



# NAVIGATION

Newsletter of the Australian Institute of Navigation Inc

Volume 16, No 74    March 2015



**Prof Chris Rizos,  
President AIN**

On behalf of the Council, I hope you had a good Xmas break, and the chance to catch up with family and friends.

The Institute has got off to a strong start in 2015, with a well attended first meeting/lecture and several events planned for the near future.

The presentation by Captain Will Martin, Commanding Officer of HMAS Watson was very well received, and gave some insight into the future direction for RAN warfare training and current Navy issues and priorities.

Also I am pleased to see a steady influx of new members, primarily through the RAN and RAAF connections we have fostered with the School of Navigation Warfare at HMAS Watson and the School of Air Warfare at RAAF East Sale.

I am hoping that our recruiting base will somewhat broaden with the 'Civil/Military Operations in a Degraded GPS/SATCOM Environment' seminar planned for 22 May 2015 in Canberra. The attendees at this will be those from across the commercial/military and scientific sectors interested in navigation as the fundamental foundation and enabler for operations.

Similarly, I see the conference of the International Global Navigation Satellite Systems Society (IGNSS) 2015 planned for the Gold

Coast on 14-16 July 2015 as another opportunity to showcase the professional expertise that Australians have in the sciences of satellite navigation; and hopefully further attract members to, and interest in, the AIN.

Since we are an active Institute again, and are sponsoring and organising seminars and conferences that promote research in the sciences of navigation and situational awareness, we need to once again reinstitute the AIN subscription fees from 1 July 2015. The fees will remain as in previous years at \$75 per annum for full members, and \$50 for senior members (over 60 years).

*Prof Chris Rizos and the AIN Council, March 2015*

**AIN Dinner/ Lecture – 11 February 2015 –  
Capt Will Martin, Commanding Officer HMAS  
Watson**



**Captain Will Martin,  
RAN, Commanding  
Officer HMAS Watson**

CAPT Will Martin provided a great presentation at the most recent dinner/lecture meeting, this time held at the Occidental Hotel. It was pleasing to have 22 members from the AIN at the event, and a similar number from the Master Mariners and Nautical Institute who were also invited.

The amount of 'experience' in that room that evening was extremely high – and many good ideas and stories were exchanged!

CAPT Will Martin, RAN – who is currently both Officer Commanding HMAS Watson and the Training Authority for Navigation and other Warfare training in the RAN spoke at length of the challenges of evolving training to meet the new skill set required for the future Navy. In addition to discussing the technical training, he highlighted how the creation of a cohesive, diverse and well-functioning workforce was just as important as embracing any technological change. He specifically addressed the aim of the 'New Generation Navy', the need to be an attractive employer for the next generation of sailors, and the focus being put on trying to create an environment where there would be a greater percentage participation rate of females in the Navy workforce. It was quite clear that the Navy was in good hands, and was setting a good course for the future.

**Notice of Technical/General Meeting Number 592 – Monday, 30<sup>th</sup> March 2015 – 6:30PM**

**Council Meeting and Presentation by Professor Chris Rizos on '*Developments in Navigation – Trends and Mega Trends*'**

Fellow Members of the AIN, the next meeting will be held starting at 6:30PM on the at the Combined Services Club

There will not be a dinner available at the Club, but drinks will be available downstairs prior to and after the meeting, and there are several places nearby where meals are available.

The agenda for the evening is:

**0630-0730** – Council meeting

**0730-0745** – drink break

**0745-0830** – Presentation by Professor Chris Rizos on '*Developments in Navigation – Trends and Mega Trends*'.

*Prof Chris Rizos has attended several international navigation conferences and seminars in the past 6 months and will summarise the key technological changes and developments in the navigation/ situational awareness sphere. This will include, but not be limited to countering GPS jamming, developments in satellite navigation and unique and new applications of navigation. He will also be able to give a summary of the next noteworthy GNSS Conference, which is the Munich Satellite Navigation Summit 24-26 March 2015.*

**Venue: Combined Services Club, meeting area on the third floor 5-7 Barrack Street, Sydney**  
**Nearest Railway Station: Wynyard**

**RSVP/apology:**  
**kym.osley1@gmail.com (preferred)**  
**Or phone 02 62880346 & leave msg.**

**Avalon Air Show 2015 – 23 Feb 15 to 1 Mar 15 at Avalon, Victoria**

The Secretary, AVM (ret'd) Kym Osley, attended the Avalon Airshow. Avalon Airshow is the premiere airshow in the Southern Hemisphere and occurs every two years.

On Monday 23<sup>rd</sup> February, the Chief of Air Force hosted an 'air power' conference in Melbourne. ***This year the Conference was about how to create an 'integrated 5<sup>th</sup> generation air force'***. Several senior regional air chiefs attended, as well as representatives from the US, UK, China and many other nations.



**Kym Osley, Sec AIN at Avalon with USAF F-22 stealth fighter**

There were several air navigation-related conferences at Avalon, including one focussed on the challenges of navigating UAVs in airspace with other manned aircraft. It was called "A *Gathering Storm: Unmanned Systems Outlook in Australasia*", and was hosted by the Australian Association for Unmanned Systems.

There was also a seminar at Avalon about the OneSKY Australia Program; which is one of the most significant and important aviation navigation-related initiatives ever undertaken in Australia. It is a once-in-a-generation opportunity to create one national harmonised civil-military air traffic management system.

A 'Safeskies Conference' was also held with some very interesting speakers, including Mr Cameron Heathwood, from AMSA speaking about the *search for the missing Malaysian Airlines B777 Flight MH370*.

Interesting exhibits at the air show included the F-22, Singaporean F-16 display team, Global Hawk High Altitude Unmanned Air Vehicle, B-52,

and many others.

#### Upcoming RAN Navigation Courses 2015

In 2015, the following RAN Navigation Courses are currently planned:

- Intermediate Navigation Course:
  - #52 – 30 Mar 15 to 29 May 15
  - #53 – 13 Jul 15 to 11 Sep 15
  - #54 – 5 Oct 15 to 4 Dec 15
- Surface Combatant Navigation Course ('Long Nav Course')
  - #31 - 30 Mar 15 to 25 Jun 15
  - #32 - 16 Nov 15 to 11 Mar 16

The Council of the AIN looks forward to attending the various graduations and presenting the AIN awards for Dux of each course.

#### 'Navigators' RAN/AIN Reception at HMAS Watson-Sydney

As mentioned in the last newsletter, the OIC School of Navigation Warfare at HMAS Watson, LCDR Iain McCall has kindly agreed to work with the AIN to hold a '**Navigators Reception**' at HMAS Watson in the latter half of 2015. We will provide details in the next newsletter.

#### 22 May 2015 – AIN and Defence Co-Hosted Seminar on 'Military/Civil Operations when Space-based Navigation and Communications Systems are degraded'- Canberra.

The Australian Institute of Navigation and Lieutenant General John Caligari, Chief of Capability Development will co-host a seminar on 22 May 2015 on 'Civil and Military Operations when Space-based Navigation and Communications Systems are Degraded'.

The Seminar will explore the challenges to both Defence and the commercial sector in maintaining normal operations should satellite navigation and space-based communications be disrupted.

There is a heavy reliance on space-based navigation and communications in the air, land and sea environments; and in some cases,

reversionary techniques for operating without space-based systems are practiced rarely or not at all. The aim of the seminar will be to gain a better understanding at decision-making levels within the organisations represented at the seminar of the problems of operating in an environment where these systems are degraded from a civilian and military perspective, and what might be done to mitigate the risks.

The seminar is at no cost to AIN and Defence attendees. The venue for the day; the Military Theatre at ADFA.

The RAN has issued a signal stating that it is an approved Professional Development opportunity.

The format for the day will be a series of presentations interspersed with panel sessions, and the outcomes should be documented in a Summary of Proceedings. Military dress of the day/business attire would be appropriate. Registration on the day will commence at 0800 hrs for an 0830 start to proceedings. The seminar will be unclassified.

I will be one of the facilitators for the seminar, and **look forward to hearing from members who would like to attend.** Please contact me on [kym.osley1@gmail.com](mailto:kym.osley1@gmail.com) to RSVP (or 02 6288 0346 and leave a message).

A Summary of Proceedings (unclassified) will be prepared post-Conference and released by Defence and the AIN.

### Program for the Seminar:

0830-0850 – Opening address (outline challenge provided by interruptions to space based services) – Lieutenant General John Caligari ,CCDG

0850-0915 – How space based services (nav and comm) can be interrupted by relatively cheap systems and techniques– Prof Chris Rizos, AIN President

0915-0945 - Civil Aviation – Air Services Perspective – Ms Margaret Staib, CEO Airservices (invited)

0945 -1015- Civil Aviation (CASA perspective) – Mr Ian Mallet, Section Head Communications, Navigation and Surveillance, CASA

1015-1045 – Military Aviation –Air Vice-Marshal Mel Hupfeld, Head Capability Systems/Air Commodore Craig Heap, Director General Aerospace Development

1045 -1115 – break

1115-1145 – Military Aviation – DDAAFS- Wing Commander Bill Savill, Acting DDAAFS

1145-1215 – Panel comment and question session- Civil and Military aviation

1215-1300 – working lunch

1300 -1330 – Land Operations – Civil – Deputy Commissioner Graham Ashton, AFP

1330 -1400 – Land Operations – Military – Major General Gus Gilmore, Head Army Modernisation (invited)

1400 - 1430 – Maritime Operations (Civil) – Mr Nick Lemon, Manager Nautical and Regulation, AMSA

1430-1500 – break

1500-1530 - Maritime Operations – Military – Rear Admiral Jonathan Mead, Head of Navy Capability, RAN (invited)

1530-1600 – Panel comment and question session- Land and Maritime

1600-1645 - What can be done about NAVWAR? - Air Commodore Craig Heap, Director General Aerospace Development /CAPT Don Burningham, CDG

1645-1700 – wrap up and summary – AVM Kym Osley (retd) AIN

1700-1800 – AIN sponsored refreshments in area

### 14-16 July 2015 – International Global Navigation Satellite Systems Society (IGNSS) 2015- Gold Coast

Just another reminder that the IGNSS 2015 conference is being held at the Outrigger Hotel, Gold Coast, Queensland, on 14-16 July 2015. The subjects being addressed at the conference include; alternatives to GNSS; GNSS system providers and issues; and UAV navigation. AIN is participating in the conference through the involvement of the President of AIN, Prof Chris Rizos, on the IGNSS Society Advisory

Committee, and through the AIN sponsorship of the travel/accommodation costs of one of the US Keynote Speakers. As mentioned previously, the sponsorship of this international navigation-related event is a first for the AIN, which could potentially be a part of the organising committee in the future.

**RAAF Air Combat Officer Training**



The ACO ab-initio course includes a common module of training, followed by a specialist stream module. The ACO common course includes ground school, simulation and airborne training and focuses on common ACO skills that are critical to achieving the vision for the category, such as mission systems management and mission command skills. The common flying training on the King Air 350 is essential to allow a valid streaming decision. The common course is 26 weeks.



**Typical tactical displays (above) that can be provided in the B350 King Air (below) used by 32SQN to train Air Combat Officers**

Following the common course, students are streamed into one of three specialisations. These are air battle management (ABM), maritime patrol and response (MPR) or air combat and

tactical support (ACATS). Students streamed for ABM conduct specialist training in the ground environment at the Surveillance and Control Training Unit (SACTU) at RAAF Williamtown. Students streamed for MPR or ACATS receive additional specialist training at SAW, including ground simulation and airborne training events. All specialist training is 14 weeks, and on completion all students graduate at SAW, and are given the ACO brevet. Following graduation, ABM ACOs proceed to the ground ABM environment for a consolidation period prior to possible selection for AEW&C employment. MPR ACOs proceed to 292 SQN for an operational conversion to the AP-3C and fast jet ACOs proceed to 79 SQN for lead-in training on the Hawk prior to F/A-18F conversion.

**US National Space-based Positioning, Navigation and Timing Advisory Board meeting in Washington DC – 10-11 December 2014**

This Conference was arguably the most important navigation-based conference over the last few months. The proceedings can be accessed at <http://www.gps.gov/governance/advisory/>. There is ongoing concern about GPS/GNSS vulnerabilities, with the launch of the “PTA” initiative (Protect, Toughen and Augment). They also launched an economic study into the benefits of GPS, and discussed radio spectrum issues (crowding). The US is not going down the route of promoting eLoran as the GPS back-up.

Australia was represented by Matt Higgins, President of IGNSS (Aust), who is in the Qld Dept of Natural Resources and Mines. He summarised the 2014 Space Report which covers implementation of the Australian Satellite Utilisation Policy with its 7 Principles. He noted that the Space Coordination Committee (SCC), which is overseen by Department of Industry’s Space Coordination Office is the senior civilian body for addressing space issues.

**Australian Government Report and Risk Matrix on Impact to Critical Civilian Infrastructure by Disruption to GPS**

The Australian Space Community of Interest (SCoI) has been formed under the auspices of

the Attorney-General's Office (Critical Infrastructure Advisory Council) to recognise the essential services provided by space-based systems and technologies, and the potential impacts across all critical infrastructure sectors from a major disruption to these systems;

- The SCol is developing a comprehensive risk matrix based on the ISO 31000 standard and should be completed in early 2015;
- The matrix will identify the links to other critical Australian infrastructure and the likely impact of loss of space-related facilities.

### International Navigation Conference 2015, Manchester, UK, 24-26 February 2015

The Royal Institute of Navigation ran the INC 2015 at the Manchester Conference Centre in the UK over the period 24-26 February. A couple of the more noteworthy presentations were:

**GPS Jamming pervades the Commercial Sector.** A bolt-on GPS anti-jam module is now being marketed to reduce the susceptibility of commercial GPS to jamming. It is easily retro-fitted to existing GPS systems.

**Car Thieves Use GPS Jamming.** The use of GPS jamming in car crime is increasing dramatically, and average luxury car can now be driven away under the cover of GPS jamming within 20 seconds of entry. The counter is technology that can identify GPS jammers and then geolocate them. Bath University in the UK is engaged in research called 'automatic jamming recognition' that is exploring ways to collect information from jamming detection systems to provide actionable intelligence to the Police in near real time.

### AIN Webpage

Hopefully the Secretary will resolve a few residual issues with the AIN website in the near future, and we'll then be able to pass information to members in a more timely manner. The website is at [www.ain.org.au](http://www.ain.org.au)

At the moment, the Secretary is the only member with editor rights for the AIN webpage. However after the plea in the last newsletter, LEUT Mike Gordon, RAN has very kindly volunteered to

takeover the role of administering the website in the longer term. This is much appreciated as the Secretary is well aware that Mike, as the Deputy Navigating Officer on the HMAS Canberra, doing first of class trials is going to be a busy chap!

### AIN Subscription fees for July 2015 to June 2016

The subscription holiday' for the AIN ends on 30 June 2015. To maintain financial membership of the AIN beyond 30 June 2015; members are requested to do a bank deposit for the following amounts to the following account before end-June 2015:

**Full members/Fellows** - \$75 per annum

**Senior members** (any member or Fellow 60 years old or older) - \$50

**Bank:** Commonwealth Bank of Australia

**Bank account number:** 06 2001 0091 8322

**BSB:** 06 2001

**Bank Account Name:** The Australian Institute of Navigation

**Note 1:** Please include a clear identification of the name of the member when making the bank deposit.

**Note 2:** Some members who are recent graduates of the RAN and RAAF navigation/ACO courses have a years complimentary membership and so do not need to pay any subscriptions until 1 Jul 2016.

### Contacting the Institute:

Secretary, Kym Osley; 2 Niblo Place, Chapman, ACT, 2611.

Ph: 02 62880346;

(M) 0466 253 100;

(E) [kym.osley1@gmail.com](mailto:kym.osley1@gmail.com)

Please note I will be in Africa on safari for 5-25 March, and will have intermittent email connectivity.

### Welcome to Our Newest Members!

- LEUT Benjamin Hall, RAN
- CAPT Will Martin, RAN (honorary as CO Watson)