AUSTRALIAN AVIATION

Australian Defence Business Review

AVALON 2017 SHOW DAILY

WEDNESDAY MARCH 1

NEXT-GEN RAAF

RAAF enters electronic warfare era with Growler arrival

The Royal Australian Air Force's new Boeing EA-18G Growler airborne electronic attack aircraft have roared through the skies above Avalon Airport on their public debut.

The aircraft flew in for their appearance at the airshow having recently been ferried to Australia from Naval Air Station Whidbey Island in the US.

"This is a beast; it was built to be a war aircraft and that is exactly what we plan to use it for,"

CONTINUED PAGE 3 >

AVALON OFFICIAL OPENING

On with the show

The Australian International Airshow 2017 has officially opened to the thrum of the didgeridoo and with record Australian and international attendance.

Before an audience of VIPs , the Navy's Bungaree dance troop, comprising indigenous sailors, performed, while local elders Uncle Brian and Auntie Violet welcomed visitors to country.

He declared on such occasions it was customary for gifts to be exchanged, in which case he would like one of the aircraft on display.

Defence Minister Marise Payne said this was a very important event on the national defence calendar.

"I can't think of a better place for a defence minister to start the day," she said.

"This is a significant event. It is significant for defence, significant for industry, for aviation and Victoria. For defence this year Avalon is a real opportunity to reveal for the first time in Australia a number of cutting edge new platforms that will be central to the future ADF."

Air Marshal Geoff Shepherd (ret'd), former RAAF chief and chairman of show organisers Aerospace Australia, said they wanted to take Australian industry to the world by bringing the world to Avalon.

Attending are 158 trade, industry, government and professional delegations, including 79 from 45 countries. 641 organisations and companies from 25 nations are exhibiting, with 431 from Australia, most small to medium sized enterprises.

More than 170,000

CONTINUED PAGE 3 >

SHOW HIGHLIGHTS

- Marine Corps pilots taking the F-35 to the "next level"
- QinetiQ Australia acquires RubiKon Group
- KC-30 training reaches a constant state

IN THE SPOTLIGHT

BOEING'S ADVANCED SUPER HORNET

Page 9

ITALIAN FLARE

PIAGGIO MAKES ITS MARK

Page 10

ELECTRONIC WARFARE

SEIZE THE SPECTRUM

Staying a step ahead of emerging threats. Protecting warfighters. Improving survivability. Raytheon delivers full-spectrum solutions that span a broad range of domains and capabilities. Seize the spectrum. Protect the mission.

Raytheon.com/spectrum

@Raytheon

Raytheon

Raytheon

Artist's rendering of the EA-18G *GROWLER.*®
Cleared for public release SPR 2016-921.

NEXT-GEN RAAF CONTINUED FROM PAGE 1 said Chief of Air Force Air Marshal Leo Davies, welcoming the arrival of Australia's first electronic warfare aircraft on Tuesday.

"This is a precision instrument; it is something we can use to fit into the rest of the Australian [order of battle]; it is something that we need to learn how to use."

Meanwhile, Minister for Defence Senator Marise Payne announced that Australia is set to partner with the US in the development of a next-generation radar and radio jammer for the Growler with an investment of $250 million.

"Electronic warfare is a rapidly evolving area and we want to ensure that these aircraft remain at the technological forefront throughout their service life, so we will work in partnership with the United States Navy to develop that next-generation jamming capability," Minister Payne said.

The Growler is capable of providing force-level electronic warfare support by disrupting, deceiving or denying access to an adversary's electronic systems, including radars and communications systems.

"Integration is the key; it is not just about aeroplanes," Air Marshal Davies said.

"I expect this aeroplane to spend more time flying with the Army and the Navy than it actually does with the Air Force."

By the middle of this year, all 12 aircraft are expected to have arrived at RAAF Base Amberley in Queensland to be operated by 6 Squadron.

Australia is the only country besides the US to fly the Growler.

AVALON OFFICIAL OPENING CONTINUED FROM PAGE 1 visitors are expected to attend over the next six days.

Chief of Air Force Air Marshal Leo Davies said an impressively large number of aircraft were on show, considering Australia and others have been on continuous operations for the last 17 years.

"They are not just air force aircraft. This is about air power. It's about the navy, the army and the air forces working together to generate that outcome of total air power that we seek in order to keep our respective countries safe," he said.

"The key industry players that are here represented are vital. We are a strong air force but we are not there yet. The aircraft on their own do not make the capability.

"It's the innovation, it's the drive, it's the training, it's the ability to bring those aircraft to a joint effect and industry are certainly leading the way for us there."

Both the F-35 and Growler make their public debut at Avalon this week. Air Marshal Davies said he was often asked which promised the biggest change to the RAAF over the next 10, 20 or 30 years.

"I say both," he said, adding he was just as excited about the new PC-21 basic trainer aircraft.

"If we don't start training our young folk to come to the Air Force, then our future is perhaps bleak."

MANAGING EDITOR & PUBLISHER
Gerard Frawley

EDITORIAL TEAM
Jordan Chong, Robert Nutbrown, Trevor Thomas, Max Blenkin, Paul Sadler, Tim Frawley, Owen Zupp

DESIGN & PRODUCTION
Daniel Frawley

ADVERTISING & MARKETING
Louise Harry

PHOTOGRAPHERS
Seth Jaworski & Paul Sadler

PUBLISHER
Phantom Media Pty Ltd
ABN: 50 112 691 666
PO Box 3926,
Manuka ACT 2603,
Australia.

Phone: (02) 6232 7474
Fax: (02) 6260 6747
mail@australianaviation.com.au

Printed by Bluestar.

QinetiQ Australia acquires RubiKon Group

QinetiQ Australia has announced the acquisition of integrated logistics provider RubiKon Group, as part of the company's strategy of expansion in Australia.

"Here in Australia we've been very focused on our strategy and what we can bring to the Australian Defence Force, and I'm very pleased as part of the progress with that strategy that we are announcing here today the acquisition of RubiKon Group, a highly regarded and well-respected integrated logistics and support business," QinetiQ chief executive Steve Wadey said at Avalon on Tuesday.

"It will now form part of QinetiQ here and it is critical to our strategy to build stronger customer relationships and to bring even more value to those customers. It is a really big step for us."

Rubikon was formed in 2009 and has focused on identifying and implementing logistics, supply chain management and procurement solutions.

RubiKon Group managing director Chris Otley-Doe, QinetiQ Australia managing director Greg Barsby, and new QinetiQ Australia board member Raydon Gates

"Combined with QinetiQ Australia's existing business relationships, the acquisition of RubiKon Group ensures we are uniquely placed to provide our customers with a more comprehensive service offering to meet both existing and future demand," QinetiQ Australia managing director Greg Barsby said.

"This acquisition strengthens our position in the market enabling us to take on broader programs of work for our customers and enhances the technical expertise, deep domain knowledge and rigorous thinking we are known for."

Said RubiKon Group managing director Chris Otley-Doe: "I see this as an exciting and natural fit for the RubiKon team. It will enhance their opportunities and career progression, at the same time exposing them to more diverse products and campaigns."

Separately QinetiQ has announced the appointment of Rear Admiral Raydon Gates (ret'd) to the QinetiQ Australia board. The former Maritime Commander Australia retired as chief executive of Lockheed Martin Australia at the end of 2016.

"In the current climate, the defence industry has an important role to play in innovation, leadership and collaboration to ensure we have the best capability to protect Australia's sovereignty," Gates said.

"QinetiQ Australia is well-respected within the industry and I look forward to supporting their on-going success as a strategic program delivery provider."

General Atomics launches industry team for armed UAS project

General Atomics Aeronautical Systems has formally launched its 'Team Reaper Australia' solution for the AIR 7003 armed unmanned aircraft project with Australian teammates Cobham, CAE Australia, Raytheon Australia and Flight Data Systems.

"Our offering for AIR 7003 is a system that provides persistent situational awareness with a bite; another way of saying long-endurance armed reconnaissance," said Linden Blue, chief executive officer of General Atomics Aeronautical Systems, speaking during the opening of the US Pavilion at the Avalon Airshow on Tuesday.

General Atomics has not made a final decision on what specifically it will offer, and at this stage could put forward either the existing US Air Force MQ-9 Reaper or the Type-Certifiable Predator B (marketed as the SkyGuardian), which the USAF has designated as the MQ-9B.

Cobham will be focusing on through-life support and training; CAE Australia brings its simulator expertise to the team; meanwhile Raytheon Australia will be responsible for the MTS-B electro-optical/infrared payload; and Flight Data Systems will be providing a flight data recorder.

"Cobham and GA-ASI have been working in partnership for more than 12 years to prepare for the whole-of-life support requirements for Australian armed [remotely piloted aircraft systems]," said Peter Nottage, president of Cobham Aviation Services.

Blue said that General Atomics is also seeking a range of other capabilities from local industry including: supply chain partners; sensor partners, especially in the electronic warfare and signals intelligence field; companies that can help with the integration of unmanned aircraft into non-military airspace; and industry players working on the automation of data exploitation processes.

Sir Angus Houston, chair of the Defence SA Advisory Board (pictured), said that he expects much of the in-country support for the platform will be centred in South Australia.

"I understand the aerospace support facilities provided in South Australia, particularly those centred around the Edinburgh Defence Precinct, will play a vital role," he said.

Northrop Grumman Australia to double in size

Northrop Grumman Australia is planning to double in size over the next few years as it bids for new defence acquisition programs and prepares to support the MQ-4C Triton unmanned surveillance aircraft and F-35 Joint Strike Fighter as they enter RAAF service.

"Our forecasts are pretty aggressive, we should double our size in the next few years," Northrop Grumman Australia chief executive Ian Irving told Australian media in the US in January.

"I've been on board now for about four years and we've grown from five people to almost 500 in Australia over that period of time. Granted that was through two acquisitions (M5 and Qantas IDS), but we're now starting to have substantial organic growth within those areas of the business."

Irving flagged 2017 would be a year of substantial activity for Northrop Grumman Australia as it expects to submit proposals on up to five defence acquisition programs in the first eight months of the year, "in addition to helping the Commonwealth negotiate and get started with their cooperative program for Triton".

Those five programs he listed as JP9711 for a 'Core Simulation Capability' or CSimC; JP2096 for an ISR information backbone; the Defence ERP (enterprise resource planning) project; Land 19 Phase 7B – Army's project for a land-based air defence system; and AIR 6500, Air Force's plans for an integrated air and missile defence system.

"We'll win our fair share of all of those programs, you can't win everything but I think we're well positioned."

Irving concedes that doubling the size of Northrop Grumman Australia to deliver on the planned increase in defence projects will be challenging.

"That's going to be one of the challenges for the defence industry as a whole, to keep up with the pace of growth," he said.

"If you look at the increase in spend that Australia is forecasting over the next few years it is somewhere between five and eight per cent – I don't suspect that we're going to get quite to that level as the best that industry did in the John Howard era was probably about four per cent year on year growth.

"I think as an industry to actually bring in the types of skills and talent required for that ... will be a challenge."

F-35s touch down at Amberley ahead of Avalon debut

The RAAF's first two Lockheed Martin F-35A Joint Strike Fighters have touched down on Australian soil for the first time, landing at RAAF Base Amberley on Monday afternoon ahead of their planned appearance at the Avalon Airshow from Friday.

The ABC's defence reporter Andrew Greene reported the aircraft landed at Amberley just after 5:00pm on Monday.

The F-35A mockup at Avalon on Tuesday. The real thing arrives on Friday.

The aircraft, A35-001 (AU-1) and A35-002 (AU-2), have been based at Luke Air Force Base, Arizona since late 2014 as part of the International Pilot Training Center there, and are due to return there early next week after their Avalon appearance.

"The first two F-35A aircraft, AU-1 and AU-2 will arrive at the airshow on Friday 3 March, returning to the United States via RAAF Base Amberley allowing Australian pilots to continue their training," a joint statement by Defence Minister Senator Marise Payne and Defence Industry Minister Christopher Pyne announcing the visit earlier this month reads.

"The visit is a significant contribution by the United States Air Force Training Command, and Lockheed Martin to facilitate the deployment from Luke Air Force Base during their training period."

The two jets were due to be ferried to Amberley via Hawaii and Guam accompanied by a RAAF KC-30A tanker-transport, and they are due to be officially revealed at the Avalon Airshow on Friday.

The first F-35s to be based permanently in Australia are two aircraft due to arrive in late 2018 for Australian operational test and evaluation. Other Australia F-35s will be delivered to Luke for pilot training from 2018 before ferrying to Australia from 2020.

Taking the F-35B to "the next level"

When it comes to shooting down enemy aircraft and bombing their stuff, the US Marines reckon their new F-35B Lightning II aircraft are real killing machines.

"I tell you we have a real winner on our hands," says USMC Lieutenant General John "Dog" Davis, the Marines' top aviator.

"It's a very high quality, maybe the best high quality fighter we have available to us in respect of being a killing machine. It's a fighter, it's an attack airplane, an exceptional attack airplane, it's also an electronic warfare airplane."

"It sees everything. It's very very bright. It knows a lot and everybody that fights with F-35 in all the scenarios we've done, everybody ends up being a little bit better than they were without it."

The USMC declared initial operational capability for its first F-35B squadron last July. So far USMC aircraft have conducted a variety of exercises in Alaska and aboard the USS *America*.

In high end exercises, featuring fighter and SAM dense environments, F-35s have hit the target and emerged unscathed, along with legacy aircraft.

In earlier pre-F-35 exercises with older aircraft, the Marine flyers got their butts kicked, losing half their aircraft (simulated) and not hitting the target, the General admitted.

In the recent Red Flag exercises US Air Force F-35As achieved a 15-1 kill ratio. The Marines see 24-0 in their exercises.

"We are not losing F-35s at all and we set the conditions for everybody else to be successful. It's a vastly different airplane," he said.

The USMC has just deployed its first 10 F-35B aircraft to Iwakuni, Japan, with another six aircraft to come to make up a full squadron. So far USMC F-35B aircraft have flown 25,000 hours.

USMC aircraft are the more complex short takeoff and vertical landing (STOVL) variant, different to the F-35A conventional takeoff and landing version to be acquired by Australia.

USMC exercise successes have been achieved with the Block 3I software which gives only a limited warfighting capability. The full block 3F is expected to be rolled out around the end of this year, adding a range of capabilities including the gun and the ability to carry weapons on external pylons.

General Davis says with the external pylons fully loaded, the F-35 can carry 3000lb more stores than a legacy F/A-18 Hornet, although with reduced stealth capability. In an operational environment, that would only done once enemy defences had been fully suppressed.

General Davis said the top scoring F-35 pilot in the recent Marine Division Tactics Course – the USMC version of the USN's Top Gun school – turned out to be a young student in a training squadron with only some 50-60 hours on the F-35B.

The final graduation scenario featured 20 bad guys versus eight good guys including four F-35Bs.

"It was a very good day for the eight. A very bad day for the 20," he said.

"The confidence they have in the airplane is unprecedented. "

General Davis said this showed what could happen when the new technology was put in the hands of pilots who hadn't brought in baggage from flying the F-18 or AV-8B Harrier.

"The new guys, the new gals will be the ones to take this airplane to the next level."

General Davis said the USMC had a achieved a 12-minute turnaround of a F-35, refuelling and replacing weapons and other stores.

He said they were doing okay with the troublesome Autonomic Logistics Information System (ALIS).

"What we found with ALIS is we find very sharp marines and we keep them in place working that until we get the final system we want. We are achieving our turnarounds for the airplane with the system we have right now."

THE VALUE OF *INTEGRATING COMPLEX AIR AND MISSILE DEFENSE SYSTEMS IN AN EVER-CHANGING WORLD.*

As global threats continue to evolve, so does Northrop Grumman—building and integrating complex layered air and missile defense systems that protect our nation and our allies. Our open architecture approach allows agencies to provide reliable data seamlessly to execute the mission with greater efficiency, flexibility, and operational superiority—achieving the most effective response no matter the threat. *That's why we're a leader in Integrated Air and Missile Defense.*

THE VALUE OF *PERFORMANCE.*

NORTHROP GRUMMAN

www.northropgrumman.com/**missiledefense**

SCORPION™

SEE + SENSE + STING

COST-EFFECTIVE AIRPOWER IN ACTION

Introducing a formidable new species in jet flight — the Scorpion™ aircraft. Advanced surveillance and strike capability set the Scorpion apart from the rest. With best-in-class acquisition and operating cost, its affordability is unmatched. The Scorpion boasts high dash speeds to get to an escalating situation quickly, yet it can maneuver at much lower speeds when the mission calls for it. Quickly reconfigurable, the interior payload bay is provisioned for sophisticated intelligence, surveillance and reconnaissance (ISR) systems. Plus, the Scorpion is weapons-capable, using a variety of weapon sets that include precision-guided munitions (PGMs). The Scorpion can exploit perishable intelligence, strike fleeting targets and impose the tactical advantage in even the most demanding situations.

TEXTRON AIRLAND

SCORPIONJET.COM | U.S. **+1.844.44.TXTAV** | INTERNATIONAL **+1.316.517.8270**

Advanced Super Hornet in the spotlight

Discussing what the future might hold for the Super Hornet (left) will no doubt be a hot topic at the Avalon Airshow, given that President Donald Trump has said the US is "looking seriously at a big order" of the fighter jets.

Boeing says the Advanced Super Hornet package of upgrades has "evolved" since the company and partner Northrop Grumman demonstrated the capabilities during flight testing in 2013.

These capabilities, also known as Block III, can be either built into new aircraft or incorporated into existing aircraft through a service life modification program.

Boeing outlined the key features of the Block III Super Hornet (title pic) in a statement provided to the *Show Daily*, including:

- Longer range with shoulder-mounted conformal fuel tanks, enhanced situational awareness with an advanced cockpit system and improved signature with low observable radar cross-section.
- Enhanced network capability with a system that improves computing power, network throughput and sensor-to-platform integration, allowing large amounts of data to be transferred on and off the aircraft, plus an enhanced ability to receive targeting information from platforms including the EA-18G Growler, which is a variant of the Super Hornet, and the F-35 Lightning II.
- Long-range detection with the infrared search and track system, which can detect and target threats without depending on radar, allowing the Super Hornet to operate as a 'smart' sensor node on the network.

During three weeks of flight testing in August 2013, Boeing and Northrop Grumman tested conformal fuel tanks, an enclosed weapons pod and signature enhancements, each of which could be retrofitted on an existing Block II Super Hornet or included on a new aircraft.

Piaggio looks to increase awareness in Australia at Avalon

Piaggio Aerospace is keen to establish Australia as a base for Oceania and the wider Far East, its chief executive Renato Vaghi says.

The Italian-based manufacturer, which is wholly-owned by United Arab Emirates (UAE) government investment vehicle Mubadala Development Company, is returning to the Australian International Airshow at Avalon after a four-year absence.

It will have a P.180 Avanti II twin-engine turboprop belonging to an Australian-based private owner on display during the week-long event.

Also, executives from the company will seek to highlight the potential of Piaggio's two in-development military programs – the P1.HH HammerHead unmanned aircraft system and the Multirole Patrol Aircraft (MPA).

Vaghi says Piaggio has undergone a major transformation since Avalon 2013 as it sought to establish a footprint in the military sector and update its evergreen P.180.

"The reason to be back is that the point where we are in our history we are actually significantly relaunching our commercial platform the P.180, and of course to promote our new defence products that are still in the development phase but we believe have a very high potential," Vaghi tells *Australian Aviation* in an interview from Rome ahead of the Avalon Airshow.

"We believe Australia has a lot of potential that was unexploited in the past. For many reasons, one being that our presence in Australia was probably below the level needed to develop the product awareness that we need to have there."

On the military front, Vaghi said the HammerHead, which comprises a remotely piloted aerial vehicle, a ground control station and integrated navigation and mission system, was on track for delivery of its first operational systems in 2018 and the completion of its development program in 2019.

Meanwhile, first deliveries of the MPA were expected to begin in early 2020.

"Both platforms have already flown," Vaghi said.

"The HammerHead I think completed tens and tens of flight hours and the MPA has logged a few tens of hours in the development phase.

"When all these developments are complete we will have a range of defence products as well as P.180 which is being significantly upgraded."

In March 2016, Piaggio announced the UAE Armed Forces was the launch customer of the P.1HH HammerHead with an order for eight of the type.

The total contract value was 1,327 million UAE dirham (A$470 million), Piaggio said at the time.

The HammerHead was ostensibly competing with General Atomics Aeronautical Systems MQ-9 Reaper and Israel Aerospace Industries' Heron in the unmanned military aircraft segment.

On the civil side, Vaghi said the latest incarnation of the P.180, the Avanti EVO, stacked up well against similarly sized aircraft such as the Beechcraft King Air and Embraer Phenom 300, among others.

To that end, Piaggio is hoping to capture a slice of the replacement aircraft in that market segment, as well as encourage air ambulance and aeromedical operators to consider the P.180 Avanti EVO for their future fleet needs, noting the widespread use of the type for that purpose in Europe.

"I personally see many advantages for us in replacing ageing aircraft, not only in VIP and charter services but also in medevac and ambulance operations, where the P.180 has got significant advantages to the competition," Vaghi said.

The P.180 Avanti EVO seats between seven and nine people, has a range of about 1,500nm and a top speed of 400kt. It is powered by two Pratt & Whitney Canada PT6A-66B turboprop engines.

Vaghi said Piaggio was considering Australia as a base for its business in this part of the world.

"We want to use this Avalon Airshow and the engagement that will come from our participation there to see if this idea can fly," Vaghi said.

"The big advantage that we see is Australia is close to a lot of countries in the Far East where we already have interest or that we are engaging in dialogues that might bring a lot of new business.

"This participation is, we hope, a door opener. We want to make sure that this participation is not just a one-off event but is something that sets the base for a more permanent presence in Oceania."

BAE Systems welcomes Flinders University as member of innovation network

BAE Systems Australia has announced that Flinders University has become a member of the company's Joint Open Innovation Network (JOIN) initiative that is designed to drive research, development and innovation in defence technologies.

JOIN will focus on activities to support the upgrade of the Jindalee Operational Radar Network (JORN), and the development of future JORN and intelligence, surveillance and reconnaissance (ISR) capability.

"I am delighted that this initiative is expanding and look forward to other academic partners and industry joining us to support development of cutting-edge technology to meet the future defence needs of the country," said BAE Systems Australia chief executive Glynn Phillips.

Twenty-eight university graduates and six interns are starting roles with BAE Systems; a number of final year engineering projects will soon be offered by the company, together with scholarships for first year (2016) engineering students.

RAF and Northrop Grumman demonstrate airborne gateway

Northrop Grumman and the Royal Air Force (RAF) have completed a communications interoperability trial involving F-35B and Typhoon FGR4 aircraft via an 'airborne gateway' developed by the company.

The two-week trial, named 'Babel Fish III' and funded by the Ministry of Defence, was conducted in airspace above the Mojave Desert in California.

Northrop Grumman's airborne gateway connected the F-35B, which communicates using the Multifunction Advanced Data Link (MADL), with the Typhoon by translating MADL messages into Link 16 format.

Although the F-35 and the Typhoon can communicate directly via Link 16, previously the aircraft could not share "certain fifth-generation information", Northrop Grumman stated.

The company deployed a similar airborne gateway capability to support the Australian Defence Force's 'Exercise Jericho Dawn' demonstration of air-land integration.

"Being able to network sensor data between fifth-generation and fourth-generation fast jets and other battlespace assets in a stealthy manner is critically important to enabling the full capability offered by fifth-generation aircraft," said Andrew Tyler, chief executive of Northrop Grumman Europe.

Bridging the platform interoperability gap was made possible by the inclusion of a Northrop Grumman Freedom 550 software-defined radio in the airborne gateway.

Airbus looks to A400M opportunities

Last year saw the Airbus A400M airlifter achieve some significant milestones while the program also worked to resolve a technical issue with the aircraft engine's gearbox.

"Overall the aeroplane is a significantly better, more capable aeroplane than it was a year ago," said Fernando Alonso, head of military aircraft for Airbus Defence and Space, at Avalon on Tuesday.

"We've gone from a purely cargo aeroplane to a tactical aeroplane."

The A400M is now certified to drop paratroopers and air loads, and can operate from unpaved runways, while the second iteration of its defensive suite has been rolled out, Alonso explained.

"The aeroplanes we are now delivering are tactical aeroplanes," said Alonso, with 18 A400Ms handed over to customers in 2016, just short of Airbus's target of around 20.

The main reason for the lower delivery rate was an issue with the aircraft engine's advanced gearbox, which Alonso labelled as a "crisis". But an interim fix implemented in 2016 has increased inspection intervals for the gearbox from just 20 flight hours to 600, Alonso explained.

"It was a difficult year but overall production is under control and the capabilities are getting better."

For 2017, says Alonso, the focus now shifts to marketing the aircraft for new export orders.

"This year is the year we are going to be focusing on selling the aeroplane, promoting the aeroplane. That is why we are here."

Alonso comes to Avalon after visiting New Zealand where Airbus is marketing the A400M to meet a requirement to replace the RNZAF's C-130H Hercules and Boeing 757 transports.

Australia is a longer-term potential prospect for the A400M, given Defence's Integrated Investment Program released in February 2016 detailed a requirement for new heavy airlifters which are expected to replace the RAAF's C-130Js.

But, said Alonso, "We're at the point where we want to sell this aeroplane, we need to sell this aeroplane. So whether it is today, tomorrow or the day after tomorrow, we will be engaged with them. I think we have the right product and we are developing it more and more, so we will be here.

"If Australia wants the aeroplane tomorrow, the day after tomorrow we'll be here offering it."

A Royal Air Force A400M is on display at Avalon, having crossed the Tasman from New Zealand where it was on display at the RNZAF's Air Tattoo on the weekend.

Frequentis sees opportunities in Australia

In the pantheon of Australian defence industry, there are the big players such as BAE Systems, Thales, Boeing and Lockheed Martin, and the small lesser known players making a growing impact in the high tech sector.

One is Brisbane-based Frequentis, the local subsidiary of a 70-year-old Austrian firm which produces secure voice communications systems for military and civil applications.

When Lockheed Martin was awarded the contract for defence's Tactical Air Defence Radar System (TADRS), Frequentis was chosen as the supplier of the end-to-end IP-based secure voice communication system.

The company also supplies secure voice communications for US Navy aircraft carriers and LHDs and civil aviation throughout the world. Closer to home, Frequentis does communications and incident management for Sydney trains.

Frequentis executive board member Norbert Haslacher said the company heritage was voice communications for air traffic control, of which it's a world leader with 30 per cent of the global market.

"We expanded civil air traffic management into defence, public safety, public transport and maritime," he said.

Frequentis arrived in Australia in 2004 as Frequentis Australasia, headquartered in Brisbane with offices in Sydney and Melbourne with annual business growing to $35 million for military and civil projects across the region. It has 30 staff.

The RAAF is its biggest customer, with Frequentis engaged in air traffic management and air defence systems.

"The last three years we have had average growth of 40 per cent per year which is a big opportunity for us," he said.

Frequentis Australasia managing director Martin Rampl (pictured) said the corporate strategy was to decentralise operations.

"We do program management, maintenance support and project delivery on site. The next step then is to also manage research and development locally," he said.

Setting the Standard in UAS Capabilities

For the 1st time in Australia, see the HERON TP at AVALON 2017

Backed by over 1,500,000 operational flight hours the HERON TP offers:

- Advancement of the HERON family legacy
- Certifiable system
- Full automation
- 100% operational
- Complete customization

IAI

WHEN RESULTS MATTER

www.iai.co.il
info.malat@iai.co.il

SEE US AT
AVALON AIR SHOW 2017
Chalet S7 and at the Outdoor Display

FOR SECURITY. FOR INDUSTRY. FOR AUSTRALIA.

AT LOCKHEED MARTIN, WE'RE ENGINEERING A BETTER TOMORROW.

When defence forces need to protect air, land, sea and space—defence technologies need to work effectively across domains. That's why Lockheed Martin is collaborating with Australian industry to envision a new joint battle management system for Australia. Powered by C4ISR and built with an open architecture, this system of systems will net together platforms, sensors and intelligence. Enabling Joint, Allied and Coalition interoperability. Creating a true force multiplier.

Learn more at www.lockheedmartin.com.au

LOCKHEED MARTIN

Lt Gen Bogdan looks for an US$80 million F-35

Australia could end up paying under US$80 million for F-35A Joint Strike Fighter aircraft as accelerating production drives down costs.

US Air Force Lieutenant General Chris Bogdan, head of the F-35 Joint Program Office in the Pentagon, said by the production lot nine negotiated in 2015 was for 60 aircraft while the 2017 lot would be for 134 aircraft.

By 2020 each lot will be for 160 aircraft.

He said the price per airplane was coming down lot after lot. The price of an F-35A in Lot 10 was US$94.6 million.

"I see that number continuing to come down," he said.

General Bogdan said the JPO had consistently promised that an F-35A purchased in 2019 would be less than US$85 million.

"I am here to tell you today that that is not enough. We need the airplane to be lower in price in 2019 and 2020 than US$85 million and I think we can get there.

"We ought to be looking at about an US$80 million airplane by that timeframe and then continuing to reduce the price of the airplane lot over lot over lot."

The F-35 has been consistently criticised for being too expensive, most recently by new US President Donald Trump.

General Bogdan said the Trump message to both industry and the Defense Department – that he wanted better value for money was a great message which was to be applauded.

He said since the F-35 program was re-baselined in 2011, the price trajectory had been consistently down. Before 2011, the program was running late and over budget.

Australia plans to buy a total of 72 F-35A aircraft with the full fleet in service by the end of 2023. Two have been delivered, early production aircraft now part of the international pilot training fleet at Luke US Air Force base. Each cost more than US$120 million.

General Bogdan said F-35 had achieved great progress in 2016 with both the US Marine Corps and US Air Force declaring initial operating capability of their first F-35 squadrons. F-35 aircraft were now permanently based in Israel and Italy with Norway next.

In the next four years F-35s will be based in 14 countries.

"We have risks. We have things we want to sort out. There are challenges ahead. But since 2011 when the program, was re-baselined we are in a much better frame than we have ever been."

In one test of F-35s ability to disseminate data, a Marine F-35B detected a low altitude high speed drone simulating a cruise missile, conveyed the tracking data to a US Navy Aegis cruiser simulation out in the desert. Using that data, the cruiser was able to fire a SM-6 missile and shoot down the missile beyond the visible horizon.

General Bogdan said that was a very important demonstration for Australia considering our acquisition of both F-35s and the Navy's new Aegis air warfare destroyers.

He said the $55 billion F-35 development program, which started in 2001 would conclude next year.

When the F-35 program was re-baselined in 2011, the plan was to finish flight testing by the end of 2017 with full capability delivered between August this year and next February. That includes the final software Block 3F which delivers the full warfighting ability.

"Today I am here to tell you we are well within that window for completing all the flight testing and for delivering that capability," he said.

Back in 2011, The US Defense Department set a budget of US$13.9-15.2 billion. The program now looks like coming in at US$14.2 billion.

Dassault pitches Falcon 7X and 8X for Australian VIP fleet

Dassault Aviation is pitching its Falcon 7X and 8X tri-jets as the best solution for the Australian Government's Special Purpose Aircraft (SPA) fleet.

The France-based airframer has brought its flagship 8X to the Australian International Airshow at Avalon, the first time the aircraft has been on display in this part of the world.

And Dassault Falcon Asia Pacific president Jean Michel Jacob said Avalon was a great opportunity to showcase the brand-new Falcon 8X capabilities to the local market, noting its smooth entry into service and positive feedback from customers.

"It comes at the right time to promote this aircraft to both the government and private customers," Jacob said on Tuesday.

The company has two aircraft at Avalon 2017, with a Falcon 2000LXS on display alongside the Falcon 8X. Although this was down from the three aircraft in 2015, there was clear star power in having the Falcon 8X Down Under so soon after first delivery in October 2016.

The Falcon 8X is an update of the Falcon 7X and designed to enable non-stop flights such as Sydney-Mumbai, Hong Kong-London or Beijing-Los Angeles, or one-stop from Sydney to New York or London.

With a cabin length of 13 metres, the Falcon 8X is capable of flying eight passengers and three crew 6,450nm at a speed of 0.8 Mach. Further, the cabin could be configured up to 30 different ways, including the potential to install a shower in the lavatory.

Dassault has delivered 15 Falcon 8X aircraft so far, with the aircraft now operating in Europe, North America, Africa and Asia. But not Australia.

That could change pending the Australian Government's thinking about the future of its Special Purpose Aircraft (SPA) fleet.

Currently, the Royal Australian Air Force's 34 Squadron operates two leased Boeing Business Jets (specially configured Boeing 737s) and three Bombardier Challenger 604 aircraft from Fairbairn Defence Establishment at Canberra Airport.

The Australian Government issued a request for proposal in November 2015 entitled "Replacement Special Purpose Aircraft (SPA) Transport Service – Managing Contractor" which closed in February 2016.

Jacob said Dassault had pitched the Falcon 8X and 7X as the ideal solution to the Commonwealth's needs.

"In my own opinion we think that our aircraft would be a perfect aircraft for the government," Jacob said.

"It satisfies most of the requirements that the tender showed a few months ago, which is to go to most airfields in Australia, even the more challenging airfields.

"I'm talking specifically about 7X and 8X."

Jacob noted the three-engine design of the Falcon 7X and 8X offered advantages for long over-water flights. For instance, on Melbourne-Santiago the Falcon 8X had a 1,000-mile shorter flight distance than comparable twin-engine business jets, he said.

In October 2016, Defence confirmed one of the two additional Airbus A330-200s being converted into KC-30A tanker transports for the RAAF would be modified with a VIP interior to support long-range government transport needs.

Meanwhile, Jacob said Dassault's installed fleet in Australia stood at 15 aircraft, with the most recent delivery taking place in the week prior to Avalon. The figure is up from 10 in the 2016 register of business jets in Australia and New Zealand in the December edition of *Australian Aviation*.

In terms of local conditions, Jacob said he had noticed a pickup in activity since the start of 2017.

"The market is getting more active now than it was last year," Jacob said.

"It's simmering."

Boeing welcomes Australian defence innovation initiative

The Director of Boeing Phantom Works International (PW-I), Dr Shane Arnott, has welcomed the Australian Government's decision to launch a major defence innovation initiative to generate new technologies related to satisfying future capability development requirements of the Australian Defence Force.

The Australian Government launched last December a $1.6 billion (over 10 years) innovation program to be managed by the Centre for Defence Industry Capability (CDIC), and looking to generate new future technologies of relevance to the military, as well as accelerate the uptake by Defence of current innovations that have progressed through to the engineering/manufacturing development stage.

Dr Arnott, who oversees PW-I's global program – including its largest and longest-established facility in Brisbane (Australia) - says the company is "really pleased with the shift in Australian thinking from presenting itself as a capability buyer to a capability maker/innovator, in parallel with the decision to elevate Industry as a fundamental input to Australian military capability (FIC) within the ADF's capability development model."

Boeing, in turn, was not surprised by the conclusions of the 2016 Australian Defence White Paper, and the structure of its accompanying Defence Integrated Investment Plan, which laid out proposals for expenditure of up to $195 billion on new military capability acquisitions over the next decade or so.

Dr Arnott says, "Everyone in the West has got very similar or the same problems and issues, so there were really no surprises for Boeing in the new integrated investment plan. In fact, we found there was very strong alignment with several of the technology development strands we were already advancing via the Phantom Works."

Current Boeing Defence, Space and Security technology initiatives include the TX trainer, reusable space launchers, advanced weapons, the MQ-25 unmanned tanker, future vertical lift platforms, satellites and unmanned undersea vehicles. These platform projects are being accompanied by research into mission systems solutions extending across integrated systems, computing/sensors, a common mission control centre and RF communications.

Dr Arnott says Boeing is especially looking at ensuring outputs of this work fit with the Royal Australian Air Force's project Jericho, as well as more broadly investigating how existing Boeing platforms in-service with the Australian Defence Force – such as the E-7A Wedgetail AEW&C and 'Vigilaire' command and control system - can be updated and tasked to addressing future threats.

As a result, says Dr Arnott, "particular focus within Boeing is being given to the future Air Battle Management System (project AIR 6500) and options for future Tactical Air & Missile Defence (project Land 19/7). We also have an active program for leveraging technologies between the military and commercial areas, including the use of unmanned aerial vehicles from Boeing's Insitu subsidiary by Shell, for survey/monitoring its vast gas fields.

"Shell's gas fields in Australia are spread roughly over the size of the UK, and previously, ground-based crews could only achieve well head inspections on 4-5 sites a day by traditional means. Now, with the assistance of Insitu's unmanned aerial vehicles, Shell is achieving inspection rates of up to 150 facilities per day."

US back at Avalon searching for novel Australian military technologies

With the United States sustaining its position as the world's largest procurer of military equipment, and President Trump now talking of a US$50 billion boost to the US Defense budget, it might be natural to assume that all required new military capabilities would be satisfied from within the US scientific and industry base.

"Not so" says a US Air Force officer who is visiting the Avalon Airshow this week on the hunt for novel Australian military technologies.

During a specialist briefing at Avalon on Tuesday, Col Sean Bradley, Director of the Comparative Technology Office within the Office of the Secretary of Defense (OSD), said that the long-standing foreign comparative technology program - which scours the globe for emerging technologies - continues to deliver significant benefits to the US armed services and its Special Operations Command (SOCOM).

The mission of the Comparative Technology Office (CTO) is to find, assess and field world-class technologies to enhance US military capabilities and provide long-term value. Col Bradley stressed that his efforts within the CTO brief were to evaluate new technologies, not procure them. Nevertheless, technologies that did make it through the annual CTO vetting cycle did have a habit of attracting the attention of US military procurement authorities.

Col Bradley did have some good news for Australian companies looking to represent their innovations to the US. First, budgetary issues associated with the transition to the new Presidency were progressively working themselves out, and he was confidently looking to secure new funding to support a 2018 CTO evaluation round. Australian CTO engagements from previous CTO rounds currently being advanced include:

- E-band (71-86 GHhz) Communications Link (2015);
- Rifle Accessory Control Unit (2016);
- Holographic Immersive Simulation System (2016); and
- JDAM Compatible Wing Kits for Aerial Delivery Improvements of Underwater Mines (2016).

Each year the CTO looks at hundreds of technologies being generated outside of the US to find and select applications relevant to the military, and then refers these onto each of the US Army, Navy and Air Force and SOCOM. Over the last 35 years, some US$1.3 billion has been invested in this search, and has led to 273 procurements valued at $11 bn.

New developments in the CTO program have since led to a widening of the Technological Readiness Level spectrum under which potential innovations can be considered by the program, with the majority falling between TRL 6 (developmental prototype) and TRL 8-9 (qualification test). Col Bradley says TRL 7 (operational prototype) is generally "the medium" in terms of the number of activities.

Col Bradley added that it was generally the case that the CTO program would progress side-by-side comparative evaluations, which means participants in the program should be aware that more than one source of competing technologies were being investigated. The CTO program is nevertheless administered openly, and applicants are informed when competing proposals are under study.

Looking forward to 2018, the CTO program is particularly interested in technologies relating to: Asymmetric Forces Applications; Electromagnetic Spectrum Agility; Autonomous Systems; and Information Operations and Analytics.

Funding for CTO activities works to the same fiscal year as the US military (October), so the window is currently open for crafting initial military innovation proposal submissions that would be eligible for evaluation funding post-October 2017.

Col Bradley says he would prefer initial applications to use the OSD CTO Product Template available on their website (https://cto.acqcenter.com/osd/portal.nsf/), which also provides information on Intellectual Property requirements associated with the CTO program. For his own purposes, Col Bradley says "as we are not purchasing, we don't require IP above what's necessary to safely test the technology. It's a different approach from the IP negotiations that need to be undertaken when the proposal goes to procurement."

Over the life of the CTO program to date, 40 Australian-based innovations have successfully passed through the CTO evaluation process with the benefit of OSD investment support amounting US$59.6m, which has driven subsequent procurement activity of US$415.5 million.

CAE secures Hawk simulator support contract

Defence has partnered with CAE to provide support and training for the Royal Australian Air Force's Hawk 127 lead-in fighter.

The in-service support contract with CAE for full mission simulators acquired under Project AIR 5348 is valued at about $14.5 million over four and a half years.

This contract will see nine new jobs created, three at RAAF Base Pearce and six at RAAF Base Williamtown, Minister for Defence Industry Christopher Pyne announced.

"This contract will see CAE provide classroom and simulator instructors at RAAF Base Williamtown, as well as maintenance and support services at both RAAF Base Pearce and Williamtown," Minister Pyne said.

"The Hawk Mk 127 full mission simulators all feature a high-fidelity replica of the Hawk Mk 127 cockpit and will play a vital role in preparing fast jet aircrews for the RAAF's next-generation fighter aircraft."

The contract was awarded under a contract change proposal to the existing Australian Defence Force Simulator Through-Life Support In-Service Support contract with CAE.

There will be a phasing-in period for the company while the full mission simulators become operational during the first half of 2017.

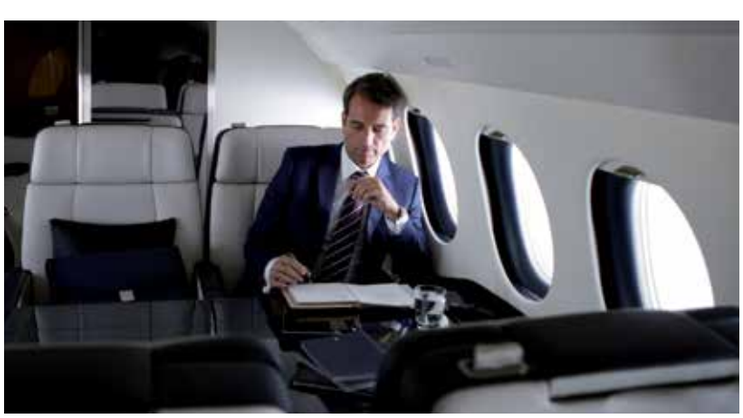
Pratt & Whitney is the only company in the world delivering 5th generation fighter engines. Our F135 engine is powering the F-35 Lightning II today, and our decades of operational experience and technology have produced the most capable and reliable fighter engine ever. Ready today and for tomorrow's challenge. See it for yourself at **www.pw.utc.com**.

PRATT & WHITNEY
DEPENDABLE ENGINES

A United Technologies Company

Visit us at the Avalon Airshow, Booth #3F4

Connect with us



Falcon 8X

The 6,450 nm Falcon 8X has the quietest cabin of any business jet. That means more comfort and greater productivity on long, demanding journeys. Add to that uninterrupted connectivity and access to virtually any two points on the globe, and you have a business jet that exceeds expectations.
Fly far. Fly in comfort. Achieve more.

DASSAULT FALCON

ENGINEERED WITH PASSION

KC-30 aircrew training reaches a constant state

RAAF KC-30A pilot and air refuelling officer training should stabilise in 2017 as the tanker transport approaches full operating capability (FOC) and the first of two additional aircraft enters service later in the year.

Using a Level D-certified full-mission simulator (FMS), an integrated procedure trainer and an air refuelling officer (ARO) part-task trainer the CAE Australia-operated KC-30A training centre at RAAF Base Amberley is planning to run four pilot conversion courses with three students and two courses of six AROs in 2017.

Training at the centre began in 2012 following the KC-30'S entry into RAAF service with 33 Squadron in 2011.

"There was a sudden ramp up in 2013 with the aircraft here in country," CAE Australia's Amberley training centre manager Ben Gage told media ahead of the Avalon Airshow on Thursday.

Then in 2014 KC-30 aircrew training in fact tapered off as KC-30s underwent upgrades.

"At that stage the Air Force had enough crews to meet the number of aircraft they had to keep airborne," Gage said.

"But then along came Operation Okra, the efforts that were required to go and support operations in the Middle East kicked off and the training ramped right up because not only were they doing the local type of missions there was also now a requirement to have crews positioned overseas."

33 Squadron has had a single KC-30A on deployment in the Middle East supporting coalition campaign against Islamic State in Iraq (and more recently Syria) since October 2014.

"Credit to the squadron that they battled through that program, Air Force got the people in, our training went up, we started doing six students per course. That does put a training load burden on but we all worked together as a team across the platform and we got those aircrews happening," Gage said.

CAE provides the training with five, and soon to be six instructor pilots and three ARO instructors. The instructors mostly have military backgrounds and while now civilians they must meet RAAF Central Flying School standards.

"For us now with the expansion of the fleet, coming out of 2016 into 2017 [with] the two new aircraft are arriving, in consultation with the commanding officer of 33 Squadron [we expect] slight increases but it is [now] about managing that throughput," Gage said.

Conversion training for both pilots and AROs runs for six months, and pilots will typically graduate from the centre with 70 hours flying time in the FMS full-motion simulator, explained 33SQN commanding officer Wing Commander Brent Taylor.

"Before they get to the line and fly an actual aircraft they've got in the vicinity of 70-odd simulator hours, then they'll get to the line and they'll do three flights which can be anywhere from an hour to a couple of hours," WGCDR Taylor said.

Once a student has successfully completed the qualification flights they will be rated as a 'D cat' co-pilot.

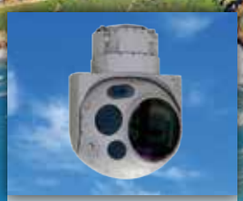
"They're in the right hand seat as a co-pilot for about nine months, and then after that across the board it's 'seat agile'."

The squadron is expecting to take delivery of its sixth KC-30A in the second half of the year while a seventh airframe, which is expected to feature a government transport/VIP interior, is due to be handed over in early 2019.

In the meantime KC-30A FOC is due to be declared in the coming months said WGCDR Taylor.

"We're nearly there, I sure that will come out in the near future."

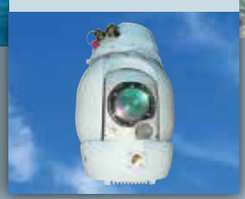
See the right way all the way. Now in full HD.



M -19 HD
Long-Range Multi-Sensor, Multi-Spectral Observation & Targeting Payload

MOSP-3000 HD
Multi-Mission Optronic Stabilized Payload

TNL-16GI
High Performance INS/GPS



POP-300D HD
Plug-in Optronic Payload with Laser Designator

Rely on IAI's advanced HD EO/IR sensors and navigation systems for your ISTAR missions

- Field proven for military, paramilitary and HLS applications
- Mounted on aircraft, helicopters, UAS, maritime vessels, land vehicles, UGVs and ground installations

IAI

WHEN RESULTS MATTER

www.iai.co.il
infotmm@iai.co.il

SEE US AT
AVALON AIR SHOW 2017
Chalet S7

First Lockheed Martin LM-100J freighter breaks cover

Lockheed Martin has unveiled the LM-100J commercial freighter for the first time at its Marietta, Georgia facility.

The LM-100J, a civil derivative of the C-130J Super Hercules military airlifter, had its rollout ceremony on February 9.

The company said the aircraft was scheduled to make its first flight later in 2017.

"Today's rollout not only marks another accomplishment for Super Hercules, but it also reflects the aircraft's capability to evolve to meet customer requirements," Lockheed Martin vice president and general manager for air mobility and maritime missions George Shultz said in a statement.

Lockheed Martin first applied to the US Federal Aviation Administration (FAA) in February 2014 for a civil-certified version of the C-130J-30 Super Hercules.

In July 2014, Ireland-based ASL Aviation Group signed a letter of intent (LoI) for 10 LM-100Js.

Schultz said the LM-100J program had "exceeded all expectations" during its development to date.

"We are at this point thanks to hard work and dedication of Lockheed Martin employees and suppliers, who have literally designed and built this new chapter of Super Hercules operations," Schultz said.

"The FAA has been an essential partner in this aircraft's production and we look forward to continuing to work together as we move into the LM-100J's critical flight test phase."

More than 100 units of the L-100, the commercial variant of the first-generation C-130, were produced between 1964 and 1992. Many of these aircraft are still in service around the world with a range of commercial and government customers.

Lockheed Martin has said previously the LM-100J would be able to operate from short, unprepared airfields without ground support infrastructure and require only minimal cargo-handling equipment.

The aircraft was set to be built on the existing C-130 production line, with first delivery expected in 2018.

The Royal Australian Air Force's 37 Squadron operates a fleet of 12 C-130J-30 Hercules from RAAF Base Richmond.

Lockheed Martin to open systems demonstration centre in Canberra

Lockheed Martin Australia is set to open a state-of-the-art demonstration and collaboration centre at its new headquarters in Canberra to meet a need that the company has identified for demonstrating complex system-of-systems solutions.

The new Canberra Demonstration Centre is a purpose-built space that is intended to provide both a physical and virtual portal into the network of Lockheed Martin laboratories, including the recently established Science Technology, Engineering and Leadership Research Laboratory (STELaRLab) based in Melbourne, and the 'Lighthouse' Centre for Innovation in Virginia, US.

When completed in mid-2017, the Canberra Demonstration Centre will be staffed by specialists trained in operations analysis, modelling and simulation, prototyping and early integration activities that will be working in a facility resourced with the aim of maximising their ability to test new ideas, analyse concepts and collaborate on developing innovative solutions.

The 900-square-metre centre will serve as a collaboration hub where Lockheed Martin employees, Defence staff, industry and other key stakeholders can come together to explore solutions to the most complex of challenges.

Lockheed Martin stated that the development of a range of Defence and national security programs would be enhanced by the establishment of the centre.

"This will include transformational activities such as the Royal Australian Air Force's Plan Jericho and Project AIR 6500, where the development of solutions will require collaboration between Defence and industry, and a team that is committed to innovation and R&D, and that will benefit from a dedicated space that allows access to a range of innovative tools, technologies and skills," the company said.

Safeskies to host safety seminar at Avalon

Aviation safety organisation Safeskies will host a morning seminar at the Avalon Airshow.

The session will focus on three safety areas – Royal Australian Air Force fast jets, air traffic management and recreational aviation safety.

Speakers at the three-hour seminar include EA-18G Growler pilot and RAAF SQNLDR Shannon 'Bird' Kennedy, who will discuss flying fast jets safely.

Meanwhile, Airservices executive general manager for air navigation services Stephen Angus's address will cover the safety benefits of the Civil Military Air Traffic Management System (CMATS) system.

Finally, Recreational Aviation Australia chief executive Michael Linke and safety officer Katie Jenkins will discuss what makes a successful SMS and the human impact of fatal and serious accidents.

Safeskies' Avalon session is scheduled for Thursday from 0900 to 1200. Entry is free for airshow attendees.

Separately, Safeskies has confirmed its biennial safety conference has been set down for October 3-5 2017 in Canberra. Virgin Australia chief executive John Borghetti was named as the guest lecturer for the Sir Reginald Ansett memorial lecturer to be held at Parliament House, Canberra on Tuesday October 3.

Building the 'joint & integrated ADF'

The Australian Strategic Policy Institute (ASPI) is planning conference on 'Building the joint & integrated ADF'.

International and Australian speakers will cover a range of topics including: Impact of changes in Australia's strategic environment on Defence's capability plan; policy and implementation challenges central to building the joint and integrated ADF; the emerging operating environment; key Defence capability decisions; best practice internationally in developing joint & integrated defence forces; pptions for enhancing the role of industry as a fundamental input to capability; and, Impact of new and emerging technology options.

'Building the joint & integrated ADF' will be held at the QT Hotel in Canberra on June 6-8.

Ultra Electronics receives funds for shipborne early-warning technology

Ultra Electronics Avalon Systems is set to receive Australian government funding of $1.7 million to develop techniques to provide ships with early warning of low-flying threats such as anti-ship missiles, Minister for Defence Industry Christopher Pyne has announced.

This technology will complement existing shipborne radar systems, Minister Pyne said.

As impressive as it was, the public unveiling of the Royal Australian Air Force's new EA-18G Growler electronic attack aircraft was not the only show in town on the opening day of the 2017 Avalon Airshow.

Also making an appearance was the RAAF's new C-27J Spartan battlefield airlifter, which achieved initial operational capability (IOC) in December.

The PC-21 training aircraft that is being acquired under the AIR 5428 pilot training system project was also on display having recently arrived from Switzerland.

And the P-8A Poseidon maritime patrol aircraft made its Avalon debut with RAAF markings, having arrived in Australia in November.

INNOVATION TO PERFORM

A unique and innovative design, our distinguishing mark.

The latest generation of a legendary aircraft.

The Avanti EVO rewrites the rules of efficiency and elegance.

An unmatchable combination of style,

respect for the environment and high technology.

PIAGGIO AEROSPACE

A FIRST FOR AUSTRALIA AND SECOND TO NONE

The proven P-8A Poseidon is here, bringing next-generation anti-submarine warfare and advanced maritime intelligence, surveillance and reconnaissance capabilities to the Royal Australian Air Force. Boeing congratulates Australia on taking delivery of its first P-8A, a milestone in our longstanding partnership. We look forward to building and sustaining a key element of Australia's networked Air Force of the future.

boeing.com.au

BOEING