

August
2009

From the editor

Hello All,

Students must mark in their diaries the annual Careers Expo this month, a must for job seekers.

Meanwhile, any feedback on areas of special interest, ideas for future lectures or improvements is encouraged – as we aim to provide something of interest to all our members.

**** PLEASE NOTE **** The Boeing Lecture (July Event #4) by Randy Tinseth scheduled for the 31st July has been postponed until further notice.

I hope you like the new Newsletter format ☺

Best Regards,

Karen Trezise
Newsletter Editor

August 23rd 1932

In the USA, Frances Mersalis and Louise Thaden established a woman's flight refuelled endurance record of 8 days, 4 hours and five minutes.

Along with Francis Marsalis, Thaden set a new endurance record by flying a Curtiss Thrustrub biplane for 196 hours over Long Island, N.Y. During the eight days, Thaden made 78 air-to-air refueling contacts, and occasionally made live radio broadcasts to a national listening audience. The two pilots received food, water and fresh clothing lowered by rope from another airplane during the record-setting event.



August Event Annual Aerospace Careers Night

Participating companies this year include Boeing Aerostructures, CRC-ACS, Defence Material Organization, GKN, Macro Recruitment, Sir Lawrence Wackett Centre, BAE Systems, Aeronautical Engineers Australia, Airservics Australia, Thales Australia, Defence Force Recruiting and Raytheon Australia,

The evening will begin with a presentation on the current and future aerospace marketplace. After this, each of the attending companies will briefly outline their operations and opportunities. Following this, there will be time for students to talk with company representatives in an informal expo setting.

The event is highly recommended to all people, including students and graduates, seeking a career in the industry.

When: Tuesday 4th August 2009
Time: Doors open 5.30pm for a 6.00pm start
Where: RMIT University, Storey Hall, 342 Swanston St, Melbourne
Free - everyone welcome! No registration required.

Next Month - September Event 2009 Hargrave Recipient Applications and Advances in Crack Patching

Presenter: Alan Baker, 2009 Hargrave Award Recipient
When: Monday 14th September 2009
Time: 6.00pm for a 6.30pm start
Where: Auditorium, Engineers Australia, 21 Bedford St, North Melbourne
Free - everyone welcome! No registration required.

Crack patching, the use of adhesively bonded fibre-composite reinforcements to repair defective metallic aircraft components, has become accepted as a cost-effective and highly structurally efficient repair technology. CP technology, developed in DSTO from the early 70's, has been widely exploited by ADF for repairing fatigue cracks in C130, Mirage, F111 and F/A-18.

Dr. Baker will provide background on the basis, scope and advantages of CP when compared with conventional repair approaches, based on mechanically fastened metallic patches, and then outline some of key underpinning materials engineering and design technologies. He will then briefly describe several repair applications, including some undertaken commercially for the USAF and US Army.

More challenging repairs to primary structure in the wings of Australian F111 and USAF C141 Aircraft will be described in more detail.

The scope of CP is much broader than the repair of cracks; for example, it can be used to reduce stress or repair corrosion damage. Non-aerospace examples for ADF include the reinforcement of welds in FFG ships.

The reasons for the current limitations of CP to repair critical fatigue cracks in highly loaded primary aircraft structure will be described followed by a discussion of approaches, based on structural health monitoring (SHM), that have the potential to overcome these limitations.

this issue

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Upcoming Events / Websites of interest

RMIT University Prize Night

The RMIT University Prize Night is scheduled for Tuesday 11 August 2009 from 5.30 pm to 7.00 pm at Storey Hall on Swanston Street. The winner of the RAeS prize will be announced at this event and will be presented with a certificate and cheque.

Super Hornet takes flight

The first Royal Australian Air Force F/A-18F Super Hornet takes off from Lambert International Airport in St. Louis, USA on July 20th to begin its initial flight. Boeing unveiled the aircraft on July 8th 2009 at the company's Integrated Defense Systems facility in St. Louis.

Boeing will complete delivery of the first of 24 F/A-18Fs to the RAAF later this month, three months ahead of schedule. The remaining 23 Super Hornets, each equipped with the Raytheon-built APG-79 Active Electronically Scanned Array radar, will be delivered to the RAAF throughout 2010 and 2011.



RAAF Sabre

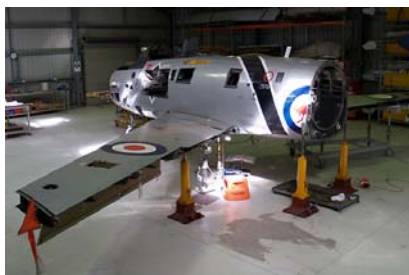
A significant commitment to preserving historical military aircraft was made by the Chief of Air Force when he signed an agreement with the Temora Aviation Museum (TAM). Under the agreement, the Royal Australian Air Force (RAAF) will loan one of its historic aircraft to the TAM. The Sabre jet, flown throughout Australia and South East Asia by the RAAF will be restored to flying condition by TAM.

History of CAC Avon Sabre A94-983 delivered from Commonwealth Aircraft Corporation (CAC) in November 1957, was brought into service at No 1 Aircraft Depot at Laverton before undergoing test flights at the Aircraft Research and Development Unit for three weeks. Upon completion the aircraft was delivered to No 78 Wing at Williamtown, and was subsequently allotted to No 3 Squadron at Butterworth in October 1958. In February 1959, the aircraft made a wheels-up landing at Butterworth, with extensive damage to the underside of the airframe, and was transported back to CAC at Avalon for survey and costing of repair work.

After repair, A94-983 was allotted to No 75 Squadron in February 1961, and was operated until July 1963, when the aircraft was dismantled and put into storage at No 78 Wing, Williamtown. In November 1966, the aircraft was put back into service, this time with No 2 (Fighter) Operational Conversion Unit. By July 1970, the aircraft had moved to No 5 Operational Training Unit, before returning to No 2 (Fighter) Operational Conversion Unit in August 1971. In November 1971 the aircraft was ferried to Base Squadron Butterworth, for transfer to the Royal Malaysian Air Force.

The RAAF Museum's Sabre, A94-983, presently at TAM, successfully passed its taxi tests in early July. Mike Nixon, the last pilot to fly the aircraft, conducted the checks associated with preparation for first flights, including high speed taxi tests in order to check the systems and bed the brakes. The ejection seat cartridges shipped from Martin Baker in the UK where the last items awaiting arrival before the first flight.

The RAAF Airworthiness Board considered the Operational and Technical Airworthiness of the aircraft. Based upon the advice of the Board members, the Chief of the Air Force deemed the aircraft ready for flight; the 15th of July 2009 saw the Sabre's first successful flight!



Have you ever noticed the engines on a B737?

The earlier Boeing 737-200s had rounded engines. In 1985, when Boeing decided to stretch the Boeing 737-300 and creating the Boeing 737-400, they extended the fuselage by a further 3 metres. They also fitted them with more powerful engines, strengthened the wings and landing gear components. The newer engines were larger than the previous ones on the -200 where they were built into the wings rather than slung under the wings on pylons.

As a result of the pylons and having the engines slung below the wings, plus the extra 3 metres of fuselage, the centre of gravity also moved forward which reduced the ground clearance. To address this, a flat-bottomed engine was designed but this gave rise to new problems because engine accessories that used to be fixed at the bottom of the engine had to be relocated to the side.

The solution of flattening the underside of the engine gave about 18 inches extra ground clearance. This additional clearance provides a greater safety margin for pilots, especially during crosswind landings, when it could be possible to scrape an engine on the downward wing if the aircraft's attitude is wrong.



John Duigan Memorial Lecture

John Duigan, the first Australian-built powered aircraft and the replica Duigan Aeroplane project

Presenter: Dr Gwynne Duigan and Mr Terry Egan
When: Wednesday 26th August 2009
Time: 6.30pm start
Where: Royal Victorian Aero Club, Moorabbin Airport, Mentone
Registration: RSVP by 12th August, email: agrage@bigpond.net.au or phone: Antony Grage on 0418 170 395
Cost: \$40 per person (Light meal and drinks provided)

This year marks the fiftieth anniversary of the founding of the Aviation Historical Society of Australia and to celebrate this, the AHSA has initiated an annual lecture series. The lectures are to be on the general subject of "Significant Events in the History of Australian Aviation", and will be delivered annually in Melbourne at one of the Society's winter meetings.

John Robertson Duigan (1882-1951) was the first person to fly an Australian-built aircraft which he designed and, with his brother Reginald Charles Duigan (1888-1966), built at 'Spring Plains', their property at Mia Mia, Central Victoria. John Duigan made the first flight on 16th July 1910, and progressively improved the biplane machine until he recorded his first successful controlled flight on October 7th 1910. He then made a number of demonstration flights until the aircraft was stored in 1911, and is now held by Museum Victoria.

The Duigan family has agreed to the naming of the annual lectures as "The John Duigan Memorial Lectures". The centenary of John Duigan's flight will be celebrated next year.

Gwynne Duigan is the daughter-in-law of John Duigan's brother and collaborator Reginald, and is the archivist and matriarch of the Duigan family. Terry Egan is leading the project to build a flying replica of the Duigan aeroplane.



Engineers Australia

2009 Young Professional Engineer Award

Do you want to acknowledge and reward your young engineering colleagues for their achievements?

The 2009 Young Professional Engineer Award, presented by Engineers Australia, Victoria Division and proudly supported by VicRoads, is an opportunity to highlight young professional engineers who have reached a high level of achievement and involvement in engineering and community affairs. This award provides an excellent opportunity to profile your company's talented young engineers and may assist in enhancing your current retention strategies and activities.

Entry is FREE! Closing date - Friday, 7 AUGUST 2009

The award will be presented in front of a large audience of significant industry representatives at the Victorian Engineering Excellence Awards Presentation Dinner to be held on 17 September 2009. The winner will also proceed to the National Award.

State Winner: \$3000
High Commendation: \$1500.

Engineers Australia strongly urge you to encourage your young engineers to stand out from the crowd and become the next Young Professional Engineer. They want to support and acknowledge young engineers who are producing outstanding work everyday, however they can't do it without you.

For further information please don't hesitate to contact Laine Duggan on lduggan@engineersaustralia.org.au or by phoning 03 9321 1718. Award Guidelines can be found at www.engineersaustralia.org.au/youngengineeraward09



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<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

Compare helicopter sizes:

<http://www.aviastar.org/scale/>

History of aircraft landing aids:

http://www.centennialofflight.gov/essay/Government_Role/landing_nav/POL14.htm

History of Space Suits:

<http://www.astronautix.com/craftfam/spasuits.htm>

Red Bull Air Race:

<http://www.redbullairrace.com/>

Airships - Zeppelin NT

An airship flies with the aid of a lifting gas, such as hot air, hydrogen or helium, and is propelled forward by an engine. In 1901, Alberto Santos-Dumont, a Brazilian air enthusiast, developed the first practical airship – a motorised, lighter-than-air flying machine. His breakthrough set the stage for a new form of flying. Two types of craft evolved: non-rigid airships (blimps) and rigid airships (dirigibles). Rigid airships have a fixed skeletal structure within an envelope. Non-rigid blimps maintain their structure by the pressure of contained gas. Dirigibles were often called Zeppelins in honour of Ferdinand Graf von Zeppelin who pioneered them for use in war and peace. In the 1920s and 1930s, airships carried thousands of passengers around the globe.



Zeppelin NT facts:

- Length 75 meters
- Height 17.4 meters
- Weight 8,040 kg
- 3 Lycoming 197hp engines
- Crew: two pilots and 12 passengers
- Cruise speed 126 km/h

Forthcoming Events

Planned future events to make a note of include:

Gippsland Aeronautics

The development of the GA-200 agricultural, GA8 utility and the ex-GAF Nomad aircraft

Lawrence Hargrave Lecture

Alan Joyce, Qantas CEO, has kindly agreed to deliver this year's Hargrave Lecture on Wednesday 4th November. Put the date in your diary now!

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

Melbourne Branch of the Royal Aeronautical Society

August 2009

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