijeet Kumar (Uni of Syd)

It was noted that Fred Burke, a long-serving member of the Sydney Branch Committee, did not stand for re-election to the Committee for 2013. Accordingly, Mr Burke will stand down from the Committee. The Chairman moved a motion of thanks to Fred for his long years of diligent and dedicated service to the Sydney Branch and the Committee. The motion was seconded by Peter Brooks and accepted unanimously by all present.

### Visit by Sydney Branch Committee to HARS Albion Park, Saturday 19<sup>th</sup> January, 2013

**Background:** Several years ago the Students on the committee of the Sydney Branch raised the issue of the difficulty in getting practical industrial experience, which is part of their engineering degree requirements. Fred Burke suggested that it might be possible to have the students work at HARS, where the stringent requirements applied to commercial aircraft are not necessary and agreed to explore this with a colleague Jim Thurstan, Project Engineering Manager of HARS. Jim obtained the approval of the HARS management to further this proposal and Fred took Sam Catts and Christopher Lieu from UNSW down to HARS and the programme was launched. Students from the University of Sydney have now joined the programme.

**Visit 19<sup>th</sup> Jan:** David Cox, Ross Barkla, Peter Marosszeky, Fred Burke and Jeff Lock meet with Jim Thurstan, Southern Cross Replica (SCR) Project Engineering Manager, Prof Michael Hough AM (Deputy Chairman, HARS), Geoff Timms, SCR Project Manager, Roger Kearin, SCR Engineer, James Steele (Syd Uni Aero Eng Student) and Mark Coronel (UNSW Aero Eng Student) and toured the HARS facility. We were extremely impressed not only with the HARS facility but more importantly with the work that the university students have contributed to the day to day maintenance and engineering activities that HARS perform.

A highlight of the visit was reviewing the restoration program on the Southern Cross Replica (VH-USU) originally built in the late 1980s, that the university students have participated in. This work is endeavouring to restore the aircraft to flight worthy condition. In particular is the redesign of the landing gear oleo which failed during a flight in Adelaide, resulting in breakage of the wing spar and which has grounded the replica since 2000.

The new undercarriage design incorporates the use of a threaded end cap with a flange to resist the pressure forces from the oleo strut and retain the internal components.

Concerns surrounding the new design were expressed with regards to the strength of the flange in supporting the hydraulic loads, including both the pre-load pressures and additional landing loads.

The task given to the UNSW student team was to analyse the new design of the end cap components, with a particular focus on the stresses exerted onto the end cap ring. Computational modelling of components was conducted by the students using CATIA V5R20 and subsequently imported into ANSYS Finite Element software. Maximum shear stress encountered in the component under loads applied to the bottom end cap flange were found to be well below the material's shear properties. The Equivalent Von-Mises stress results indicated that under the most extreme loads, the flange would not fail, however plastic deformation was evident, however, the maximum deformation of the flange was found to be minimal, 0.0025 in. These results were approved by the original design engineer, Bill Whitney and passed on to CASA for approval to enable the Southern Cross Replica restoration work to continue.

Having students being able to undertake the redesign of the oleo and to perform stress analysis has been very beneficial to HARS.

### Origin of VH –Australian Aircraft Registration

In July 1919 the International Commission for Airline Navigation allocated civil airliner registration prefixes to every nation. Members of the Empire were given the letter G- followed by the next one or two letter signifying the country itself, for Australia this was G-AU, New Zealand G-NZ. This operated until 1927 when the International Radiotelegraph Convention in Washington, USA produced a revised table of registrations which were adopted by ICAN. As Australia did not have a seat on ICAN it was allocated random letters and was arbitrarily allocated VH-, so G-AUEH became VH-AEH, dropping the prefix and first letter of its original British Empire code." Source: Feb 2006 copy of *Airliner World*.

### Australia Division Council Elections for 2013

Members are reminded that the ballot paper for the 2013 elections need to be returned by Friday 22<sup>nd</sup> Feb, 2013.

### RAeS Ties, Coffee Mugs, and Lapel Pins

Variety of RAeS Ties \$20 each, Sydney Bch coffee mugs (with new logo) & lapel pins available at Bch meetings for \$10 each.

### Diary 2012-2013

**24-26 Feb:** AUVS-Australia 2<sup>nd</sup> Annual Unmanned Vehicle Systems Conference entitled "Unmanned Applications-UAS & Beyond" will be held in the Melbourne Convention & Exhibition with the final day (26<sup>th</sup>) at the Avalon Air Show. For further details refer: [www.auvsi.org/australia/events/conferences/](http://www.auvsi.org/australia/events/conferences/)

**26 Feb- 3 March:** Australian International Airshow and Aerospace & Defence Exposition. For further details refer: - [www.airshow.com.au/airshow2013/index.html](http://www.airshow.com.au/airshow2013/index.html)

**5 March:** Eminent speaker Professor Takashi Ishikawa. Refer first page for details.

**24-28 June:** 10<sup>th</sup> Annual Meeting Asia Oceania Geosciences Society, Brisbane. For further details refer: [www.asiaoceania.org/aogs2013/public.asp?page=sessionProposal.htm](http://www.asiaoceania.org/aogs2013/public.asp?page=sessionProposal.htm)

### Aerospace Websites:

[www.aerosocietychannel.com/aerospace-insight/2011/07/space-shuttle-the-end-of-the-beginning/](http://www.aerosocietychannel.com/aerospace-insight/2011/07/space-shuttle-the-end-of-the-beginning/)

[www.57rescuecanada.com](http://www.57rescuecanada.com): Follow Capt. Karl Kjarsgaard's adventures to recover Halifax bomber LW170 which is resting beneath 5000ft of water off the Irish coast;

[www.adastron.com/707/updates/updates.htm](http://www.adastron.com/707/updates/updates.htm): Diary of Boeing 707-138B XBA formally Qantas EBA.  
[www.airshow.com.au](http://www.airshow.com.au); [www.atsb.gov.au](http://www.atsb.gov.au);  
[www.aviationmuseum.com.au](http://www.aviationmuseum.com.au) - Temora Aviation Museum;  
[www.boxkite2014.org](http://www.boxkite2014.org): The Boxkite project.  
[www.innovationnewsdaily.com/920-flying-robots-play-007-theme.html](http://www.innovationnewsdaily.com/920-flying-robots-play-007-theme.html)  
[www.powerhousemuseum.com/whatson](http://www.powerhousemuseum.com/whatson); [www.singapore.com.sg](http://www.singapore.com.sg)  
[en.wikipedia.org/wiki/Rolls-Royce\\_Trent](http://en.wikipedia.org/wiki/Rolls-Royce_Trent)