



DEFENCE WEEK

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IN THIS ISSUE

NATIONAL NEWS

- New titanium manufacturing facility for BAE Systems 1
- Johnston proposes increased Defence budget funding certainty 3
- Amphibious ship trials for French Army's NH90 4
- New members join unique defence industry program 5
- Submarine escape exercise closes ... 6
- AUSMIN 2013 Joint Communiqué ... 7
- Indonesia's military modernisation ... 8
- New Commander and new Squadron for RAAF's No. 86 Wing 9
- Port Stephens Council development approval 10
- Aspen Medical scoops National Export Award 10
- ADM Online: Weekly Summary 11

INTERNATIONAL NEWS

- Kongsberg and Boeing complete JSM check on Super Hornet 11
- P-8A achieves Initial Operational Capability 12
- WFEL delivers 100th dry support bridge to US 12
- Northrop Grumman delivers additional MQ-8C Fire Scout to the US 13
- FORTHCOMING EVENTS 14

PUBLISHING CONTACTS:

EDITOR

Katherine Ziesing,
Tel: 02 6203 9535
Email: katherineziesing@yaffa.com.au

SENIOR CORRESPONDENT

Tom Muir,
Tel: 02 6291 0126
Email: tom.muir@home.com.au

MANAGING EDITOR

Judy Hinz,
Tel: 07 3348 6966
Email: judyhinz@yaffa.com.au

PUBLISHING ASSISTANT

Erin Pittman, Tel: 02 6203 9535

SUBSCRIPTIONS

Martin Phillpott,
Toll Free 1800 807 760
Email: martinphillpott@yaffa.com.au



New titanium manufacturing facility for BAE Systems

Tom Muir

This week saw the opening of BAE Systems' \$10 million advanced titanium manufacturing facility at Edinburgh Parks, Adelaide as part of a collaborative agreement with the South Australian government and Rosebank Engineering (a RUAG company), which is establishing a metal processing and finishing facility in nearby Wingfield.

Included in the joint government/industry investment is a new machine – the only one of its type in the Southern Hemisphere – the **Starrag BTP5000**.

The start of this country's largest titanium aerospace operation has been underpinned by the company's participation in the **F-35 Joint Strike Fighter supply chain** over the next 20 years and more immediately by the need to manufacture highly specialised 5m long, titanium vertical tail fins for possibly 3,000 F-35s.

Reports indicate that the introduced technology potentially has other applications such as **Boeing's Dreamliner aircraft** and future fighter jets, and that BAE Systems will likely go to the global market to win global airline and military contracts for the technology inherent in this advanced titanium machining capability.





BAE Systems announced in 2012 it would invest \$10 million in machining capability in its Adelaide facility to support the production of F-35 tail fins. The first ship set of parts from BAE Systems advanced manufacturing facility at Edinburgh Parks was delivered to Melbourne-based **Marand's** F-35 tail fin assembly line at the end of April 2013.

The shipset comprised around 30 complex titanium components of varying sizes that will form part of two vertical tails for each of more than 700 next generation F-35 jets. It was the first delivery of a 20-year contract. F-35 tail fin work was also originally contracted to Victorian-based Rosebank Engineering, as part of the establishment of a manufacturing base at Edinburgh Parks, in South Australia.

Historically, titanium has been perceived as a material that is difficult to machine. Some years back a highly capable Sydney-based engineering firm awarded an aerospace contract under the early offsets program had considerable difficulty in manufacturing heat resistant titanium jet engine components which may have led to the loss of that contract.

Many of titanium's material and component design characteristics make it expensive to machine. A considerable amount of stock must be removed from primary forms such as forgings, plates, bars, and so on. In some instances, as much as 50-90 per cent of the primary form's weight ends up as chips and maximum machining efficiency for titanium alloys is required to minimise the costs of stock removal.

The titanium milling machine at the heart of the new facility, the Starrag BTP 5000 was developed for the machining of particularly long, complex titanium components for the aerospace industry. The five-axis simultaneous machining with double rotatable head provides maximum flexibility. The spindle, machine bed and guides were designed for heavy chip removal and ensure optimum stiffness and damping. The components are based on the tried and trusted Starrag technology which has successfully been implemented on more than a hundred machines the world over.

Aircraft designers continue to replace high-tensile-strength aluminium alloys with titanium for key components. These include long parts such as engine suspensions and high-load primary structures in the wings and fuselage. Such components present machining challenges not only because of their material, but also because of their size. Evident from BAE Systems F-35 tailfin contract some are more than five metres long.

Machine tool builders have been developing large-scale machines to meet this demand. The **Big Titanium Profiler (BTP) 5000** from Starrag weighs 200 tonnes and offers five meters of X-axis travel. It is the largest and heaviest machining centre the company has built. However, its design not only addresses the need for larger machining capacity for long aerospace components, but it also offers impressive material removal rates for tough titanium alloys.

While machining of titanium alloys requires cutting forces only slightly higher than those needed to machine steels, but these alloys have metallurgical characteristics that make them somewhat more difficult to machine than steels of equivalent hardness.





Johnston proposes increased Defence budget funding certainty

Katherine Ziesing

Speaking at an ASPI dinner this week, new Defence Minister Senator David Johnston gave an unexpected state of the portfolio.

"I don't think I am being too harsh on the previous government when I say that Defence for them was not a priority. The 2009 Defence White Paper was broadly accepted in a bi-partisan approach by the Opposition.

"It was a plan for the future and we supported it, however, this all collapsed when just nine days later the funding envelope was pulled by the Rudd Government.

The funding envelope of three per cent real growth to Defence's funding base to 2017-18 and 2.2 per cent real growth from 2018 to 2030 to fund the promises made in the 2009 Defence White Paper simply went out the window.

"The past five years have been nothing less than a series of significant financial setbacks for Defence," Senator Johnston told the audience.

These setbacks have caused industry to reassess their medium to long term plans in the Australian market. *ADM* can confirm that \$900 million was taken out of the **AMCIP (approved major capital investment program) budget** this year alone. If you imagine the **Defence Capability Plan (DCP) programs** as a body of water behind a dam and the funds available as a pipe at the bottom of said dam, the pipe is letting water through as a trickle. Next financial year doesn't look much better.

Every spending decision over the \$1 million mark to be taken in this financial year, 2013-2014, is getting approval through the CEO of the DMO's office. As to when this practice will cease is unknown.

As one senior DMO official said to *ADM* "I can go to jail for mismanaging money (under the **FMA**) but not schedule." In essence, while funds are tight, schedule will be the side of the golden project management triangle of schedule, quality/money and risk to suffer most.

Senator Johnston has promised no more cuts to the Defence budget and a return to two per cent GDP spending in the coming decade. Some budget certainty would be a very welcome thing to all involved.

The minister has hopes to release the new White Paper, DCP and Industry Policy as a trio in the third quarter of next year, according to his *From the Source* interview with *ADM* that will appear in the **Top 40 Defence Contractors** December/January edition.





Amphibious ship trials for French Army's NH90

The French Army Aviation's (ALAT) NH90 tactical transport helicopter (TTH) has successfully conducted its initial naval trials onboard the second Mistral Class amphibious warfare ship, *BPC Tonnerre*.

Carried out at an undisclosed location, the trials enabled the helicopter's maximum take-off weight to be updated to 10.6 tonne, while additional trials, which are planned for March 2014, will lead to the helicopter's clearance for shipboard missions. The helicopter's initial operational capability (IOC) is planned for mid-2014, when four NH90s will be available for operations.

The French Army has to date taken delivery of three of the total 34 NH90 helicopters ordered by the French defence procurement agency from **NH Industries** in December 2008, along with an option for an additional 34 aircraft, to help replace the army's ageing **SA 330 Puma** helicopters fleet.



...and for RAN MRH90s?

Australia was the first NH90 operator to certify the aircraft for service at sea, with the RAN conducting the world's first maritime trials of the innovative MRH90 helicopter off the Landing Platform Amphibious ship *HMAS Manoora* in 2009. That month-long first of class flight trials testing regime gauged the aircraft's capabilities at sea through takeoffs, landings, munitions transfers and weight load carries.

The **NZ Navy** and **Air Force** have also been working alongside the Australian Defence Force to develop the capabilities of HMNZS *Canterbury*, conducting First of Class Flight Trials for the NH90 helicopter from her flight deck. The two weeks of first of class flight trials for the NH90 off the north-east coast of Australia, during 26 August to 6 September, used a RAN test pilot and team and an ADF MRH90 helicopter (similar to the **RNZAF NH90**).

The trials involved testing the helicopter and the ship's company onboard HMNZS *Canterbury* in a wide range of wind and sea states, in order to develop an authorised template for flying onboard.

And back in May the RAN conducted MRH90 flight deck trials onboard **ESPS Cantabria**, the Spanish Navy's Combat Support Ship deployed to the Royal Australian Navy for most of 2013. At the Cruiser Wharf, Fleet Base East the helicopter rehearsed recovery and launch operations to achieve training and qualification goals.

While in Australia, *Cantabria* took part in mutually beneficial training and exercises with Australian ships and helicopters, including consorting the workup of two Royal Australian Navy ship's preparing for operational deployment and supported a first of class flight trial for MRH-90 ship operating limits validation. Having completed a successful deployment, which has enabled the Spanish Armada to evaluate her full range of capabilities, *Cantabria* started her return voyage to Spain on 1 November 2013 and will arrive in Ferrol just before Christmas.

The MRH90 will replace the ADF's existing **Black Hawk** and **Sea King fleets** with increased and improved capability, ability and capacity to meet emerging requirements. 47 MRH90 aircraft will be acquired for Navy and Army. The first two aircraft were accepted into service in Brisbane on 18 December 2007.



New members join unique defence industry program

Minister for Defence Senator David Johnston has congratulated the latest group of Australian organisations to have been selected to join the unique **Rapid Prototyping, Development and Evaluation Program (RPDE)**.

The RPDE, which is a Defence and private sector collaborative venture, was established in 2005 to solve difficult and challenging problems affecting the delivery of capability to the warfighter.

"Through engagement with industry, Defence can maximise a wide range of expertise and continue to deliver the right capability for our service men and women. Commitment and cooperation within the Program is paramount" he said.

New entrants this year include **Optus Networks**, **UGL Engineering Pty Ltd**, **Queensland University of Technology** and the **University of Newcastle**.

RPDE already includes an impressive list of Australia's foremost research and development organisations, and has access to the most innovative solutions from leaders in their field.

A full list of the new and current organisations participating in the program can be found at www.rpde.org.au.

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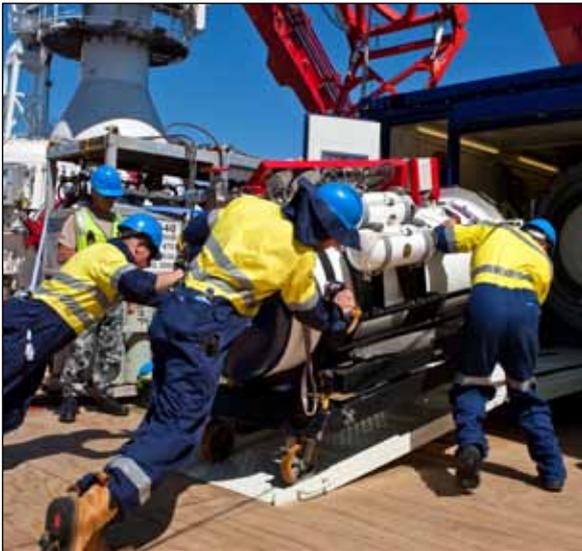
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The ROV (Remotely Operated Vehicle) SC-45 "Scorpio" from James Fisher Submarine Rescue Services is craned outboard from ADV Ocean Shield to locate HMAS Farncomb on the sea floor in the East Australian Exercise Area during Exercise Black Carillon 2013.



James Fisher Submarine Rescue Services personnel mate a single person recompression chamber to the larger Type B recompression chamber, as Royal Australian Navy medical personnel conduct familiarisation training on both chambers onboard ADV Ocean Shield during Exercise Black Carillon 2013.

Submarine escape exercise closes

An intensive three week submarine escape and rescue exercise has drawn to a close off the east coast of Australia. During Exercise Black Carillon 2013, members of Navy's Submarine Force simulated being evacuated from HMAS *Farncomb*, which was bottomed in 112 metres of water, in the James Fisher Rescue Service LR5 submersible.

The 21.5 tonne submersible was then lifted onto the deck of a rescue vessel, where its passengers were transferred into decompression chambers without being exposed to the outside air pressure. The LR5 Submersible was mobilised from its base at Henderson, WA, flown by RAAF 86 Wing **C17 Globemaster** to the east coast and then embarked on Australian Defence Vessel (ADV) *Ocean Shield*.

Commander Submarine Force, Captain **Mark Potter**, RAN, said while it's unlikely the equipment will be needed, maintaining the capability is essential.

"Submariners are an important part of naval capability. Should the unthinkable happen, it is essential that we have established and well practiced procedures in place to rescue personnel," CAPT Potter said.

"During Black Carillon, Navy worked closely with defence partners and contractor James Fisher Defence to mobilise and test the equipment on the east coast. It was also the first time that ADV *Ocean Shield* was used as the mother ship. Her size and ability to dynamically position proved to be an invaluable capability during the rescue operation.

"Navy's underwater medical specialists also played a vital part in the exercise.



Type B decompression chambers were tested and life-saving medical techniques aimed at preventing and responding to decompression sickness were simulated,” Captain Potter said.

This was the 12th time the Royal Australian Navy had conducted a submarine escape and rescue exercise. Australia is also a member of the **International Submarine Escape and Rescue Liaison Organisation**, which would provide international support, should an Australian submarine be disabled.

ADM Footnote:

QinetiQ Maritime has been contracted by the **UK MoD** to upgrade and provide on-going maintenance for a specialist software tool designed to aid in the decision making process of submarine escape and rescue systems. The **Submarine Escape, Rescue, Abandonment and Survival (SMERAS) Assessment Model Software** provides a method for analysing numerous scenarios based on expert agreed assumptions relating to distressed submarines and the rescue of survivors.

It has been used by the UK MOD SMERAS team since 1998 supporting in-service submarines and to drive the design of new builds. QinetiQ GRC, who also developed **Paramarine Software**, was asked to review the software and assess its usability and future development, and has subsequently been contracted by the MoD to recode and maintain the software in a modern development language.

“The SMERAS Assessment Model Software (SAM) is an important safety component in support of the Royal Navy’s submarine fleet. We selected QinetiQ not only because of their world leading SMERAS knowledge and understanding but also because they have a significant software development capability which has been built around their Paramarine advanced marine design software,” Commander **R D Randall**, MoD commented.



Foreign Minister Bishop and Defence Minister Johnston with US Congressman Eric Cantor (R-Virginia) [Photo:Defence]

AUSMIN 2013 Joint Communiqué

Minister for Foreign Affairs, Julie Bishop, released the communiqué of the recent AUS-US foreign and defence policy talks, focusing on:

- a joint Statement of Principles that provides a common vision for advancing the US force posture initiatives in northern Australia;
- facilitating interoperability, industry collaboration, and innovation;
- a Memorandum of Understanding governing the arrangements for the relocation and joint operation of a unique, highly advanced US space surveillance telescope to Western Australia;
- cyberspace threats;
- potential Australian contributions to ballistic missile defence in the Asia-Pacific



- region; disaster relief capacity in the region;
- defence cooperation with Indonesia, including on humanitarian and disaster relief operations;
- enhance trust and confidence through dialogue with China on strategic security issues; promotion of stability on the Korean Peninsula;
- promote the importance of peace and stability, respect for international law, unimpeded lawful commerce, and freedom of navigation in the East China Sea and the South China Sea;
- conclude a high-standard and comprehensive Trans-Pacific Partnership agreement in 2013; and
- cooperate more closely with ASEAN and other EAS members to develop the EAS security and political agenda and its institutional arrangements.



Indonesia's military modernisation

In his latest report in ASPI's Strategy series, *Moving beyond ambitions? Indonesia's military modernisation*, Dr Ben Schreer notes that Indonesia's ambitious plans to modernise its armed forces (TNI) over the next 10 to 15 years, including a 274-ship 'green-water navy', 10 fighter squadrons and 12 new diesel-electric submarines, are of key interest for Australia.

He says three major issues are particularly pertinent for Australia:

- the degree to which the capability balance between the ADF and the TNI could shift;
 - the degree to which the TNI will strengthen its capacity to defend the Indonesian archipelago and contribute to regional security; and
 - the implications of a relative shift in Indonesia's military power for the Australia-Indonesia defence relationship.
- The study examines some key issues related to TNI modernisation:
- What are the key drivers behind Indonesia's efforts to build a modern defence force?
 - What are the key trends and challenges for TNI reform?
 - What are the strategic implications for Australia?
 - And what could Australia do to support Indonesia's military capability development and to further the bilateral defence relationship?

The report can be downloaded as a pdf from www.aspi.org.au





The outgoing Air Component Commander Joint Task Force 633.2, Group Captain Paul Nicholas, addresses the audience at the change of command ceremony. [Photo:Defence]

New Commander and new Squadron for RAAF's No. 86 Wing

A new era dawned for Air Force's No. 86 Wing on November 29, with a change of command ceremony at RAAF Base Amberley.

Group Captain Guy Wilson took over as Officer Commanding No. 86 Wing, after Group Captain Paul Nicholas completed his posting to the role.

During the same ceremony, No. 86 Wing also welcomed No. 33 Squadron under its operational command and control. No. 33 Squadron operates a fleet of five KC-30A Multi-Role Tanker Transport aircraft.

Already, No. 86 Wing is responsible for No. 36 Squadron at RAAF Base Amberley, which operates the **C-17A Globemaster**; and No. 38 Squadron at RAAF Base Townsville, which operates the **King Air** light transport aircraft.

Group Captain Paul Nicholas, who had been in command of No. 86 Wing since January 2012, will now move into a new role as **Defence Attache**

(Air) at the Australian High Commission in London.

Group Captain Guy Wilson comes to No. 86 Wing having served as Chief of Staff for Headquarters Air Lift Group, and prior to this, Commanding Officer for No. 33 Squadron.

ADM 2014 Defence/Industry Congress

Date: 25 - 26 February 2014, Canberra

Enquiries: Keith Barks, Tel: +61(2) 9080 4342;
Email: Keith.barks@informa.com.au



Port Stephens Council development approvals

The Chief of Air Force, Air Marshal Geoff Brown AO has expressed disappointment over the decisions taken by the Port Stephens Council to provide exemptions to their planning rules which applies the Australian Standard 2021–2000 Acoustics – Aircraft Noise Intrusion – Building Siting and Construction.

AIRMSHL Brown said Defence has undertaken extensive research to provide the best available information about aircraft noise.

“We have released the best available information about aircraft noise, and Port Stephens Council continues to provide exemptions to the Australian Standard, undermining all the work that Air Force is doing to reduce aircraft noise impacts,” AIRMSHL Brown said.

“I acknowledge the amended layout for 153 Richardson Road means that the housing is in the ‘conditionally acceptable’ zone, however it will never be possible for home-owners to sound proof their backyards.

“The continuing trend by Port Stephens Council to provide exemptions for noise attenuation requirements, for residential development in the ‘conditionally acceptable’ ANEF zone such as Adastra Close, undermines the hard work we are doing to work with the community to reduce aircraft noise impacts,” AIRMSHL Brown said.

New developments, inside the contours on the **Australian Noise Exposure Forecast (ANEF)** map that are deemed unsuitable by the relevant Australian Standards, will expose new home-owners to high levels of aircraft noise.

“Home-owners that purchase these new developments are acquiring properties that will be exposed to high levels of aircraft noise both now with **F/A-18A/B Hornets** and **F-35A** in the future,” AIRMSHL Brown said.



Managing Director and Co-founder of Aspen Medical, Glenn Keys,

Aspen Medical scoops National Export Award

Aspen Medical has scooped the national prize in the Health & Biotechnology category at the 51st National Export Awards held in Melbourne on 26th November.

Glenn Keys, managing director and co-founder of Aspen collected the prestigious award from Australia’s Prime Minister, the Hon Tony Abbott MP.

Aspen is one of only four companies from the ACT to have won a national award since the awards started and the first company from the ACT to have won a national category award twice (Aspen also won in 2011).



ADM Online: Weekly Summary

A summary of the latest news and views in the defence industry, locally and overseas. Check out our webpage for daily news updates on the *ADM* home page and make sure you bookmark/RSS this for a regular visit.

This week, Defence awarded two multi-million dollar contracts to **Selex ES** for the acquisition and support of modernised communication systems for the RAN's eight ANZAC Class frigates.

Kongsberg signed a contract with the NZ Defence Force for the delivery of Penguin Mk 2 Mod 7 anti-ship missiles and associated equipment.

Canberra based company, **CEA Technologies**, was awarded a Standing Offer contract to develop high powered Phased Array Radar technology.

And, construction of facilities for the new **Seahawk Romeo Helicopters** commenced at HMAS Albatross in Nowra, NSW.



International

Kongsberg and Boeing complete JSM check on Super Hornet

Kongsberg Defence Systems and Boeing recently completed a successful fit-check of the Joint Strike Missile (JSM) on an F/A-18F Super Hornet at the Boeing St. Louis facility to ensure the weapons fit on the aircraft's external pylons.

The test brings the JSM one step closer to Super Hornet compatibility.

The JSM is a 5th generation long-range stealthy precision strike missile for sea- and land targets. Boeings F- 18E/F multirole fighter is one of the most capable and successful international fighter platforms.

Kongsberg and Boeing plan to conduct wind tunnel testing for the **Block II Super Hornet** early next year.





P-8A achieves Initial Operational Capability

The US Navy's newest maritime patrol and reconnaissance aircraft, the P-8A Poseidon, has achieved initial operational capability (IOC) after the first two P-8A Poseidons departed for deployment November 29.

This announcement comes weeks after the completion of the Operational Readiness Evaluation of the first deploying

P-8A Poseidon squadron and the commander of Patrol and Reconnaissance Group officially declaring the first P-8A squadron, Patrol Squadron 16 (VP-16), "prepared for deployment" November 4.

"This IOC declaration is the culmination of years of careful planning and coordinated effort by the fleet, resource sponsor, acquisition community, and industry," Captain **Scott Dillon**, program manager for Maritime Patrol and Reconnaissance Aircraft Program Office (PMA-290) said.

By achieving IOC, the Navy can effectively deploy the P-8A for operational missions and continue to successfully transition from the aging P-3C. The Poseidon program is on track for completing the remaining preparations for the first operational deployment of a P-8A squadron.



Max Houghton, WFEL (left) and Major Gregory Baker, US Army

WFEL delivers 100th dry support bridge to US

UK-based WFEL has handed over of the 100th Dry Support Bridge to the US.

The 100th DSB, WFEL's next-generation bridging system, was delivered to US Army Major Gregory **W. Baker**, of the Office of Defence Cooperation at the US Embassy in London, during a ceremony at WFEL's headquarters in Stockport, UK.

The bridge will be transported to the US Army's Fort Leonard Wood Centre of Excellence in Missouri, which trains nearly 100,000 soldiers and civilians each year.

"The Dry Support Bridge has proved an invaluable resource for the US armed forces, both in Iraq and, currently, in Afghanistan," Major Baker said. "Used during military operations and as temporary infrastructure, the DSB, which spans gaps of up to 46 metres and can be deployed by a team of eight in less than 90 minutes, has proved to



be a vital piece of equipment in keeping traffic flowing.”

The DSB, WFEL’s latest generation rapidly-deployable bridging system, has been supplied to the US since 2003. The latest delivery takes the value of DSBs ordered by the US to more than £450million.

Alongside the US, other key customers of the DSB include Turkey and Switzerland. A specially-modified **IVECO** vehicle used by the Swiss military to launch the bridge was recently on show at DSEI, the defence and security equipment exhibition held in London.

Northrop Grumman delivers additional MQ-8C Fire Scout to the US

Northrop Grumman Corporation has delivered the second MQ-8C Fire Scout unmanned helicopter to the US Navy after completing final assembly at the company’s unmanned systems centre in Moss Point, Miss.

The aircraft is joining the first one delivered to Naval Base Ventura County, Point Mugu, Calif., to conduct flight testing before using the system for operational missions in 2014.

FORTHCOMING EVENTS.....page 14



FORTHCOMING EVENTS

For a full list of defence and industry events, head to **ADM's** online events page at www.australiandefence.com.au

Singapore Air Show

DATE: 11 - 16 February, 2014, Changi Exhibition Centre

ENQUIRIES: Web: <http://www.singaporeairshow.com>

Singapore Airshow is all about creating opportunities for aero space industry representatives across the world to connect, do business, find out about the latest innovations and exchange ideas to spearhead developments across the industry.

ADM will
be in
attendance

Defence and ITAR Trade Controls from a non-US Perspective - workshops

DATE: 12 - 28 February, 2014, various locations and dates

ENQUIRIES: Web: <http://export-controls-training.com/training/face-to-face/2-day-defence-and-itar-training-february-14>

For those new to the topic, the course will be an ideal and comprehensive introduction to this extremely important topic. For those with prior experience or knowledge, the course provides a good opportunity to brush up on recent changes, ask questions, and network with defence trade control managers from other businesses. This workshop is proudly supported by Enterprise Connect's Defence Industry Innovation Centre for SME's. **Free to SME's**

ADM 2014 Defence/Industry Congress

DATE: 25 - 26 February, 2014, Canberra

ENQUIRIES: ADM Events - Adam Wiltshire, Ph: 02 9080 4342;

Email: adam.wiltshire@informa.com.au

Web: www.admevents.com.au

This major Defence/Industry Conference has evolved into a pivotal event in the Defence calendar, attracting over 250 delegates each year. More details to come.

ADM will
be in
attendance

The Submarine Choice: ASPI's International Conference

DATE: 8 - 10 April, 2014, Canberra

ENQUIRIES: Lynne Gozzard, Ph: 02 6270 5109;

Email: lynnegozzard@aspi.org.au

Join distinguished international and Australian speakers for two days of debate on Australia's Future Submarine choice.

Topics include: The Strategic Context; the Navy's Perspective; Regional Perspectives; Design Options; Industry and Economics; Project Management; Lessons from Abroad.

Centenary of Military Aviation Air Show 2014

DATE: 1 - 2 March, 2014, Point Cook, Victoria

ENQUIRIES: Web: <http://www.airforce.gov.au/>

The event highlights the significant advances in military aircraft during the past 100 years.

Old Crows Conference

DATE: 18 - 19 August, 2014, Hotel Grand Chancellor, Adelaide

ENQUIRIES: Web: www.oldcrows.org.au

Full details are yet to be released.

SimTect 2014

DATE: 25 August, 2014, Adelaide

ENQUIRIES: Web: <http://www.simtect.com.au/>

SimTect is the annual Simulation Technology and Training Conference held by Simulation Australia. Since its inception in 1996, SimTect has grown to become Australasia's premier simulation conference for industry, government and academia.

ADM will
be in
attendance

Land Forces Conference 2014

DATE: 22 - 26 September, 2014, Brisbane

The Land Forces Conference is a major event for users, providers, academics, designers and manufacturers to meet, present, share and exchange new and visionary ideas on Land Systems. More details to come.

ADM will
be in
attendance

