



DEFENCE WEEK

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BAE Systems opens LHD training facility

Nigel Pittaway

BAE Systems Australia, prime contractor for the Navy's Landing Helicopter Dock ship program opened a state of the art training facility in Sydney on April.

The \$5 million facility, in a converted warehouse at Mascot, close to Sydney Airport, was jointly opened by director BAE Systems Maritime **Bill Saltzer** and Minister for Defence Materiel **Dr Mike Kelly** and will begin training the first LHD crew on May 6. Over 700 personnel will be trained for the two LHDs over the next two and a half years.

The facility is capable of training LHD crews on all aspects of the ships' operation in a number of separate spaces, including weapons and navigation systems and engineering and damage control. It also incorporates a marine evacuation facility, where crews can rehearse the rapid evacuation of the vessel in an emergency.

The various systems can be linked to provide realistic training and a feature of the software allows cause and effect to be displayed, to demonstrate to the trainee the consequences of actions and to permit troubleshooting skills to be built up before he or she steps aboard the real vessel.

"The crews and personnel who are trained here will actually be on a virtual *HMAS Canberra*," Bill Saltzer said. "The equipment installed in this facility has the capability to replicate any scenario, incident or event the LHDs may encounter."

Minister Kelly, who was involved with simulation technology training solutions in his Army career, noted that the LHD training facility was designed with the flexibility to evolve as systems are enhanced in future years.

"This facility aims to enable and equip the men and women to drive that beast and get the most out of it," he said. "It's very exciting to see simulation squeezed for all you can get."

The Minister also moved to allay industry fears of the so-called shipbuilding 'valley of death'. "I know there's been a lot of concern about how our future maritime construction plan is going to pan out," he told invited guests.

"But let me assure everyone the government is completely aware of the industry impacts of our plans and the ups and downs of the cycle ahead of us, how we manage our way through that and retain skills and capabilities. We will ensure that is addressed in the plan, so I don't think anyone needs to be concerned about that." ▶▶▶



ADF joins US space surveillance program

Tom Muir

The growing dependence on space systems within the ADF, the increasing number of foreign space systems, and the rapidly

increasing amount of space debris, constitute a growing vulnerability to operations. Space situational awareness (SSA) is the fusion of many sources of data to detect and warn of any threats to space assets.

Back in 2010, Australia and the United States signed an **SSA Partnership Statement of Principles** that recognises the importance of SSA to protect national interests, and support global peace and security. At last year's 2012 Australia-US Ministerial consultations, both nations affirmed their intention to relocate two space surveillance sensors—a C-Band space surveillance radar and a highly advanced Space Surveillance Telescope—from the US to Australia to strengthen the SSN's ability to track space objects and debris.

So what is involved in SSA? One of the key elements of SSA is knowledge of the location of objects in Earth orbit. This is achieved through surveillance of space which involves the detection, tracking, identification and cataloguing of space objects using a global network of space surveillance sensors. Radars, both conventional and phased-array, provide the backbone of any space surveillance network.

In addition to the traditional radar and optical tracking sensors, there are also other more specialised sensors which contribute to SSA. These include lasers for very accurate distance measurements, infrared sensors which detect heat, telescopes which take pictures of space objects, sensors which detect electronic emissions from space objects, and specialised imaging radars which create images of the objects.

Australian space specialist **Electro-Optic Systems**, employs sophisticated satellite laser ranging technologies to carry out surveillance of space assets. The aim of EOS is to assist agencies, government bodies and large corporations to prevent or mitigate threats against these assets, thereby avoiding huge losses to capital and human life.

There are several space surveillance networks involving amateur satellite observers, the scientific community and the military. The most prominent of these is the US Air Force Space Surveillance Network (SSN), which maintains the most complete catalogue of space objects. This is a network of 29 radar and optical sensors, and includes a US military operated space-based telescope onboard the Space-Based Surveillance Satellite. However, there is a limitation in the SSN, in that there is little to no coverage from the Southern Hemisphere and Asia hence the interest in establishing a military space surveillance capability in Australia.

Within the ADF, the Australian Space Operations Centre (AUSSpOC) provides operational SSA utilising indigenous and coalition space assets to government and operational commanders. AUSSpOC is located in the Air and Space Operations Centre within the Headquarters Joint Operations Command – *Bulletin #193, Air Power Development Centre*.





Field trial for Beersheba model

Tom Muir

While some pundits have criticised Plan Beersheba's multi-role combat brigades (MCB) force structure, the Army is undertaking a field trial of the proposed armoured cavalry regiment (ACR) design and the future concept of employment for the multi-role combat brigades to

be adopted by 1 Bde, 3 Bde and 7 Bde. The trial will be undertaken through Exercise Hamel which will be held in conjunction with Talisman Sabre 2013.

According to the Army, a cavalry regiment based on 1 Bde units will be tested and evaluated during high-end war fighting in a near-peer threat environment – that is, against a conventional military force of similar capability. Army's transition from its current organisation to three MCBs is expected to improve combined-arms capabilities across the force and support more effective force generation for operations.

Each new brigade will have specialist mounted and dismounted combat capabilities, along with the requisite combat support and combat service support. To support these changes, an initial concept of employment detailing the structure, roles and methods of operation of the MCB and its organic units has been developed. It describes the outputs expected at each stage of the force generation cycle and the contingency forces that are expected to be generated. It is hoped that the concept will help soldiers understand how they can expect to be employed in future.

Equipped with **Abrams** tanks, **ASLAVS** and **M113 APCs**, the armoured cavalry regiment provides the capability to locate, disrupt/destroy an enemy with offensive, defensive, reconnaissance and security operations. It also provides close combat lift for the fighting elements of the standard infantry battalion and supporting capabilities. Testing the optimum organisational design is essential to its being an effective, sustainable and affordable part of the MCB.



Successful radio tests using MUOS

Tom Muir

Further to our [recent report](#) on the Mobile User Objective System (MUOS) satellite program regarding the ground station in Sicily, General Dynamics C4 Systems has now announced that two of their AN/

PRC-155 Manpack radios have successfully completed secure radio-to-radio voice and data communications tests through the network, as part of a MUOS end-to-end system test.



Using the final version of the MUOS waveform, the two-channel **PRC-155 Manpack radio** successfully transmitted voice and data communications to the orbiting MUOS satellite, through the MUOS ground station and back to a second PRC-155 radio. This is the first time that any military radio has communicated with the MUOS space-ground network, which will ultimately extend the reach of the soldiers' network to even the most isolated locations.

"The PRC-155 is the only government-owned, off the shelf radio to demonstrate this capability. Using the same cell phone technology (WCDMA) that powers commercial smartphones, military and government personnel can make secure 'calls' and exchange critical information from anywhere in the world," **Chris Marzilli**, president of GD C4 Systems said.

The PRC-155 radios also demonstrated the capability enabling soldiers to network their communications using the MUOS system, connecting them to one another wherever they are deployed, on foot, from land vehicles, ships, submarines and aircraft.

The GD-developed, non-proprietary MUOS waveform used for the test delivers high-speed voice and data communications at 16-times greater capacity than the military's current UHF satellite communications system. The two-channel PRC-155 radio also runs the essential US military waveforms including the **Soldier Radio Waveform (SRW)**, which connects dismounted soldiers to the network, and the **Wideband Networking Waveform (WNW)**, which seamlessly transports large amounts of data and the legacy SINCGARS waveform for communication with existing radios. Using the PRC-155's two-channel capability, soldiers operating on any of these waveforms on one channel, can interconnect with soldiers using another waveform on the second channel.

General Dynamics has been leading the development and deployment of the MUOS ground system that provides communications and control interfaces between the MUOS satellites and existing and future US Department of Defense terrestrial communication networks.

Australian focus

While the PRC-155 will be the first MUOS terminal in the field other vendors have been busy developing their radios to receive the MUOS waveform when it becomes available. Thales has added another channel to its PRC-148 enhanced MBITR radio which has received UHF satcom waveform certification from the JITC. MUOS capability is presumably the next step for that radio which is in ADF service. Harris will provide MUOS capability through its Falcon 3 AN/PRC-117G tactical satellite radios. These software-defined, multiband radios used in ground vehicles and command posts were redesigned in 2010 to become MUOS-compatible.

Once the MUOS waveform is ready, **Harris** will begin loading it onto approximately 10,000 AN/PRC-117G radios fielded presumably including those held by the ADF. While the AN/PRC-117G tacsat radios acquired with other types from Harris under JP 2072's first phase, will be able to access the MUOS system through UHF, their satcom capacity will be increased enormously once upgraded to full WCDMA capability. No doubt the ADF will be pressing Harris through its \$14.7 million field support contract with Defence, to field MUOS upgrade kits as soon as possible. Presumably **Rohde & Schwarz** are also preparing to load MUOS waveforms into their recently released software defined vehicular tactical radio SDTR.

Launched in February 2012, the first MUOS satellite and associated ground system already provide initial on-orbit capability. After the second MUOS satellite is launched in July and completes on-orbit testing and check-out with the ground system and a manpack terminal certified with the MUOS waveform, the system will provide full WCDMA capability to users.



JSF model to study electromagnetic effects



Nick Champion MP Federal Member for Wakefield, and The Hon Warren Snowdon MP Minister for Defence Science and Personnel (L-R), with members of Defence Science and Technology Organisation (DSTO) Edinburgh staff during their visit to DSTO.

Minister for Defence Science and Personnel, Warren Snowdon has unveiled a full-scale model of the F-35A Joint Strike Fighter (JSF) which the Defence Science and Technology Organisation (DSTO) will use to study the effects of electromagnetic compatibility and interference on the aircraft.

Called **Iron Bird**, the Australian-built model will be tested under simulated electromagnetic conditions during the acquisition and through-life sustainment of the JSF.

“This study is a significant part of ensuring the protection of the JSF against electromagnetic environmental effects such as lightning and static discharge which can impair the performance and safety of aircraft,” Snowdon said.

The JSF is a fifth-generation aircraft with highly complex electronics, sophisticated software and a structural airframe made of composite materials. This exposes the aircraft to electromagnetic interference from both naturally occurring phenomena and man-made sources, including telecommunication transmissions and radar.

“The impact of these interferences needs to be well understood and appropriately managed,” Snowdon said.

“DSTO has developed world-class expertise in the investigation of electromagnetic radiation impact on aircraft and is engaged directly with the US JSF Joint Project Office to undertake this study using the Iron Bird model.

“The data captured will help in providing potential reductions in the cost of owning the JSF fleet and enhancing the aircraft’s capability.”

The DSTO test methods provide a rapid, cost-effective means of assessing and monitoring the JSF’s ability to withstand electromagnetic exposure and minimise any impact on its systems and performance.

Snowdon said DSTO’s research would support the verification for compliance and airworthiness certification for the JSF aircraft.





Micreo receives production order of Airborne Optical Links

Micreo Limited has received the first production order from a leading defence prime contractor for wideband Microwave Optical Links for deployment in an airborne rugged environment.

In an airborne receiver, high frequency signals are typically down converted as close as possible to the antenna and fed to the receiver to minimise de-sensitisation associated with running wide bandwidth high frequency signals through high loss coaxial cable.

Additionally down-conversion hardware requires a reference signal, and potentially a local oscillator signal, to be routed alongside a high speed data connection within the aircraft exposing these signals to noise.

Coaxial cable in Direction Finding (DF) systems connects multiple antennas to several receivers located in the aircraft. Current systems compensate for amplitude and phase imbalances in the link with equalizers and attenuators, resulting in the practice of desensitizing all the receivers to compensate for the path with the highest loss.

As an alternative to coaxial distribution Micreo developed a fibre based link permitting the positioning of down conversion hardware and receivers in a less environmentally stressful location on the aircraft. Additionally the installation of fibre cabling within an aircraft frame is substantially lower cost than the equivalent installation of co-axial cable with the added potential to route all control and reference signals on a single fibre.



Telstra wins \$1.1 billion Defence contract

Defence has signed a \$1.1 billion contract with Telstra for the provision of telecommunications services.

The six-and-a-half-year contract will see Telstra implement unified communications, advanced video conferencing as well as tablet and

smartphone usage to provide communications links to troops, commanders, bases and allies around the world.

Defence chief information officer **Dr Peter Lawrence** said the transformation of its network was central to wider strategic reforms throughout the Department.

"This partnership will deliver Defence with robust and secure information communications technology, while creating greater efficiencies and lower costs," Dr Lawrence said.

"The project includes a major transformation program of work and the ongoing sustainment of Defence's telecommunications environment."



Telstra chief executive **David Thodey** said that the agreement represents the largest customer undertaking in Telstra's history and will support military operations at home and abroad.

"We will create 350 new positions to help serve the contract, including recruiting some of the nation's leading IT, network and security experts.

Defence will partner with Telstra to implement the transformed network solution which has a targeted completion date of mid-2016.

The Defence telecommunications network includes networks at 430 sites in Australia, supporting some 100,000 users in Australia and overseas. The project will significantly improve network performance and meet capability requirements to 2023.

GSC Training Opportunity

Raytheon Australia has secured a limited number of placements on the Raytheon Principles of System Engineering Course. The course provides an opportunity to engage with experienced System Engineers.

The course will run from 8:00am to 5:00pm, on each day of June 17 to 21, 2013. It will be held in Perth with the delivery location advised closer to the time. Lunch and morning/afternoon tea will be provided during the course.

Attendees will have to make their own arrangements for accommodation, transport and other meals.

If you are interested in attending this course or nominating one of your employees, please advise intention to participate by COB Tuesday April 30, 2013 to Dayle Svensen, IDU project coordinator. Phone: (02) 6122 0233 or email Dayle.Svensen@raytheon.com.au



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, the new high-tech **military vehicle simulator** was launched. The simulator is designed to replicate field conditions across different terrain.

Exercise Bersama Shield 2013 conducted. Australia was the only nation to deploy a submarine in support.

A key piece of the combat system for the Hobart Class Air Warfare Destroyers - the **Phalanx Close-In-Weapon-System (CIWS)** - arrived in Adelaide.

ADM Cyber Security Conference

Date: 12-13 June 2013, Hotel Realm, Canberra

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International

Austal's USNS Millinocket christened



Austal has recently christened USNS *Millinocket* (JHSV 3) at its shipyard in Mobile, Alabama. USNS *Millinocket* is the third of ten Joint High Speed Vessels (JHSV) Austal has under contract with the US Navy as part of an overall 10-ship contract worth over \$1.6 billion.

The 338-foot (103 metre) catamaran vessel was named *Millinocket*.

Over 600 naval and shipyard guests attended the ceremony, which was held underneath the ship, between the iconic twin hulls of the USNS *Millinocket*.

Austal USA president, **Craig Perciavalle**, praised the ship, saying, "USNS *Millinocket* is a revolutionary new platform that will bring an unprecedented level of flexibility, mobility, efficiency and support to our Combatant Commanders and nation."

Austal has been contracted by the US Navy to build ten 103-metre JHSVs under a 10-ship, US\$1.6 billion contract, one of which has already been delivered, and eight 127-metre Independence-variant LCS class ships (including USS *Independence*, delivered to the Navy in 2009), six of which are a part of a 10-ship, \$3.5 billion contract.

Four JHSVs and four LCSs are currently under construction in Austal's Mobile, Alabama shipyard.



Rolls-Royce to transfer RTM322 helicopter engine program

Rolls-Royce has announced it will sell its shareholding and interest in the RTM322 helicopter engine program to Turbomeca. Rolls-Royce's 50 per cent interest in the engine program will be progressively transferred to Turbomeca, which will then hold 100 per cent of the RTM322 program.

Turbomeca will assume full responsibility for the design, production and support of the RTM322 engine, which powers the **Apache**, **EH101 Merlin** and **NH90 helicopters**. Rolls-Royce will provide full assistance to Turbomeca during the multi-year transition period to ensure all RTM322 customers continue to receive effective support.





DCNS begins sea trials with FREMM multimission frigate

The FREMM frigate built for the Royal Moroccan Navy has been put to sea for the first time. This key milestone marks the launch of sea trials, which will be conducted over the next few weeks off the Brittany coast. The ship will be delivered to the Royal Moroccan Navy at the end of this year, in accordance with the contract schedule.

During this first period at sea, the crew made up of French Navy personnel, customer representatives and DCNS employees will focus primarily on the performance of the ship's propulsion system and navigation system. The exceptional seakeeping qualities of the FREMM frigates have already been demonstrated by the first-of-class Aquitaine, delivered to the French Navy in November 2012.

The teams on board will work day and night to conduct a series of tests at a sustained pace. The first three days of the campaign, known as the 'familiarisation' phase, will be used to test the vessel's safety systems and equipment, including fire-fighting, flood control and emergency response systems and evacuation procedures as well as manoeuvrability and mooring performance.

The second phase will focus on the propulsion system. The FREMM's high-performance hybrid **CODLOG (COMbined Diesel eLEctric Or Gas)** power package combines electric motors for low-speed silent-mode propulsion and a gas turbine for high-speed mechanical propulsion, with a maximum speed in excess of 27 knots.

In addition, the DCNS teams will also test the ship's navigation systems (log, position, heading) and its inertial platforms for precise positioning anywhere in the world.

In the next few weeks, over 150 people, including 60 French Navy personnel, will spend time on this second FREMM frigate. To save the ship returning to port, people will be ferried out and back on a daily basis.

On completing these preliminary trials, the frigate will return to DCNS's Lorient shipyard for several days of quayside work. A few weeks later, it will put to sea for a second campaign of trials focusing on the combat system.



Eurocopter delivers the first Tiger HAD version to the French DGA

Eurocopter's first production Tiger helicopter in the HAD attack configuration was delivered to France's DGA armament procurement agency for operation by French Army Aviation units, providing a highly capable combat weapon system that is tailored to the world's evolving battlefield conditions.



This milestone followed DGA qualification of the Tiger HAD version on April 10, and marked the delivery startup for Eurocopter's latest variant of a rotorcraft product line which has already been combat proven during military operations in Afghanistan, Libya and today in Mali.

To date, France has ordered 40 Tiger combat helicopters in HAD configuration for its French Army Aviation units. Another 24 helicopters has been ordered by the Spanish government to equip the Spanish Army (which includes six Tiger HAP support and escort versions retrofitted for fire support and attack missions).

Feature improvements of the Tiger HAD variant include two enhanced **MTR390 turboshaft engines** that provide 14 per cent more power, improved ballistic protection, a new optronic sighting system, the capability to target and launch Hellfire air-to-surface missiles, an evolved electronic warfare suite, and an IFF (identification, friend or foe) interrogation system.

97 multi-role Tiger family currently are in service in four countries: France, Germany, Spain and Australia; which have ordered a total of 206 helicopters.



GD wins US\$20million contract for nuclear sub services

The US Navy has awarded General Dynamics Electric Boat a \$20 million contract modification for nuclear-maintenance work for submarines

homeported at the Naval Submarine Base in Groton.

Under the contract, Electric Boat will continue to operate the Nuclear Regional Maintenance Department (NRMD) at the submarine base. The company will provide project management, planning, training and nuclear services to support maintenance, modernization and repairs. A core group of about 25 Electric Boat employees are assigned to the NRMD, with surge groups of up to 100 shipyard employees assigned for short periods.

The company has been awarded two initial contract modifications to date, valued at \$25 million. The contract has a total potential value of \$164 million over five years.

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FORTHCOMING EVENTS

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

International Maritime Security Conference

DATE: 14-16 May 2013, Changi, Singapore

ENQUIRIES: IMDEX Asia Web: <http://www.imdexasia.com/index.aspx>

IMSC 2013 will bring together Navy Chiefs, Coast Guard Directors-General and academia around the world to discuss threats to maritime security and safety, as well as develop frameworks and solutions to deal with the security challenges that threaten and disrupt sea lines of communication.

2013 Hunter Defence Conference

DATE: 22-23 May 2013, Fort Scratchley

ENQUIRIES: Web: www.sticktickets.com.au/10869

The 2013 Hunter Defence Conference, supported by NSW Trade & Investment, HunterNet and Hunter Business Chamber, is an excellent opportunity for SMEs to hear about current Defence opportunities, diversification, innovation and skilling in supporting Defence.

ADM Cyber Security Conference

DATE: 12-13 June, 2013, Hotel Realm, Canberra

ENQUIRIES: ADM Events - Jamie Burrage, Ph: 02 9080 4321;

Email: Jamie.burrage@informa.com.au Web: www.admevents.com.au

ADM's 3rd Cyber Security Summit will see stakeholders from Australia's Defence and National Security agencies address the current and emerging cyber threats to Australia's security. More details to be released closer to the date.

DSEI

DATE: 10-13 September, 2013, ExCel, London

ENQUIRIES: Web: www.dsei.co.uk

DSEI is the largest fully integrated defence and security show in the world, featuring Air, Naval, Land and Security show content. Based in ExCeL, London every two years, the event provides unrivalled access to key markets across the globe.

SimTecT

DATE: 16 Sep - 19 Sep, 2013, Brisbane Convention and Exhibition Centre, Queensland

ENQUIRIES: Web: 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.