

The Melbourne Branch of the



Royal Aeronautical Society, Australian division

March 2009

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Last flight

From the Editor

Hello All,

March is an exciting month with both the Wackett Lecture and the biennial Avalon Airshow! In early April we have a unique opportunity to take a 'behind the scenes' look at Melbourne Airport – get in quick as places are limited.



Karen Trezise,

Newsletter Editor

March Event

Wackett Lecture

The Air Transport System of the Future

– Are we ambitious enough in our goals?

Presenter: Prof. Dr.-Ing. Joachim Szodruich
Member of the Executive Board
DLR - German Aerospace
Center, Cologne, Germany

Date: Thursday 5th March

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

Air transport fulfils society's needs for mobility and is today a major economic factor, also massively supporting globalisation. After more than 100 years of powered flight we have established a rather optimised system with dramatic performance improvements at the aircraft level (fuel burn, economy and environment) compared with any other form of transportation. All the forecasts predict for the next 20 years that passenger air traffic will increase on average by 5% annually.

The resulting challenges for the entire air transport system have been discussed within ACARE – the European Advisory Council for Aeronautics – and the major goals are quantified in the Vision 2020. This document is by now the most important and widely accepted strategic guideline valid for all the aeronautical research activities in Europe. The Vision 2020 has been further detailed in the Strategic Research Agenda, where technological solutions for the elements of the air transport system – the aircraft, the air traffic management and the airports – are specifically addressed.

One of the major research establishments in Europe, the German Aerospace Center (DLR) is addressing exactly these challenges in their broad and extensive research activities covering the entire air transport system. Major contributions in all relevant fields are expected for the next decade. Still the question remains if we can fulfil the already ambitious goals of the Vision 2020 at all and if these goals are really sufficient in order to build a competitive and sustainable air transport system for the longer term future. Prof. Joachim Szodruich graduated from the Technical University Berlin in 1971 followed by a post-graduate study at Cambridge University, England. He started his professional career in 1973 as a scientific assistant at the Aerospace Institute of the Technical University Berlin, where he obtained his doctorate (Dr.-Ing.). In 1978 he received an Associateship from the National Research Council and worked for two years at the NASA Ames Research Center in California, USA.

In 1981 he joined MBB Civil Transport Division in Bremen, where he started in experimental aerodynamics working on Airbus A310 and future projects. Later he became the manager responsible for all aerodynamic research and was Assistant Chief Aerodynamicist. He joined Airbus Industrie in Toulouse, France, in 1990 as a General Manager for Research & Technology.



The 5th March 2002, saw the last scheduled passenger-carrying service by Ansett Airlines. 134 passengers travelled on flight AN152, an Airbus 320, between Perth and Sydney.

This photo shows Ansett Airlines Airbus A320 VH-HYK at Kingsford Smith Airport, Sydney on the last day of Ansett operations.

Returning to Germany he became Vice President Product Development and Technology at the DaimlerChrysler Aerospace Airbus Headquarters in Hamburg. With the formation of Airbus as an integrated company in mid-2001, he was appointed Vice President Future Projects and Technology based in Toulouse.

Since August 2002, he has been a Member of the Executive Board of the DLR German Aerospace Centre in Cologne, specifically responsible for Aeronautics and Energy. Within this function he is Member of the Supervisory Board for the two European wind-tunnel organisations – DNW and ETW.

Joachim Szodruich is currently President of the DGLR – German Aerospace Society and also an Associate Fellow of American Institute of Aeronautics and Astronautics. Furthermore, he serves as Co-Chairman of ACARE, the Advisory Council for Aeronautical Research in Europe.



Avalon Airshow 2009

Trade Days- Tuesday 10th to Friday 13th March
Public Days- Saturday 14th to Sunday 15th March

If you are attending the airshow, please come and say hello at stand 3A27 in Hall C!

What to expect at this year's Airshow?

The theme for Avalon 2009 is 'Towards Tomorrow' and Dr Thomas, a veteran of four space shuttle missions is the Guest of Honour.

Two Super Hornet Strike fighters and (helping get the Super Hornets to Australia) a massive KC-10 refueling tanker will be on display. This huge aircraft can carry almost 91 thousand kilograms of fuel.

The Friday Flying Display will feature an amazing array of military aircraft and artistic aerobatics by the world's best. As darkness falls, up to 30 parachutes will drop from the heavens in a mass display, then the 'Night Aight Finale' will explode into action, lighting up the night sky with showers of golden sparks. The much loved F-111 will perform its famous dump-and-burn and the evening will finish with a bang with the famous 'Wall of Fire'.

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 19 places available. 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!



Helitanker

The Erickson S-64 Aircrane Helitanker is the most versatile, powerful and cost effective aerial firefighter in the world and having been certificated since 1992.

The versatile S-64 features a 10,000 litre tank with microprocessor controlled tank doors that allow for 8 different coverage levels. Unlike many fixed wing tanker firefighters, the tank doors of the S-64 are controlled by a microprocessor that actually adjusts for airspeed and opens the tank doors to allow for a flow rate that matches the particular coverage level selected by the pilot. The tank adds the delivery capacity of fixed wing tanker planes to the maneuvering capability of a helicopter. The tank system and the S-64 Aircrane helicopter are manufactured by Erickson Air-Crane of Central Point, Oregon, USA. The tank system attaches to the Helicopter through 8 hardpoints on the fuselage and has been designed to give the Air Attack Coordinator more control over where and how the drops are made. Considering the fast refill time of 45 seconds or less in any water source as shallow as 45 cm, in which up to ~114,000 liters of foam mix, retardant, or water is delivered, per hour, to the fire.

A special "Sea Snorkel" augments the freshwater fill capabilities of the hover snorkel by refilling the tank in nearby salt water sources as well as fresh water sources. Refill with the Sea Snorkel is accomplished by skimming above the water surface at 35-45 knots as the hydrofoil ram scoop forces water up and into the tank. With the Sea Snorkel, refill can be accomplished in 30 seconds.

The Aircrane Helitanker continues to be a proven effective firefighting tool in Australia and elsewhere in the world.



Name(s) _____

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Total Amount (\$) _____

Membership Number _____

Payment Details

- Cheque (To "Royal Aeronautical Society, Melbourne Branch")
 Visa Mastercard American Express

Card Number _____

Name on card _____

Signature _____

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Students – Free pass to the Avalon Airshow

Here's how....

Apply for the Aerospace Student Professional program. The Royal Aeronautical Society, acting on behalf of Aerospace Australia Ltd, is offering a special invitation to "Aerospace Student Professionals" to attend the 2009 Avalon AirShow.

An "Aerospace Student Professional" is defined as any Undergraduate and Postgraduate University, or TAFE student undertaking tertiary courses throughout Australia in aerospace engineering, aviation sciences or technology, or technical trades, who shows a keen interest in pursuing a career in the Aerospace, Aviation and Defence industries.

Entry is offered for one-day only and at nil cost, to any of the 3 Trade Days of Tuesday 10 March, Wednesday 11 March, or Thursday 12 March 2009.

Cut-off date for applications is Monday 2 March 2009. To apply, visit www.raes.org.au and select the Avalon Airshow 2009 link. Be quick to nominate your preferred day of attendance, as each day has a limited number of tickets available!

Voyager 1

The Voyager 1 spacecraft is a robotic space probe launched on September 5, 1977 on a mission to locate and study the outer edge of our Solar System. It is one of two identical probes, each weighing approximately 722kg, launched by the National Aeronautics and Space Administration from Cape Canaveral, Florida, that year, some 16 days after its twin was launched from the same location.

It is presently the furthest human-made object from Earth and, as at February 1, 2009, Voyager 1 is approximately 16.354 billion kilometers from Earth in search of the heliopause which is a transition region of space where the Sun's influence is negated by other bodies in the galaxy. In doing so it is considered the first human-made object to leave our star system.

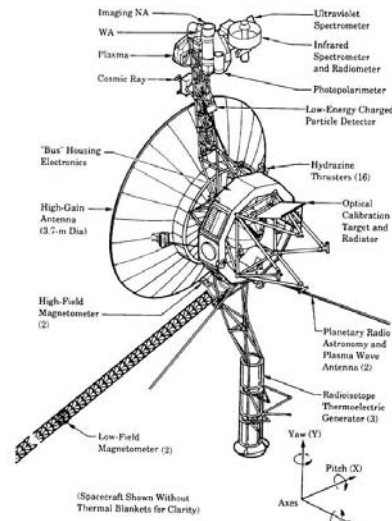
Gravity assists that help propel the probe, and reduce the amount of fuel required to that used for simple course corrections, have enabled Voyager 1 to successfully complete its journey past Jupiter and Saturn.

During the Jupiter flyby, the spacecraft was able to photograph over a period of some 4 months, but it was during the 48 hour period leading up to March 5, 1977, when the probe was entering its closest approach at 349,000km from the planets center, that images of the planet's moons, rings, magnetic fields and radiation environment were captured along with previously unobserved Volcanic activity.

In November 1980, the probe carried out a similar flyby of Saturn, but, due to a decision by the Voyager 1 controllers, its trajectory was changed for a close approach to Titan, Saturn's moon. This ultimately ended the primary objective of the probe, which would have seen it travel on to Uranus and Neptune, a mission carried out instead by Voyager 2.

NASA continues tracking Voyager 1 using its Deep Space Network stations and its present location sees it on the outer edge of our Solar System. The probe continues to send back scientific data, and is expected to do so until 2020 when initiation of instrument shutdown will occur.

Aside from research equipment, the probe also carries a Voyager Golden Record, a 12-inch gold-plated copper disk containing sounds and images intended on giving any intelligent life forms that may intercept the probe a selection of life and culture as we know it. Sounds included on the record include an F-111 Flyby, footsteps and that of a heartbeat, whilst music consists of compilations from the likes of Bach, Mozart and Louis Armstrong.



Oldest Boeing in flying condition

This Boeing 40C first entered service in July 1928 for Pacific Air Transport (PAT) who used it for Commercial Air Mail from Seattle to San Diego. On Oct 2, 1928 it crashed in Oregon killing the sole passenger, a diamond dealer from Los Angeles. PAT recovered the engine, the passengers remains and some of his diamonds. In the late 1980s a local geologist began researching and searching and finally found the aeroplane in 1996. He convinced the Oregon Aviation Historical Society to recover the plane. In 2000 the aeroplane was sold to Addison Pemberton who worked for 8 years with over 60 volunteers to restore it using as many original components as possible. It is one of 81 Boeing 40's built, but is currently the only flying example of the type and is the oldest flying Boeing in the world.

Engine: Pratt & Whitney R-1340 - 525hp

Wingspan: 44' 4.5"

Empty Weight: 4080 lbs

Max Speed: 139mph Cruise Speed: 115mph

Service ceiling: 12,000ft

Carries 4 passengers and 749 lbs of mail



Passengers are accommodated in a closed cabin, the pilot being in an open cockpit so he will stay awake.

Branch Committee

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Visit the NEW website!!
<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...

Orion Spacecraft:
[http://en.wikipedia.org/wiki/Orion_\(spacecraft\)](http://en.wikipedia.org/wiki/Orion_(spacecraft))

Pilot a cargo plane - fun game:
http://www.rafcareers.com/altitude/games/dz_game/dzgame.cfm

Amazing pictures:
http://www.heraldsunonline.com.au/soundslides/dhs/news/aviation_ms/index.html

Eject!

An Ejection System is designed to save an aircrew member's life in the event of an emergency that renders the aircraft irrecoverable. In most instances, the design of the system uses an explosive charge or rocket motor to propel the occupant from the aircraft, subsequently allowing the deployment of a parachute.

First attempts at using such a system took place in the early 1900's where designs employed the use of bungee-assisted escape or compressed air to jettison the pilot. However, Romanian inventor Anastase Dragomir designed and successfully tested a more modern ejection seat in 1929, which was subsequently patented in 1930.

It wasn't until World War II that ejection systems were perfected and included in the design of prototype and production aircraft. These included the likes of the Martin-Baker seats which used solid propellant ignited inside a telescoping tube to eject the pilot in much the same way a bullet is fired from a gun.

Evolutionary changes have taken place since then to enable safe egress from aircraft which have since gone on to reach higher terminal speeds, with seats now enabling safe exit even whilst inverted at an altitude of just 50 metres.

A standard system operates in two stages, the first being either opening or jettisoning the canopy or hatch and the second to ejecting the seat, complete with crewmember from the aircraft. Most early systems required the pilot to activate these in sequence however modern systems perform both functions in the single action.

Non-standard systems include the likes of that installed on the B-52 Stratofortress (and some other bomber aircraft) where two of the six ejection seats fire downward through hatches in the bottom of the aircraft.

As of late 2008, Martin-Baker ejector seats alone had saved the lives of some 7,259 pilots, of each of whom is awarded a unique tie and lapel pin.

Upcoming Events

We hope to organise a lecture from the:

- Australian Transport Safety Bureau
- Mars Institute

Details of the program for 2009 will be provided once events become finalized. 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.



If undeliverable return to:

**ROYAL AERONAUTICAL SOCIETY
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