

ADM

AUSTRALIAN DEFENCE MAGAZINE

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DEFENCE WEEK PREMIUM EDITION



The problem hoses installed in Cobham's 905E refuelling pods installed under each wing of the RAAF's KC-30As. NIGEL PITTAWAY

AUSSIE INGENUITY IMPROVES TANKER SAFETY

A local Defence/industry team has come up with an innovative solution to a problem which, until now, has affected the serviceability of the air to air refuelling (AAR) hoses fitted to the RAAF's Airbus KC-30A multi-role tanker transport (MRTT) fleet.

NIGEL PITTAWAY | MELBOURNE

The solution, developed by No.33 Squadron at Amberley in partnership with Northrop Grumman Australia and the Defence Aviation Safety Authority (DASA), uses non-destructive inspection (NDI) Eddy Current Array (ECA) technology to detect corrosion in the hoses and has now been mandated for use by the original equipment manufacturers, Airbus Defence and Space and Cobham.

The problem affects the hoses installed in Cobham's 905E refuelling pod, one of which is installed under each wing of the RAAF's KC-30As and similar aircraft

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operated by the international MRTT community. A similar pod is also used by the Airbus A400M transport/tanker and the issue affects aircraft from several nations around the world.

In 2016 an RAAF KC-30A suffered an incident, losing the basket and MA-4 coupling from an AAR hose assembly inflight and subsequent investigation determined that the failure was caused by corrosion of the steel braiding used to form the core of the hose. In response, the OEM issued an Airworthiness Directive (AD) which mandated an external visual inspection of the 90ft hose after every pod operation - a procedure which requires up to five people to manually deploy. However, the braided hose is encased within a neoprene shroud and many defects can potentially remain undetected by visual inspection alone.

"The steel braid core bears the load on the hose when it is extended and that's where the failure occurs," explains 33 Squadron's Senior Engineering Officer, Squadron Leader Simon Chittleborough. "Northrop Grumman Australia looked at the problem and worked with DASA's Non-destructive testing and composite technology section to look at how we could do this better, because we realised that we weren't really addressing the risk and there was a better way of inspecting the hoses."

**"THE PROCEDURE ALLOWS US TO
MONITOR THE PROPAGATION OF
CORROSION WITH MILLIMETRE
ACCURACY"**

The solution uses a special annular eddy current probe, developed in conjunction with Canadian ECA NDI specialist company EddyFi, which clasps around the hose and permits a 360-degree detailed inspection of the hose to be accomplished either on wing or in the workshop. The inspection takes only one minute or so to complete once the hose is extended and the system indexed, and the entire procedure

can be accomplished in around one hour.

"From an availability perspective, the procedure allows us to monitor the propagation of corrosion with millimetre accuracy, so we can monitor it closely and allow the hose to remain in service longer, until the limit is reached," SQNLDR Chittleborough says. "That also decreases cost; we go through 10-15 hoses every year, even during normal operation, most hoses are replaced due to general wear and tear but now we can determine whether corrosion is the driving factor for replacement."

Corrosion has been detected even in new hoses supplied by the manufacturer and the new procedure allows the operator to determine whether the hose is serviceable before it is installed in the pod in the first instance.

"We fed that information back to the manufacturer to help improve the manufacturing processes and procedures, which has subsequently led to the new product we now receive from the factory being free of defects," adds Northrop Grumman Australia's AAR technical support engineer, Stratos Patsikatheodorou.

While the visual inspection requirement will also remain in place for the foreseeable future, Cobham is understood to be developing a new hose, which is likely to become available next year.

EOS TO FIELD DIRECTED ENERGY COUNTER-DRONE CAPABILITY

Canberra-based EOS Defence Systems will field a 26 kW laser directed energy (DE) counter-drone capability in November, CEO Grant Sanderson has disclosed to ADM.

JULIAN KERR | SYDNEY

“We’ve been doing a lot of work in this area for the past couple of years and what we’re calling the counter-drone directed energy product is now undergoing materiel testing and goes into the field in November,” Sanderson said. “Currently it’s containerised, but we intend to have it mounted in a mobile platform by 2022.”

The DE weapon system includes a beam director and a co-mounted optical target identification and tracking system.

Developed and manufactured in-house, the 26 kW high energy laser (HEL) in its current format is capable of scaling to about 50 kW.

“We are a laser company,” said Sanderson. “All of our laser technologies are high-power and high beam quality continuous wave lasers coupled to EOS adaptive optics.



A concept image of a counter-drone directed energy weapon.

LOCKHEED MARTIN VIA USNI

MOST READ ONLINE AT WWW.AUSTRALIANDEFENCE.COM.AU

1. [Saab chosen for deployable health solution](#)
2. [Report outlines how Zephyr UAV disintegrated over WA](#)
3. [Fugro USV chosen to chart waters off SA](#)
4. [Three new feasibility studies placed for Hunter class](#)
5. [Five Pillars approach to support Defence Industry](#)

"We are able to build these solutions to almost any scale relevant to the task being addressed, and the mechanical and fire control architectures for our direct fire remote weapon stations and our directed energy systems are built on the same technologies and sub-systems."

"THE DIRECTED ENERGY WILL KILL A DRONE WELL BEYOND 1.5 KM"

"The directed energy will kill a drone well beyond 1.5 km although range depends on the atmosphere and the level of elevation – the colder and the higher the better.

"If you've got the right power and laser capability, essentially you end up with a bottomless magazine. It's more expensive than a ballistic option but it brings a significant additional capability."

EOS is currently involved in contract negotiations with what Sanderson describes as the world's largest counter-drone program, but an outcome is unlikely until next year, the program has not been identified and the capabilities under discussion have not been disclosed.



HEIGHTENED INTELLIGENCE

Supporting Remotely Piloted Aircraft System programs on a global scale.

IMAGE COURTESY OF GA-ASI.



L3HARRIS



The Wagardi Mission System is a new computer user interface that searches across multiple ISR databases.

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NEW COMPUTER INTERFACE IMPROVES ISR CAPABILITY

A successful Defence and industry partnership has improved the ability for analysts to search for and assimilate Intelligence, Surveillance and Reconnaissance (ISR) data.

The Wagardi Mission System is a new computer user interface that searches across multiple ISR databases, delivering information to the warfighter that is more complete in a reduced timeframe.

Chief of Joint Capabilities Air Marshal Warren McDonald said the project was an important investment in sovereign capability.

"The Wagardi Mission System is being delivered in partnership with Leidos Australia and is part of the first tranche of Joint Project 2096 – ISR Integration," Air Marshal

McDonald said. "The system will improve the ability for personnel to provide complete information, in a reduced timeframe, to support operations."

Once complete, the project will have invested around \$450 million in Australian industry, providing opportunities across a number of sectors.

"This offers Australian industry opportunities in development and integration services, data analytics, and ICT support, and includes the addition of

65 new jobs for a development and support centre," Air Marshal McDonald added.

The word 'Wagardi' (meaning 'dilly bag') comes from the language used by the Larrakia people – traditional custodians of the Darwin region.

Initial Operating Capability was recently declared for the Wagardi Mission System on budget and three months ahead of schedule.

"THE SYSTEM WILL IMPROVE THE ABILITY FOR PERSONNEL TO PROVIDE COMPLETE INFORMATION, IN A REDUCED TIMEFRAME"

MORE WORKING DAYS ALLOCATED TO ADF RESERVISTS

ADF Reservists will gain additional reserve days and the total number of personnel expanded under new initiatives announced by the government.

The announcement includes: additional reserve days to provide supplementary employment for up to 21,000 existing Reservists; an additional 25,000 reserve days to help recruit up to 500 additional ADF Reservists; and an overall increase of up to 210,000 in the total reserve days for this financial year.

Minister for Defence Linda Reynolds said the recruitment of the additional Reserve members will boost the current ADF Reserve workforce and provide part-time employment opportunities across Australia.

"Over the past 12 months, members of the Reserve have made vital contributions to Defence's response to the bushfires, and currently in our commitment to the national response to COVID-19," Minister Reynolds said.

"They are a key source of workforce capacity and specialist skills. These initiatives will support Australians who may have lost their primary income as a result of the COVID-19 pandemic, while also supplementing extant Reserve salary budgets that are being drawn upon to support Federal and State government measures."

The government is investing \$7 million in the recruiting initiative. Meanwhile, \$60 million will be invested in increasing the total annual reserve days allocation.



A reservist supporting the mandatory COVID-19 quarantine arrangements for international travellers at Brisbane Airport.

DEFENCE

Minister for Defence Personnel, Darren Chester, said the additional reserve days would be allocated to personnel who wish to increase their working days.

“Reservists have always stepped up in times of emergency, playing an important role in rebuilding the lives of entire communities — putting their lives and careers on hold to protect tens of thousands of Australians — particularly evident through this year’s bushfire season and the pandemic,” Chester said.

**“MEMBERS OF THE RESERVE HAVE
MADE VITAL CONTRIBUTIONS
TO DEFENCE’S RESPONSE TO THE
BUSHFIRES”**

“This initiative will support our dedicated Reservists who have had their civilian employment affected, ensuring they’re able to increase their working days if they wish to.

“The allocation of days per person is likely to vary depending on the skills and competencies of each individual, their personal availability subject to family and other commitments, and the nature of work to be performed.”

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VICOR

EVALUATE



The program aims to inspire, develop and support high-potential women.

SUPPLIED

DEFENCE AND AURECON LAUNCH ASCEND WOMEN IN LEADERSHIP PROGRAM

Aurecon and Defence have launched a new development program to provide women working on Defence projects with the leadership skills to advance their careers.

The Ascend Program will run between September and November and will be delivered virtually.

It is a program that aims to inspire, develop and support high-potential women to step into leadership roles. The program also develops participants' courage and capability to set up and drive business outcomes and challenge the status-quo.

The Ascend Program was developed by Aurecon in partnership with psychology and behavioural science company Inkling to foster a more diverse workforce in leadership positions.

Supporting the ADF to achieve next level interoperability
Engineering, Project Management, Commercial

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LUMINACT

"Engineering and Defence are two sectors where traditionally female participation in the workforce and, consequently female leaders, are underrepresented compared to the general population," Aurecon managing director, Defence and National Security ANZ, David Barnes, said. "We want to change that as it's only through increasing diversity that we will nurture and advance the diverse thinking required to solve some of society's toughest problems."

"Given the important role the ADF and STEM industries continue to play in 2020 responding to the bushfires crisis, the COVID-19 pandemic and significant infrastructure stimulus spends for upcoming Defence projects, I am so proud to be able to partner with our client to jointly further strengthen the leadership capability of our high-potential female leaders."

"THIS INITIATIVE PROVIDES BOTH AURECON AND DEFENCE A MEANINGFUL WAY FOR OUR FEMALE FUTURE LEADERS TO COLLABORATE AND LEARN"

Defence First Assistant Secretary Monique Hamilton said the joint Ascend Program was a key initiative for both organisations to develop a strong pipeline of female leaders.

"This initiative provides both Aurecon and Defence a meaningful way for our female future leaders to collaborate and learn from each other. Simultaneously, this will enable our high potential women to develop supportive networks and relationships through participation in a joint develop-

ment program," Hamilton said.

"The joint Ascend Program has been designed for women who want to step forward and influence the shift to empower female leaders within the Defence workforce, instead of waiting for the change to come to them."

Aurecon Diversity and Inclusion manager ANZ Penny Rush said the Ascend Program is proven to increase the confidence and leadership skills of women employed at Aurecon.

"In a recent survey of Aurecon women who have completed the Ascend Program, more than 73 per cent said that they have applied for new or stretch opportunities. The same percentage of respondents said that the program has empowered them to fast-track career progression. This highlights the real value of Ascend, and we look forward to bringing it to the Defence workforce," Rush said.

"The program will teach participants about why playing to their strengths is the single most powerful driver of improved performance in the workplace and will help increase courage, conviction and their own authentic voice. It will also inspire participants to set career goals, and build a pathway to leadership success."



RAN COMPLETES EXERCISE WITH SINGAPORE NAVY

The RAN and Republic of Singapore Navy have completed the bilateral Exercise Singaroo in Southeast Asia, marking its 25th year.

This year, the guided missile destroyer HMAS *Hobart*, auxiliary oiler HMAS *Sirius* and an embarked MH-60R helicopter joined four Singaporean warships, a submarine, and aircraft from the Republic of Singapore Air Force to train together to enhance professional ties and interoperability.

HMA Ships *Hobart* and *Sirius* left their home ports in June for a Regional Presence Deployment to exercise in Southeast Asia and Hawaii, and participated in the exercise as they returned transit through the region.

“THIS THREE-DAY EXERCISE UNDERLINES THE IMPORTANCE OF MILITARY-TO-MILITARY COOPERATION”

Minister for Defence Linda Reynolds said Exercise Singaroo is a biennial event built on existing shared mariner skills between both navies.

“Operating effectively together at sea relies on regular joint training opportunities to improve our interoperability. This three-day exercise underlines the importance of military-to-military co-operation as an avenue to hone our expertise

and build on our ability to work together,” Minister Reynolds said.

“This year marks a quarter century of Exercise Singaroo, underlining the long-standing nature of our defence relationship with Singapore, which shares our commitment to regional security.”



Two Australian ships joined the exercise this year.

DEFENCE

FORTHCOMING EVENTS

ADM EVENTS

More detail on ADM Events can be found on our [dedicated website](#).

- [ADM Women in Defence Awards](#) – 23 October 2020 | Online
- [Northern Australia Defence Summit](#) – 28 October 2020 | Online
- [ADM Space Summit](#) – 2 December 2020, Hyatt Hotel | Canberra
- [ADM Congress](#) – 3 February 2021, Hyatt Hotel | Canberra
- [ADM Defence Estate](#) – 23 February 2021, Hotel Realm | Canberra

EFFECTIVE QUAD CHART DESIGN

DATE 06 October 2020
LOCATION Online
WEBSITE www.eventbrite.com.au

Effective Quad Chart Design is a practical and interactive workshop on how to develop a quad chart to assist businesses to market themselves better to Defence and the Primes. A quad chart is a form of technical documentation used to briefly describe an invention or other innovation through writing, illustration and/or photographs. They are now an industry standard requested by Defence to propose innovations or new ideas. They help crystallise your value proposition to Defence or the Primes targeted to the specific opportunity or product.

THE ROAD TO LAND FORCES

DATE 06 October 2020
LOCATION Online
WEBSITE www.eventbrite.com.au

With the upcoming Land Forces 2021 being held in Brisbane, AIDN has designed a workshop to assist AIDN members and the wider Defence Industry community to plan their individual organisations' journey to Land Forces 2021. This interactive workshop will include targeted trade show and marketing information, and attendees will be provided with a number of electronic templates and tools to calculate realistic Land Forces target ROI & build a 'show' budget, plan a cost effective, multi-channel marketing campaign designed to generate maximum effect at the show, and design your stand and collateral to attract your target audience.

2020 ANI GOLDRICK SEMINAR – REMOTE AND AUTONOMOUS SYSTEMS AT SEA

DATE 13 and 14 October 2020
LOCATION Adams Auditorium, Australian Defence Force Academy
WEBSITE navalinstitute.com.au/latest-ani-events-and-archive

The 2020 ANI Goldrick Seminar will discuss a wide range of issues around Remote and Autonomous Systems at Sea. It will comprise six sessions over 1.5 days covering an overview of Remote and Autonomous Systems at Sea (RAS); RAS in the Littoral Domain; RAS in the Maritime Air Domain; RAS in the Undersea Domain; Measuring Effective, and Legal and Ethical Considerations.

D+I ONLINE CONFERENCE 2020

DATE 15 October 2020
LOCATION Online
WEBSITE defenceandindustry.conference@defence.gov.au

The D+I Conference 2020 is going ahead in an online format due to COVID-19 travel and gathering restrictions, with all sessions streamed nationwide on 15 October 2020 including on the Defence Protected Network (DPN).

4TH IEEE ANNUAL SYSTEMS MODELLING CONFERENCE

DATE 27 October 2020
LOCATION Online
WEBSITE www.unsw.adfa.edu.au/conferences/SMC-2020

The Capability Systems Centre runs one-day conference on the use of whole-systems approach to design and manage complex problem in socio-technical and socio-ecological systems. The daylong virtual conference on October 27th will feature showcases on the use of systems thinking and systems modelling in a wide range of areas.

10TH BIENNIAL SIA CONFERENCE 2020

DATE: 17-18 November 2020
LOCATION Hotel Realm, Canberra and online
WEBSITE submarineinstitute.com/sia-conferences

The 10th Biennial SIA Conference will be held 17-18 November 2020 at the Hotel Realm, Canberra. This year's theme is 'Submarine Build and Sustainment Programs: The Strategic Nature of Reliable, Sovereign Supply Chains'. The Call for Presentations is available on the website.

2021

43RD COSPAR SCIENTIFIC ASSEMBLY

DATE 28 Jan-4 Feb 2021
LOCATION International Convention Centre Sydney
WEBSITE cospar2020.org

The Australian space research community enthusiastically extends the invitation to you, to meet with us for COSPAR 2020, and in so doing to forge the friendships and opportunities that will connect space research for global impact. The 2020 Assembly will combine the latest in space research findings with activities designed to enrich the global space research community – including helping equip our future leaders, and workshopping with space industry – and inspire the next generation of scientists and engineers.

LOCATE21

DATE 30 March – 1 April 2021 (rescheduled dates)
LOCATION Brisbane Convention and Exhibition Centre
WEBSITE locateconference.com/2021

Due to COVID-19, Locate20 has been rescheduled for Locate21 happening in Brisbane March 30 – 1 April 2021. The event will focus on how geospatial technologies are intersecting with business, Government and defence to address national challenges. It's Australia's premier spatial conference with the inclusion of over 50 inspiring thought-leaders including speakers from government, academia, the defence force, technology, mining, natural resources and more. We believe this conference is of interest to defence personnel.

LAND FORCES 2021

DATE June 1-3 2021
LOCATION Brisbane Convention Centre
WEBSITE landforces.com.au

The biennial LAND FORCES exposition is an international industry event to showcase equipment, technology and services for the armies of Australia and the Indo-Asia-Pacific. The Land Forces 2020 team is now setting about ensuring the event will achieve its goals of providing an effective platform for the exchange of ideas on key land forces issues and of taking Australian industry to the world.

ROTORTECH 2021

DATE 15-17 June 2021
LOCATION Royal International Convention Centre, Brisbane
WEBSITE rotortech.com.au

The new dates for Rotortech will be Tuesday 15 June to Thursday 17 June 2021. The venue, the Royal International Convention Centre in Brisbane, is unchanged. Rotortech is the region's premier helicopter and unmanned flight systems showcase and forum, featuring more than 100 participating companies and key speakers from industry and government. We believe that deferring Rotortech to its new June 2021 dates will achieve this goal by moving the event to a time where the COVID situation will have improved and the current uncertainties will have passed.

PROJECT AND PROGRAM MANAGEMENT SYMPOSIUM

DATE 10 – 12 August 2021 (rescheduled dates)
LOCATION Canberra Rex Hotel
WEBSITE pgcsymposium.org.au

Foresight is more valuable than hindsight! PGCS 2020 is designed to help project and program managers, and their sponsors and senior managers, develop the skills and understanding needed to deliver projects success in the next decade. Creating the organisational capability needed to underpin the consistent delivery of successful projects in the 2020's starts at the top. Now in its 8th year, PGCS 2020 will focus on ways to build the foundations needed to create project and program success

AVALON 2021

DATE 23-28 November 2021
LOCATION Avalon Airport

The Australian International Airshow and Aerospace & Defence Exposition is one of Asia-Pacific's most prestigious aviation and aerospace events and the most comprehensive aviation, aerospace and defence exposition in the southern hemisphere. Avalon hosts multiple concurrent conferences and expo streams, across the spectrum of Defence, Airlines, Business and General Aviation, Sport and Recreational Aviation, Airports, MRO, Space, Unmanned Systems, Air Safety and Ground Equipment.

2022

INDO PACIFIC 2022

DATE 12 May 2022
LOCATION ICC Sydney
WEBSITE pacificexpo.com.au

INDO PACIFIC, the biennial International Maritime Exposition, will combine an extensive exhibition presence, a comprehensive conference program and a schedule of networking and promotional opportunities. It will be the 12th iteration of this internationally renowned event, and will be a critical link event for Defence, government and industry as Australia defines how it will invest \$90 billion on new ships, submarines and their systems and support.

VARIOUS DATES**NSW DEFENCE INNOVATION NETWORK'S REGIONAL ROAD SHOW**

DATE: Various
LOCATION: Various
WEBSITE: defenceinnovationnetwork.com/din-regional-road-show-2019-20

NSW Defence Innovation Network and AIDN will be undertaking a series of small business focused regional forums across NSW. Register to attend and hear about the programs, grants, opportunities and services the NSW Defence Innovation Network (DIN) provides to the small business community across NSW. We encourage small businesses to engage with us and participate in opportunities across our networks, including DIN's seven partner universities, as well as with other state and federal agencies.

ICCPM ONLINE WORKSHOPS

DATE Various
LOCATION Online
WEBSITE iccpm.com/online-workshop-webinars

Designed to support project teams who are experiencing new challenges due to COVID-19 concerns – Learn how to mitigate new risk levels, effectively deploy virtual teams, manage messy problems and more. ICCPM Online Workshops and Webinars provide you with an easily accessible and engaging option to continue your training from anywhere in the world. These options provide you and your team with a conducive learning environment to support your complex project success.

ICCPM ROUNDTABLE WORKSHOPS

DATE Various
LOCATION Various
WEBSITE iccpm.com/2020-rs

ICCPM, with Series Partner QUTeX, is pleased to confirm the upcoming Workshops for the 2020 International Roundtable Series Harnessing Emergence in Complex Projects: Risk, Uncertainty and Opportunity. The International Roundtable Series is an exciting Thought Leadership initiative where senior practitioners and leading academics come together and discuss the Series Theme to produce new insights and practical steps to improve complex project success. Registrations for in-person workshops are strictly limited to comply with COVID-19 venue safety guidelines. Please refer to each event page for more details.



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