

The Melbourne Branch of the



Royal Aeronautical Society, Australian division

April 2009

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From the Editor

Hello All,

This month we have a unique opportunity to take a 'behind the scenes' look at Melbourne Airport – get in quick as only a few places remain!

Thanks to all those people that donated their time to promote the RAeS at the Airshow stand.

Karen Trezise

Newsletter Editor



RAeS stand at Avalon Airshow 2009

May Event

Boeing Research and Technology in Australia

Presenter: Al Bryant, General Manager of Boeing Research and Technology Australia

Date: Monday 11th May

Time: 6pm for a 6.30pm start

Cost/Registration: Free – Everyone welcome! No registration req'd.

Venue: Auditorium,
Engineering House,
21 Bedford St, North Melbourne

Al Bryant is General Manager of Boeing Research and Technology Australia (BR&TA), formerly known as Boeing Phantom Works Australia.

BR&TA is one of two Boeing research centres outside the United States. Research is focused on specific themes with main centres based in Melbourne and Brisbane.

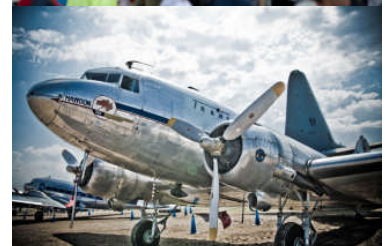
Mr Bryant will give a presentation on the motives behind the establishment of Boeing Research and Technology in Australia and how it will interact with Australian research groups.

40th Anniversary Moon Landing



On July 20, 1969, Neil Armstrong and Buzz Aldrin became the first astronauts to land on the moon. After a day spent exploring the moon's surface, the two members of the Apollo 11 mission returned to Earth. It has been estimated that 500 million people across the world watched the video broadcast of the moon landing, making it the largest audience for a live broadcast at that time.

Photos from Avalon 2009...



Victorian Engineering Excellence Award 2009

Entries are now being invited for the Victorian Engineering Excellence Awards 2009. The Awards recognise outstanding and innovative Victorian engineering achievements. Entries are invited for work completed between 8 July 2005 and 12 June 2009. Registrations close Monday 6 April. The winners will be announced at the Awards Presentation Dinner at Palladium, Crown on Thursday 17 September.

Refer to http://www.vic.engineersaustralia.org.au/awards/veea2009_b.pdf for further information.



April Event

Site Visit

Melbourne Airport – Behind the scenes

Date: Monday 6th April

Time: 6pm departure from Bus depot

Cost/Registration: \$10 per person (must pre-pay to secure seat) Only a couple of places left! First come, first served. Everyone welcome! Please fill out the registration form below and include payment. Completed forms to be posted\emailed\faxed to:

PCR Australasia Pty Ltd,

Level 1, 1 Main Street, Blackburn VIC 3130

Fax: +61 (0)3 9878 0500

Email: csotto@pcrconsult.com

Venue: Bus departs 6pm SHARP, Moonee Valley Bus Lines Depot, 6 Tullamarine Park Road, Tullamarine. Parking is available at the site – large grassed area.

Join us for a 'behind the scenes' look at Melbourne's Tullamarine Airport. Melbourne Airport will conduct an airside tour around the aircraft and terminal area. Learn about the recent and future expansion and the operational challenges faced on a day to day basis. An opportunity not to be missed!



2009 Lawrence Hargrave Award

The researcher credited with saving the Australian Government hundreds of millions of dollars through the life extension of ADF aircraft, has received one of the country's most prestigious awards.

The Australian Division of the Royal Aeronautical Society announced Dr Alan Baker the winner of the 2009 Lawrence Hargrave Award, at the Avalon International Airshow.

Dr Baker conceived and developed the unique technology for extending the life of defective aircraft structures through the use of adhesively bonded advanced fibre composite patches or reinforcements.

The reinforcements greatly increase the life of the defective component by reducing stress in the damaged area and bridging any cracks.

Other countries, including the United States and Canada, have also adopted the technology developed by Dr Baker, and are experiencing similar cost savings on their aircraft.

Dr Baker has been an inspiration and continues to champion the technology he developed over thirty years ago.

During his early career, Dr Baker conducted research into providing bird-impact resistance to the new light weight polymer-matrix carbon fibre composite jet engine fan blades initially developed by Rolls Royce for the Lockheed L1011 aircraft. He gained several patents for this and other concepts.



David Forsyth, President of the Australian Division of the Royal Aeronautical Society presents Dr Alan Baker with the 2009 Lawrence Hargrave Award

Name(s) _____

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Chimps in space

Ham (1957 – 1983), also known as Ham the Chimp and Ham the Astrochimp, was the first hominid launched into outer space. Ham's name is an acronym for the lab that prepared him for his historic mission — the Holloman Aerospace Medical Center, located at Holloman Air Force Base in New Mexico. Beginning in July 1959, the two-year-old chimpanzee was trained to do simple, timed tasks in response to electric lights and sounds.

In his pre-flight training, Ham was taught to push a lever within five seconds of seeing a flashing blue light; failure to do so would result in an application of positive punishment in the form of a mild electric shock to the soles of his feet, while a correct response earned him a banana pellet. After all of the training, it was time to find out whether he could function under the stress and pressure that comes with space travel. What differentiates Ham's mission from all the other primate flights to this point is that he was not merely a passenger, and the results from his test flight led directly to the mission Alan Shepard would make on 5 May 1961 aboard the Freedom 7.



On 31 January 1961, Ham was secured in a Project Mercury capsule labeled MR-2 and launched from Cape Canaveral, Florida, into outer space. Ham had his vital signs and tasks monitored using computers back on Earth. The capsule suffered a partial loss of pressure during the flight, but Ham's space suit prevented him from suffering any harm. Ham's lever-pushing performance in space was only a fraction of a second slower than on Earth, demonstrating that tasks could be performed in space. Ham's capsule splashed down in the Atlantic Ocean and was recovered by a rescue ship later that day. He only suffered a bruised nose. His flight was 16 minutes and 39 seconds long.

Lockheed Super Constellation

VH-EAG "Southern Preservation" is in fact the militarised version of Lockheed's famous range of Constellation aircraft which revolutionised air transport during the late 1940's and 1950's. It is similar to the Super Constellations used by Qantas during this period as their main long range passenger aircraft and pioneered their around-the-world service. This service was the first such trans-global service in world airline history. "Connie" as it is affectionately known, was originally built for the United States Air Force in 1955.

In 1990 some Historical Aircraft Restoration Society (HARS) members were in Tucson, Arizona collecting Neptune spares and saw this derelict Super Constellation. In a moment of madness the thought occurred that it should be recovered to complete Australia's aviation history and negotiations commenced for its acquisition.

Considered obsolete and of no further use, storage maintenance ceased in 1981 and as a result the aircraft was designated scrap value only. In addition most of the engine accessories and instruments had been cannibalised. Failure to re-seal the aircraft after an inspection permitted access to legions of birds to nest and foul the interior over many years. This in turn discouraged the scrap metal merchants from bidding on the aircraft due to the infestation and the subsequent imperfections that it would cause in the smelting of the aluminium.

The restoration work commenced in May 1992 at Pima Air & Space Museum and in September 1994, the Super Constellation took to the air after nearly eighteen years on the ground. Another solid year of work was required to prepare the aircraft for the Pacific crossing and in late 1995 final flight training was undertaken. On 3 February 1996 the Super Constellation VH-EAG arrived in Sydney after an incident free crossing of 39.5 hours flying time. Stops on the delivery flight to Australia were made at Oakland, Honolulu, Pago Pago and Nadi.



The Connie at the 2009 Avalon Airshow

Australia's first F/A-18 Super Hornet

The outer skin of the first Boeing F/A-18F Super Hornet for the Royal Australian Air Force is fitted to its forward fuselage on a pulse assembly line in St. Louis, USA last month. The aircraft is approximately three months ahead of schedule and set for an early delivery date in July. The F/A-18E/F Super Hornet, a multi-role aircraft equipped with the APG-79 Active Electronically Scanned Array radar, is able to perform virtually every mission in the tactical spectrum. The RAAF has 24 Super Hornets on order; Boeing will deliver the remaining aircraft from the first quarter of 2010 through 2011. Each of the more than 380 F/A-18E/F Super Hornets Boeing has delivered to the U.S. Navy has been delivered on or ahead of the original delivery timeline.



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<http://www.raes.org.au>
(Global Website)
<http://www.aerosociety.com>

* Opinions expressed in this newsletter do not necessarily represent those of RAeS, the Melbourne Branch or the Editor.

Websites of interest...

Mars Exploration Rover Mission:
<http://marsrovers.nasa.gov/home/index.html>

Melbourne Planetarium Shows:
<http://museumvictoria.com.au/planetarium/WhatsOn/>

Flying Hotel:
<http://www.hotelicopter.com/>

A race of speed and skill

The Red Bull Air Race World Championship features the world's best pilots in a motor sports competition based on speed, precision and skill. The race came from an idea to merge flying with the most exciting elements of motor racing. The aim was to develop a brand new aviation race that would challenge the ability of the world's best pilots, creating a race in the sky that was not simply about speed, but also precision and skill.

Using the fastest, most agile and lightweight racing aeroplanes, pilots navigate a low-level aerial race track made up of air-filled pylons, reaching speeds of 370 km/hr while withstanding forces of up to 12g.

The Red Bull Air Race World Championship is an international series of races with the participation of at least eight pilots at each race. The objective is to navigate an aerial race track featuring air-filled pylons in the fastest possible time incurring as few penalties as possible.

The aeroplanes flown in the Red Bull Air Race World Championship are extremely unstable and agile. During a steep turn, both pilot and plane are subjected to forces, which can reach up to 12 times their normal weight. These aircraft therefore have to be extremely light and strong, not just because of the high G-forces. Their light weight combined with a highly efficient steering system results in agility that normal aircraft, even modern fighter jets, cannot match. They also have a high power-to-weight ratio and the lowest drag possible.

Currently there are three different types of aircraft used: the Edge 540, the MXS and the Extra 300SR.



Upcoming Events

On 13 July a lecture on air accident investigation will be given by Alan Stray of the Australian Transport Safety Bureau, more details next month.

We are also hoping to organise a lecture from the Mars Institute, date to be decided.

Details of the remainder of the 2009 program will be provided when finalised. Visit our website for up to the minute details at: <http://www.raes.org.au/-raesorga/melbourne-branch/>

The branch welcomes any suggestions or ideas for future events/lectures.

The inflatable pylons, known as 'Air Gates', define the Red Bull Air Race track. They are a creative and complex feat in engineering. The Air Gates used today have developed significantly since the first prototype was designed in 2002. Back then, when the competition was in its very early stages, the Red Bull Air Race enrolled the help of Austrian designer, Martin Jehart and the team at Bellutti, an Innsbruck-based engineering firm specialising in the manufacturing of technical materials and tarpaulin, to create the pylons. Initially using an inflatable latex balloon for crash tests and aerodynamic studies, they eventually came up with the original cylindrical-shaped pylons. More than sixty crash tests were carried out using a car with wings mounted on the roof to simulate a the real thing. At speeds reaching 168 km/hr it provided the team with an insight into the effect on the pylon when hit by a plane flying at high speed.

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