



# NAVIGATION

Newsletter of the Australian Institute of Navigation Inc  
Volume 16, No 77 January 2016



I hope all the Fellows and Members of the Institute had a great break over Christmas. It was good to see about 20 attendees at the AIN Christmas function at HMAS Watson on 11<sup>th</sup> December 2015.

It was a superb event, that had probably the best Xmas catering that I have seen! Certainly the Australian Navy were wonderful and engaging hosts, and in addition to the two tables of AIN attendees we had many RAN Navigator members of the AIN in attendance too. Of special note Lieutenant Commander Thomas Geraghty was there, and received his promotion to LCDR on the day from Captain Will Martin, RAN. Tom's very proud father, Commodore (ret'd) Geoff Geraghty (ex-RAN Hydrographer) was present to see his son promoted.

On reflection we kicked quite a few goals as an institute in 2015. In addition to the normal participation in Technical Meetings/Speaker Dinners, the institute also:

- Was able to attend quite a few RAN Navigation Course and RAAF(Air Combat Officer) graduations and to present prizes for excellence.
- The May 2015 AIN-Defence 'Operations in a Degraded GNSS Environment' was a great success.
- AIN has pushed the key outcomes from this seminar with the Attorney General's, Airservices, Department of Infrastructure, CASA, and Defence.
- Also the IGNSS Conference in Queensland in July 2015, which AIN provided significant sponsorship to, was also very successful.

Of course we cannot rest on our laurels, and so at the upcoming AGM we will need to discuss a few proposals for our focus for 2016.

Some areas we could look to the AIN taking on a stronger leadership role are:

- Potentially coordinating the annual International GNSS Conferences in Australia, and
- how we might further have our voice heard on significant matters pertaining to situational awareness and navigation in the halls of Canberra.

There are several other ideas which I will float at the **AGM in Sydney (Occidental Hotel, Level 1) on 9<sup>th</sup> March 2016 starting at 1700 hrs.** I look forward to catching up with many of you at the AGM and at follow-on meetings and activities through the year.

*Prof Chris Rizos and the AIN Council, January 2016*



**The newly promoted LCDR Thomas Geraghty, RAN with CAPT Will Martin, RAN congratulating him**

**Notice of AIN Technical/General Meeting  
No 597 Annual General Meeting –  
Occidental Hotel, Wednesday 10<sup>th</sup>  
February 2015 – from 6:00PM for dinner  
and Briefing from 7:45PM**

The first dinner/speaker evening for 2016 will be 10<sup>th</sup> February 2016 and will be in conjunction with the Nautical Institute and the Honourable Company of Master Mariners so that AIN members can catch up with their colleagues after the Xmas break.

Those who wish to join the pre-dinner drinks and dinner with the NI and CMM group can do so from 6PM as per the details below.

**Presentation:** The NI and CMM folks will be addressed by the Secretary of the NI, CAPT Kendall Carter on a subject to be advised. Kendall is the Principal Manager Port Strategy and Governance at Transport for NSW and a very accomplished presenter, and so I am sure the subject will be relevant and interesting!

**Dinner:** For those who wish to arrive early at 6PM and join the NI and CMM for dinner, the dinner is a two-course dinner plus tea/coffee (cost is \$40 payable on the night to CAPT Frank Pickering, CMM).

**When:** Wednesday, 10<sup>th</sup> February 2016

- From 1800 hrs – drinks in the Fairmont Restaurant Bar, Level 1
- 1830 hrs - Dinner commences
- 1945 hours – Speaker starts.
- 2100 hrs – expected conclusion

**Where:** Meet at Fairmont Restaurant Level 1 at the Occidental Hotel, 43 York Lane, Sydney NSW (very near the Wynard Station).

**RSVP:** to Kym or Debbie Osley, AIN Secretary, on [kym.osley@defence.gov.au](mailto:kym.osley@defence.gov.au) or [kym.osley1@gmail.com](mailto:kym.osley1@gmail.com) (or 0466 253 100 (leave message) ) by NLT Close of business on 7<sup>th</sup> February 2016. Colleagues, partners and new members welcome.

**AIN Christmas Party at HMAS Watson – 11  
December 2015**

The AIN Christmas Party at HMAS Watson was well attended. Our thanks to Commander Peter

Martin, RAN Reserve (who is also CAPT Peter Martin, Counsellor AIN!) for organising for the AIN to take advantage of the RAN Xmas party organised at HMAS Watson Wardroom!

The attendees included Prof Chris Rizos and his wife Chris, Bob Hall, Ron Houghton, Tom and Alison Davidson, Andrew McClean, Dave Pyett, Kym and Debbie Osley, Peter Martin, Peter Sturt, Roger MacArthur-King, Michael Squires, Ian Watkins and others. It was also pleasing to catch up with the newer AIN generation including LEUT Ben Hicks, RAN and LCDR Tom Geraghty, RAN.



**Right to left: Ian Watkins, Ron Houghton, Dave Pyett and Peter Sturt**



**From the right: Bob Hall and Peter Martin with some of the NI/CMM guests**



**The Davidsons enjoying the festivities!**



**Left to Right: Bob Hall, Peter Sturt and Dave Pyett**



**Chris and Chris (Rizos) enjoying the day!**



**Some RAN members joined our table, which was great!**



**Debbie Osley and Andrew McClean**

**Notice of AIN Annual General Meeting and Technical/General Meeting No 598 – Wednesday 9<sup>th</sup> March 2016 – from 5:00PM for AGM and 6PM for the Technical Meeting No 598**

The AIN Annual General Meeting will commence from 1700 hrs. We will gather for the AGM on Level 1 restaurant/bar area.

At the conclusion of the AGM (about 1800-1815hrs) we'll join the NI and CMM members for a pre-dinner drink and then dinner for those who wish to.

At about 1945hrs, at the conclusion of dinner we'll be entertained and informed by Mr Neil Baird, Director of Baird Publications, about his

perspective on 'The Future of Australian Shipbuilding – A Historical Perspective'.

Neil is an internationally renowned speaker who has featured on several significant maritime conferences in recent years. We are lucky to have him address us for the March meeting.

He will be presenting on "The Future of Australian Shipbuilding – An Historical Approach".

Neil believes there is a future for Australian shipbuilding, and 'despite the best efforts of state and federal governments of both stripes, as well as all the various unions that inflict their avaricious demands on the industry, we need it to survive and thrive'.

He will review his fifty-year connection with this industry and the changes he has seen over that half century, which he calls 'dramatic'.

In his career he has met hard-driving pioneers of the commercial Australian shipbuilding community. He believes that our fast ferry, crew boat, patrol boat and super yacht sectors all had their origins in the fishing industry, most particularly in the West Australian lobster fishery.

He will comment on why the old order rapidly changed in the 70's and 80's and virtually all of the traditional steel cargo ship builders died out, while simultaneously the designers and builders of high-speed aluminium craft were establishing themselves.

**Dinner:** The evening includes a two-course dinner plus tea/coffee (cost is \$40 payable on the night). We will be joining the members of the Nautical Institute and the Master Mariners.

**When:** Wednesday, 9<sup>th</sup> March 2015

- AIN AGM from 1700 hrs-1800 hrs – meeting in the Fairmont Restaurant area on Level 1
- From 1800 hrs – drinks in the Fairmont Restaurant Bar, Level 1
- 1830 hrs - Dinner commences
- 1945 hrs – Presentation commences
- 2100 hrs – expected conclusion

**Where:** Fairmont Restaurant Level 1 at the Occidental Hotel, 43 York Lane, Sydney NSW (very near the Wynard Station).

**RSVP:** to Kym or Debbie Osley, AIN Secretary, on [kym.osley@defence.gov.au](mailto:kym.osley@defence.gov.au) or [kym.osley1@gmail.com](mailto:kym.osley1@gmail.com) (or 0466 253 100 (leave message) ) by

NLT Close of business on 6<sup>th</sup> March 2015. Friends, partners and colleagues welcome.

#### AIN Annual General Meeting Agenda – 1700-1815 hrs, 9<sup>th</sup> March 2016

- **Meeting Opening/Rollcall**
- **Confirmation of last Council Meeting Minutes – held 30 March 2015**
- **Actions Open from the Previous Meeting:**
- **Secretary's Report**
- **Treasurer's Report**
- **President's Report**
- **Election of New Office Bearers**
  - Declare all positions vacant
  - Election of new office bearers
- **Other Business:**
  - Potential Role for AIN in IGNS – Prof Rizos to introduce
  - AIN and SPECTDO (see later in Newsletter for explanation of SPECTDO) & the Space based Augmentation System for Australia – Kym Osley to introduce
- **Meeting closure and next meeting**

**Note:** Please advise any nominations for the AIN Executive positions (President (currently Chris Rizos), Vice-President (Currently Bob Hall), Executive Secretary (Kym Osley) and Treasurer (Dave Pyett), and for Counsellors to the Executive Secretary on [kym.osley1@gmail.com](mailto:kym.osley1@gmail.com) or by mail to AIN Secretary 2 Niblo Place, Chapman, ACT, 2611 by not later than 3 March 2016. Alternatively nominations can be made at the meeting.

**While not essential, apologies can be registered with the Secretary as well by email, and if you wish you can nominate a proxy for voting on your behalf at the meeting if you desire (also to the Secretary). Note there are no motions being planned ahead of the meeting for pre-consideration.**

#### Summary of AIN Priorities – SPECTDO - for 2016 Arising from the AIN-Defence Conference in May 2015

Just a new year reminder of the focus areas for the AIN to progress as agreed following the AIN-Defence Seminar in Canberra in May 2015. The Seminar Key Outcomes/Actions that will be

progressed jointly by the Australian Institute of Navigation, with the support of Defence and other Government agencies are as follows:

- **Share Information.** Further develop cross-Government GNSS-related forums to better share developments in dealing with GNSS degradation.
- **Plan.** Ensure that natural and human-induced GNSS degradation is adequately addressed in Government and Department contingency plans and risk registers.
- **Education.** Develop a program for better educating the public of the dangers of jamming or interfering with GNSS.
- **Critical Infrastructure.** Seek to have GNSS recognized as critical infrastructure in Australia.
- **Training.** Review cross-Government exercise programs and training courses to ensure that they adequately stresses staff and processes in preparation for responding to a serious degradation in space-based PNT.
- **Detect.** Create an Australian national system (equipment and processes) for detecting and geo-locating GNSS jamming.
- **Ownership.** Defence and the Australian Institute of Navigation to find the most suitable cross-Government group to accept and progress these key outcomes/actions.

So for 2016 the AIN has a definite professional role in pursuing **SPECTDO!**

#### Intermediate Navigation Course Graduation – 4 December 2015

The most recent RAN Intermediate Navigation Course graduated on 4 December 2015, and the congratulations of the AIN Counsel goes out to all the graduates. Of special note, the Dux was LEUT Braden Searle who excelled throughout the course. Braden received the AIN Plaque for Dux and is about to re-locate north to Darwin in order to Navigate a Armidale Class Patrol Boat. It is clear that Braden will do very well as a high performing Navigator in the RAN, and has a great future ahead of him.



LEUT Braden Searle, RAN, who is the Dux of the most recent Intermediate Navigation Course

#### 29 ACO Course – Winners of AIN Excellence in Navigation Award

No. 29 Air Combat Officer Course and No. 69 Aviation Warfare Officer Course graduated at East Sale on 3<sup>rd</sup> December 2015. The Reviewing Officer for the parade was Commodore Vince Di Pietro, who is Commander of the RAN Fleet Air Arm. There were three AvWOs graduating, and it was one of the last official duties of CDRE Di Pietro as COMFAA prior to his retirement.



Commodore Vince Di Pietro, CSC COMFAA

The AIN plaque for excellence in navigation was presented by CDRE Di Pietro to PLTOFF Mitch Apted, who has been posted to fly in F-18F Super Hornets with No 82WG at RAAF Amberley. He will undergo some familiarisation flying on Hawk aircraft at RAAF Williamtown ahead of his Super

Hornet Conversion Course. A Graduation dinner was held in Hangar 397, at RAAF Base East Sale.

**Royal Institute of Navigation 2016 Conference – 9-10<sup>th</sup> June 2016 at National Maritime Museum, Greenwich, UK**

The UK RIN 'History of Navigation' Conference is on in the UK, 9-10 June 2016. This Conference will consider the special demands of aeronautical navigation and will consider how marine navigation evolved into aeronautical navigation. The venue will be the National Maritime Museum at Greenwich.



**National Maritime Museum at Greenwich**

**US Space-Based Position, Navigation and Timing Advisory Board**

In October 2015 the most recent meeting of the US Position, Navigation and Timing Advisory Board occurred in the US. The PNT Advisory Board is a Presidential committee that advises the U.S. Government on national and international PNT related issues and is currently convened by NASA.

The work on the Adjacent Band Compatibility (ABC) Assessment by the US Department of Transportation is important for all GNSS users globally and especially for equipment and software developers. Of note many inland stations in the US nation-wide Digital GPS Network are planned to close. An important point for Australia to note is that the availability of the free-to-air US Space Based Augmentation System, WAAS and

standardised SBAS capable chips in many GNSS devices is a key reason why use of the DGPS network has dropped off in recent years.

There was also discussion about the studies into so-called "Complementary PNT". eLoran continues to be a key technology for Complementary PNT and is of interest in the US as a possible backup to GPS. A major focus is as a backup for precise time transfer in critical infrastructure such as energy and financial networks.

In the opinion of many, the case for eLoran's to be a backup for positioning is less strong; especially for precise positioning in agriculture, construction, mining and geospatial applications, where it cannot achieve the accuracy required. Those high precision applications account for more than half of the economic value of GPS documented in the study being overseen by the Board.

The Board was given an update on latest developments in Australia's National Positioning Infrastructure by Grant Hausler from Geoscience Australia. We continue to be seen as sophisticated PNT users and Grant's presentation was very well received. His outline of ACMA's recent changes to the way GNSS spectrum is to be managed in Australia was of particular interest to the Board, given ongoing concerns with spectrum in the US. The Australian presence at the Board was also bolstered by a presentation by Locata on recent testing by the US Naval Observatory's of Locata's precise time transfer capability. It is important to note that if Locata networks were established as a backup for precise time transfer (e.g. for communication or banking networks in urban areas) a by-product would be its value for precise positioning and potentially with indoor coverage.

The next meeting of the US PNT Advisory Board will be in May or June 2016, in the Washington DC area.

**Change of Name for the School of Air Warfare (Previously the School of Air Navigation) to No 1 Flying Training School – February 2016**

The School of Air Warfare at East Sale currently trains Air Combat Officers and Observers for the RAAF and RAN respectively. The name was changed from the School of Air Navigation to the School of Air Warfare in the early 2000s to reflect the changing nature of the training they provide and the evolving role of the traditional air navigator.

There is further change to SAW planned for February 2016 when the name of the Unit will change to No 1 Flying Training School. SAW will be 'dis-banded' on 19 Feb 16 and the unit renamed to No 1 Flying Training School. No 1 FTS was formed in 1921 on the formation of the RAAF and initially located at Point Cook. The unit closed on 31 January 1993 with the commercialisation of basic ADF pilot training.



**An AVRO 504K, in use in the 1920s at No 1 FTS**

This is in part due to the formation of an Air Warfare School under the Air Warfare Centre and partly in preparation for the establishment of the Defence Aviation Academy under Project 5428 in the next few years. SAW's Queen's Colour will be laid up on 5 Feb (70th anniversary of SAN) and a ceremony will be conducted with Chief of Air Force, AM Leo Davies, as the Reviewing Officer. The 1 FTS Queens Colour will be trooped on 19 Feb 16 to celebrate the re-commencement of No 1 FTS, and this ceremony will be attended by the Deputy Chief of Air Force, AVM Warren McDonald, and the Air Commander, AVM Gav Turnbull.



**Badge of No 1 FTS**

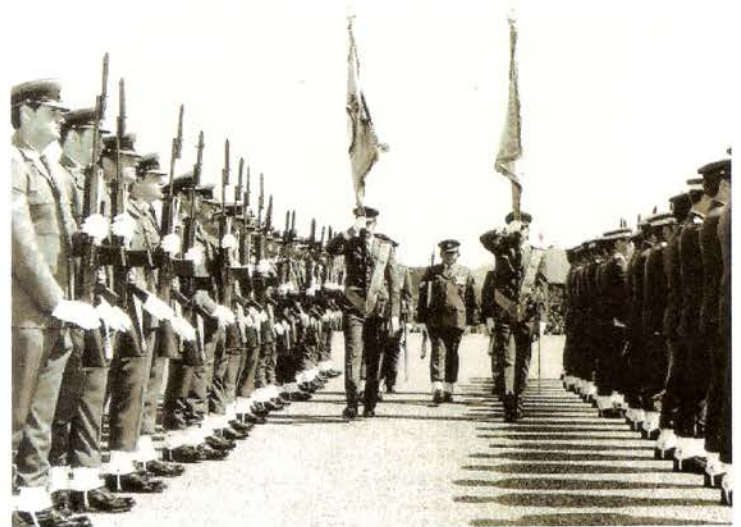
The Secretary of the AIN will plan to attend the 5<sup>th</sup> February 2016 event if he can to provide an AIN presence on this significant occasion.

The Queens Colour was presented to the School of Air Navigation (and thus to its successor, School of Air Warfare) in 1978, at a parade at East Sale. On the same day and parade, the Queens Colours was also presented to Central Flying School.



**Badge of the School of Air Warfare**

The occasion was the first time in Australian military history that Queen's Colours were presented to two units at once on the same parade ground.



**The Queen's Colour being presented in 1982 to the School of Air Navigation.**

## Visit to No 2 Flying Training School, RAAF Pearce for Pilot Graduation – 3-4 December 2015

The AIN Secretary, AVM Kym Osley, was invited to visit No 2 Flying Training School, RAAF Pearce, West Australia, to be the Reviewing Officer for the #241 Pilots' Course Graduation. Kym presented wings to 13 brand new Defence Force pilots (11 for RAAF and two for the RAN).

Kym was able to also fly in the Unit's aircraft, the PC-9, with one of his pilots from F-111 days when Kym was CO No 1 Squadron.



Left to Right: AVM (RAAF AR) Kym Osley, AIN Secretary and SQNLDR Mark 'Newy' Neasmith, Flight Commander at 2FTS.

It was interesting to note that in this day of GPS, that the PC-9 has only a very rudimentary cockpit, no GPS and no area navigation system. The pilot candidates plan their high and low level navigation routes in a manner very similar to those who have gone before them for the past 50 or so years. They make paper topographical maps and use traditional pilot navigation techniques.

## Air 5428 to Replace the ADF Flying Training System from 2019

A Lockheed Martin-led teaming will provide the RAAF's new Pilot Training System operating 49 Pilatus PC-21 training aircraft from RAAF Base East Sale in Victoria and Pearce in Western Australia.

The new pilot training system will see ADF basic flying training currently undertaken at the Basic

Flying Training School (BFTS) with BAE Systems at Tamworth in NSW relocate to East Sale, already home to the RAAF's Central Flying School (CFS), while advanced training will continue to be conducted from RAAF Base Pearce, home to the RAAF's 2 Flying Training School (2FTS).

The new pilot training system will use the latest in simulator technology that can be adapted to student needs and different learning styles to allow students to progress through training faster.



Top is PC-21 (in Singaporean colours); with the BAE Hawk in the middle and the current RAAF PC-9 at the bottom.

Efficiencies will also mean the new contractor-supported Pilot Training System will see an increase in ADF pilot training throughput despite operating fewer aircraft than the current system.

The new pilot training system will, from 2019, graduate 105 pilots a year, up from 77 currently, with an annual intake at RAAF Base East Sale of up to 165 trainee pilots. Of the 49 PC-21s to be supplied under AIR 5428, 22 will be based at Sale.

Team 21 was selected ahead of a competing bid from BAE Systems, which together with CAE Australia and Beechcraft had offered a solution based around the Beech T-6C aircraft.

### Contacting the Institute:

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