AUSTRALIAN AVIATION
Australian Defence Business Review

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NEXT-GEN RAAF

On the Jericho Trail

The Royal Australian Air Force has hosted an event inside a C-17A Globemaster heavy transport aircraft to demonstrate how it has been partnering with industry under Plan Jericho, which is helping transform the service for the information age.

Having identified obstacles to achieving the networked and integrated combat force envisaged by Plan Jericho, the RAAF partnered with industry to seek help in developing solutions.

The event held on Wednesday at the Avalon Airshow showcased some of the tangible things Air Force has done to rapidly acquire some existing capabilities and to explore the use of future technologies.

The RAAF's partnership with BAE Systems is regarded as the most formal arrangement to have been established within the Jericho program.

BAE Systems is working with the RAAF to develop and trial what is referred to as the 'acquisition sprint' methodology, demonstrating a new way of rapidly acquiring capabilities.

This project involves the acquisition of Automatic Dependent Surveillance Broadcast (ADS-B) air traffic surveillance technology for the Hawk 127 lead-in fighter. CONTINUED PAGE 3 >

SHOW HIGHLIGHTS

Boeing establishes Joint Battle Management Development Environment

Boeing has spoken publicly for the first time about its Joint Battle Management Development Environment, which allows the company to experiment with Royal Australian Air Force capabilities in a laboratory setting and get feedback on the way forward from the customer.

The lab, which has already been established in Brisbane, is at the heart of the company's efforts relating to spiral upgrades and working on new or partner technologies for projects such as AIR 6500, upgrades to the Vigilare command and control system and the E-7A Wedgetail airborne early warning and control platform.

"We have been very blessed in that the bulk of the RAAF force structure has got a Boeing logo on the side of it, and then there is Plan Jericho on how do you get all this stuff to synch better together," said Dr Shane Arnott, director of Phantom Works International.

"So we have invested, and it has been Boeing internal research-and-development money that has gone into creating this environment, which is the real mission systems, so the real Wedgetail, the real P-8, the real Vigilare, the real Super Hornet, the real Growler."

While threats are simulated, the Joint Battle Management Development Environment uses real mission systems as found aboard the real-world aircraft themselves.

"The next-generation fight that our forces are looking to face is a step up from what they are operating in today, so we are able to simulate what that looks like; we are able to then represent all the datalink traffic," Dr Arnott said, speaking during a media briefing at the Avalon Airshow on Wednesday.

UNMANNED AT SEA

FIRE SCOUT'S ELEVATED VIEW
Page 8

GULFSTREAM AT AVALON

GOING WHERE THE AIRLINES DON'T
Page 19

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JERICHO - CONTINUED FROM PAGE 1

"At its heart, acquisition sprint is innovative in the sense that it is a design-led activity," said Tony Grady, business winning team lead from BAE Systems Australia.

"It brings together industry and Air Force in this case to collaborate and to demonstrate those genuine partnership behaviours...prior even to the release of a formal request for tender to industry: that makes it innovative. In the past I think it is fair to say that Defence generally developed its requirements largely in isolation."

Meanwhile, Mark Grollo of Grollo Aerospace described the development of Evader, which is an affordable supersonic aerial target that is intended to facilitate training against high-speed missiles.

"It is undergoing flight trials at the moment in various parts of Australia... and [we] hope to demonstrate a supersonic flight within the next 12 months," Grollo said.

The target is intended to be launched from a fixed-wing aircraft.

"We are looking at up to Mach 1.5 as an initial speed; our idea is to try and keep it as affordable as possible and develop a basic vehicle that can do just that."

Also highlighted at the Jericho demonstration event was the work of L3 in the provision of AirView 360, which gives personnel on military aircraft enhanced situational awareness.

Saab and the Defence Science and Technology Group displayed an augmented reality approach to providing the ability to interact with visualisations of battlefields using the Microsoft HoloLens.

And the development by AOS of the Intelligent Watch Dog autonomous base intrusion detection, threat evaluation and response system was also shown off.

Air Force looks ahead to mark its centenary

In 2021 the RAAF turns 100, with the centenary to be marked by a series of commemorative events to showcase Air Force heritage and the work it performs for the nation.

It will also showcase the career opportunities for the next generation of airmen and women who will operate the next generation of aircraft, like the F-35, P-8A and Growler.

Australian military aviation was born before World War I and the Army's Australian Flying Corps operated throughout the war. Post-war, there was much debate about whether there should be a separate service or it should remain part of the Army.

Finally the government decided there should be an independent service, officially formed on March 31 1921 and given royal warrant on August 13 1921. Australia now had three services – the Army which was founded at federation in 1901 and the Navy founded in 1911.

Group Captain Mark Reynolds, director of Air Force 2021, said the RAAF was now examining just how to mark their big birthday. A survey of RAAF personnel threw up a wide range of suggestions, including flypasts and airshows.

For the RAAF, 2021 will be a big year, starting with that year's Avalon Airshow and moving to the main event on March 31 which will mainly be marked with events at the RAAF Memorial and Australian War Memorial in Canberra.

Anzac Day will be another focus, while the RAAF is hoping a member of the royal family will attend the centenary of the granting of the royal warrant on August 13.

Group Captain Reynolds said the RAAF wanted to use 2021 to set itself for the next 100 years.

"Whilst commemoration and celebration of 100 years is important, it's really about our future. We want to use 2021 to educate our people and educate the population more about what we do," he said at Avalon on Wednesday.

"A lot of people know we have an Air Force but do they really know what we are doing? Do they know we are out there 24/7 in the surveillance role, that we support our troops everywhere? We are in the Middle East and we've been there for 17 years flying and fighting continuously."

One of the jobs now is to get industry on board. GPCAPT Reynolds said he was interested in industry engagement with the RAAF and support such as documentary evidence like historical photos.

"We need to do a gradual buildup. If we have a splash now people will forget," he said.

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Open for business – 35 Squadron displays its C-27J Spartan

The Royal Australian Air Force's 35 Squadron has debuted its new Leonardo C-27J Spartan battlefield airlifter – the missing piece in Australia's air mobility matrix – at this year's Australian International Airshow.

Having achieved its initial operational capability (IOC) in December last year with four of the 10 C-27Js on order delivered from prime contractor L3, Commander Air Mobility Group, Air Commodore Richard Lennon said two more aircraft were due for delivery within the next two months with the final and full complement expected by early 2018.

"2017 is going to be a big year for 35 Squadron as we take delivery of more aircraft and bring our training on to home soil," said AIRCDRE Lennon. "Essentially we're open for business providing transport for government and Australian Defence Force requirements."

For the past 18 months, 35SQN has been training its aircrews and developing maintenance procedures and has spent a lot of time working with 5 Aviation Regiment in Townsville, Queensland aligning procedures and understanding how both services operate.

"Our focus is to work very closely with Army Aviation and with the Special Operations Command to ensure the integration of the air mobility operation works seamlessly and is integrated within the battlefield, particularly with Army's heavy lift helicopters," AIRCDRE Lennon said at Avalon on Wednesday.

The squadron's big focus moving forward is to establish its ground and flight training systems in Australia ahead of attaining final operational capability (FOC) with the aircraft, which is expected to occur in December 2019.

"We will continue to use simulators overseas until we get our own simulator established at Amberley in the next few years," said AIRCDRE Lennon. "The squadron will do ground and flying training themselves and look to use a commercial provider for the simulator support. We will slowly bring that whole capability onshore ready for the Final Operating Capability which we expect will be towards the end of 2019."

While the Spartan might look like a smaller Hercules on the outside, its role is more of an embedded aircraft in the battlefield area.

"I refer to it as a 'fixed-wing Chinook'," quipped AIRCDRE Lennon.

"That gives you the image of it being a battlefield capability rather than a strategic airlifter. It can operate into short airfields in remote locations and get into those airstrips that C-130J and C-17 cannot."

35SQN has been conducting a bulk of its training at regional airfields around NSW and in WA. However, the squadron is putting a lot of attention on ensuring the aircraft can work in our region and with partner nations.

"We will soon take the C-27J up into Papua New Guinea for the crews to get accustomed to operating the aircraft in the harsh and mountainous environments and begin operating the aircraft locally on exercise," said AIRCDRE Lennon.

"We have adopted the crawl, walk, run procedures with implementing the aircraft into service. We have gone through the 'crawling' stage and we are up to walking.

"The C-27J will feature in this year's Exercise Talisman Sabre and we will be looking to work with special forces and, in general, air logistics support roles supporting this exercise."

The Spartan will be a highlight in the public flying display program at the airshow this weekend.

"The squadron has got a good routine worked up to display the aircraft," said AIRCDRE Lennon. "And no, unfortunately it won't be doing barrel rolls like the demonstrator aircraft did at the last airshow."

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Up close with the F-35

As the audience awaits the arrival of the F-35s on Friday, the crowd continues to gather about the full-scale mock-up that sits on the Avalon flightline. And while its form is imposing, the numbers behind the aircraft are also having an impact.

To date there are 13 operational F-35 bases and more than 200 jets flying with a cumulative tally of 83,000 flight hours. The vast majority of airframes of this fifth-generation fighter will be the 'A' model which will also see service with the RAAF.

However, beyond the statistics lie the core components of a fifth-gen jet – stealth and fusion. While stealth is the ability to fly virtually undetected, fusion is the ability to gather information from the aircraft's multiple onboard sensors to create a single integrated picture of the battlefield. In the F-35, this display is presented on the screen of the pilot's helmet.

At first glance, the very form of the F-35 suggests stealth. There is an absence of external tanks and/or ordinance, with everything stored internally, including a massive 18,250lb of fuel. An advanced electronically-scanned phased array radar instead of the traditional flat plate in the aircraft's nose and curved diverter-less inlets house a 'buried' engine which reduces the aircraft's signature significantly. Flush sensors replace traditional angle of attack sensors and pitot probes and the list goes on.

The F-35's electro-optical targeting system (EOTS) provides pilots with precise air-to-air and air-to-ground targeting capability. The system enables aircrews to identify areas of interest, perform reconnaissance and precisely deliver laser- and GPS-guided weapons. So sensitive is the system that it can sense the difference in residual heat between an open car parking space and one that had been shielded previously by a vehicle. On a recent flight in the United States, the system detected a Cape Canaveral rocket launch 900 miles away.

Furthermore, the system allows aircraft to network in the air. Without verbal communication targets can be identified, prioritised and assigned between F-35s with the leader allocating which aircraft strikes which target – all without words. The analogy has been drawn that previously it was a world of American football where one quarterback directed and only limited players could make a touchdown. In the world of the F-35 it is more like soccer and everyone has the ability to score a goal.

The F-35 helmet takes virtual reality to the next level. Through the distributed aperture system (DAS), high-resolution, real-time images are streamed from six infrared cameras mounted around the aircraft, straight to the pilot's visor. It is as if the pilot is sitting in a sphere and can look straight through the floor to see what lies below with a wealth of information overlaid. Having worn the helmet, the author can attest to the light weight and incredible imagery available – and this was only at an unclassified level.

Flying the F-35 simulator was equally impressive. Minimal inputs delivered the desired effect and the throttle placed an array of functions from targeting to speed rakes at the fingertips. To the right, the side stick felt very natural with the big red button that sent the missiles on their way.

For such an enjoyable experience, there is still no mistaking that the F-35 brings together a new generation of aerial combat, where the ability to see first and shoot first is more important than ever. It brings big data and networking to the sky in a machine boasting stealth at every turn. All that remains is for the arrival of the first two F-35s at Avalon this Friday.

BAE prepares for F-35 sustainment

Over the next decades with the F-35 Joint Strike Fighter as Australia's frontline combat aircraft, long-term sustainment costs are estimated to exceed $40 billion and that means plenty of work for Australian industry.

With the RAAF's first two F-35 aircraft set to make their Australian debut at Avalon on Friday, BAE Systems Australia has launched a new website to showcase the sustainment task and what it will bring for local industry and jobs.

The website, titled Flightpath, can be visited at www.flightpath.net.au.

In February 2015, BAE Systems Australia – Australia's largest defence company with 3,300 employees – was assigned responsibility for F-35 airframe maintenance, repair and overhaul for the South Pacific Region.

In November, Defence Industry Minister Christopher Pyne successfully lobbied the US for Australia to become a regional hub for JSF component maintenance.

That followed a "Team Australia" approach, with defence companies opting for a collaborative rather than a competitive approach, considering the main competitors were really Japan and South Korea.

Defence Industry Minister Christopher Pyne said Flightpath was designed to profile how Australia will support RAAF F-35A aircraft as well as other F-35 aircraft in the Asia Pacific region as part of the F-35 Global Support System.

"Australian Government and industry are working together to promote the significant and niche defence capabilities we can provide global supply chains," he said.

The Minister said becoming a regional hub significantly increased the market for the Australian industry base sustaining the F-35, far more than just maintaining Australia's 72 F-35A aircraft.

"With more than 3,100 F-35 aircraft worldwide, Australia will maintain regional volumes as a key supplier in the F-35 Global Support Solution," he said.

F-35 sustainment work will centre on the BAE Systems facility at RAAF Williamtown, outside Newcastle. There the company supports the RAAF's F/A-18 classic Hornets and Hawk lead-in fighters.

F-35 support will be performed in the hangar currently used for Hawk sustainment, which will be relocated to a nearby enlarged hangar facility.

When the sustainment program is mature in 2025, BAE Systems will have some 200 people working on F-35, most at Williamtown.

"That's 200 new jobs," says Andrew Gresham, BAE Systems Australia F-35 program director.

BAE will need to build its skilled workforce at the same time construction of new submarines and warships gets under way.

"We are over-recruiting on projects. We have always had a long apprentice program but we are stepping that up," he said.

"In a few months people will be getting jobs now for work on aircraft which won't arrive until the end of next year, with full numbers not until more than five years away."

IAMD needs to be joint by design – NG's Todorov

Australia hasn't officially opted for a capability to defend against ballistic missile attack but is doing plenty of the right things in developing the fundamental precursor, an integrated air and missile defence (IAMD) system.

Retired USAF Brigadier General Kenneth Todorov, director of international programs for Northrop Grumman Mission Systems, said the US had some battle scars from its experience.

"As I look at Australia and how they are going about it, I am very jealous of the approach being taken here. I am very complimentary in a lot of ways," he said.

Previously Todorov was deputy director of the US Missile Defence Agency and director of the Joint Integrated Air and Missile Defence Organisation (JIAMDO) charged with the difficult job of integrating missile and air defence capabilities across US services.

He said the missile threat was growing, with more missiles of greater sophistication, longer range and greater diversity. That includes a new generation of hypersonic missiles.

But there's no "big bang" off-the-shelf solution for missile defence, he says.

The US approach has involved each service developing their own capability which take care of their own domains.

"We didn't do it smartly. We bought all this stuff and said oh gosh, we have got to make it work together. In Australia there is a recognition that it needs to be joint force by design," he said.

"Before you procure this capability ... we have to make sure it's planned for and there is an architecture. First get the architecture right."

That means there needs to be an effective system to detect and classify threats, communicate threat data to commanders who can direct an appropriate response. That should come well before Australia acquires any capability to shoot down incoming missiles.

Todorov said elements of Australian Defence Force capability, such as Vigilare, the RAAF's integrated air battle management system and JORN, existed now which could form part of the future system.

The integrated air and missile defence system will be further advanced through a pair of projects, LAND 19 Phase 7B and AIR 6500.

It had to be recognised that the backbone of the system needs to be modular, open and adaptable to new threats, he said.

"We can take existing capabilities and mould them into a revolutionary architecture," he said. "That command and control architecture has to be got right first. Then you can worry about the sexy stuff, the shooters, the effectors and even some of the sensors."

To go to ballistic missile defence would be a significant and very political step.

Australia has long pondered acquiring a ballistic missile defence capability, most likely aboard the navy's three new air warfare destroyers. That would take the form of the proven SM-3 missile with appropriate upgrades to the AWD Aegis combat system.

Todorov said that program was phenomenally successful.

"Given the Royal Australian Navy's relationship with the US Navy, the importance of interoperability in Pacific Command's area of responsibility and the desire of both nations to work together in conflict, it would make tremendous sense," Todorov said.

An "elevated platform" – MQ-8C Fire Scout nears service entry

Development of Northrop Grumman's MQ-8C Fire Scout ship-based Vertical Takeoff and Land Tactical UAV (VTUAV) is nearly complete.

The MQ-8C, on display in mock-up form at Avalon, is an enlarged development of the MQ-8B Fire Scout which has seen service off US Navy FFG frigates and the new Littoral Combat Ship (LCS). The Charlie model Fire Scout is based on the commercial Bell 407 helicopter airframe, offering much greater range and endurance compared to the MQ-8 Bravo, which is based on a smaller Schweizer helicopter design.

"What we got out of that [adopting the Bell 407 airframe] was something that has more than twice the payload capacity and we upped the endurance from the four-five hours to the 10-12 range," Captain Jeff Dodge, the US Navy's program manager for Fire Scout, told Australian media in January.

"So it really gives us a lot of capacity out of a single aircraft."

Capt Dodge explained the transition from the MQ-8B to the C-model was effectively a "brain transplant", where the avionics and sensors were installed in the larger Bell 407-based airframe.

"Testing and development is now largely complete, with a few final test events to be accomplished which require ship time at sea and so are dependent on ship availability," Capt Dodge said of the MQ-8C's development.

The Fire Scout, explained Dodge, was designed to provide surface ships with far greater situational awareness than can be offered by a ship's surface search radar or ship-based helicopters with their relatively short endurance.

"Building that situational awareness means that you need presence. Right now your typical ship has got a radar on the mast, you've got lookouts on the bridge, and you can see to that radar horizon – 20 to 30 miles – and you can pretty much control that seaspace," explained Capt Dodge.

"With a helicopter now I've got an elevated platform, I can get away from the ship and as long as that aircraft is up there I can expand my horizon to 100, 125 miles. Now I really know everything that is going on and I have a chance to influence it."

That's where Fire Scout, with its electro-optical and search radar sensors, plus 10-12 hour endurance, can come into its own.

"Most ships will only move at 30kt so if I come up [with a Fire Scout] every three hours I'll know of everything that is within 100 miles so now I can keep that situational awareness not just when the aircraft is up but for all day long, for really extended periods of time.

"By expanding that bubble of control you get a lot more effect from a single vessel."

While development of the Fire Scout air vehicle is nearly complete, the system will be subject to on-going upgrades and enhancements, such as the recently-announced integration of the Selex Osprey electronically-scanned array radar. Longer-term, the Fire Scout may also gain anti-submarine warfare capabilities.

"We have several research projects on for a lightweight, easily-adaptable ASW pod solution so that would incorporate maybe a sonar buoy launcher, maybe a magnetic anomaly detector, so we're researching some of that," said Capt Dodge.

That shows the potential adaptability of the Fire Scout design and its prospects for further development.

But in the nearer term, says Capt Dodge: "We still need to get these out in the field and really learn how we are going to use them in the maritime environment, because this is a fairly new capability. While it looks very much the same as what we've been doing with manned aviation there are some nuances and differences that we really need to explore, get them used at sea, [learn] how people are asking for them and take the next step in refining it."

The Fire Scout is of potential interest to the Royal Australian Navy for operation off its forthcoming Future Frigates and Offshore Patrol Vessels. Defence's Integrated Investment Program (IIP), released in 2016, lists the planned acquisition of a ship-based tactical UAV.

"To improve the situational awareness of ships on operations, we will acquire a new tactical unmanned intelligence, surveillance, and reconnaissance aircraft system that will complement other sensors and systems by extending the area able to be held under surveillance," the IIP reads. "These systems will be progressively introduced over the decade to FY 2025-26. They will be able to operate from a range of vessels of varying size, including the Future Frigates and patrol vessels."

Elsewhere the IIP also notes that the Hobart class Air Warfare Destroyers will also embark "tactical unmanned systems".

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Australian innovators recognised at Avalon

Four Australian innovators were presented with Aerospace Australia Industry Innovation Awards at Avalon on Wednesday afternoon.

The winners include a Melbourne company that, with the government's Defence Science and Technology Group, has become the prime contractor for corrosion management on the global F-35 Joint Strike Fighter fleet; a Brisbane company that has adapted CSIRO research to link a technician working on an aircraft with an expert a continent away using virtual reality and wi-fi; and a young researcher who has been conducting ground-breaking multi-national research into repairing carbon-fibre composite aircraft structures.

The Innovation Awards, including SME Innovation Grants and Young Innovator Scholarships worth $10,000, were presented by Avalon Airshow organiser Aerospace Australia Limited chairman Air Marshal (ret'd) Geoff Shepherd in a ceremony at the Avalon Airshow innovation theatrette.

The winners are:

- Defence Industry National Innovation Award: BAE Systems Australia and DST Group
- Civil Industry National Innovation Award: TAE Gas Turbines Limited
- Civil SME Innovation Grant: Thomas Global
- Young Innovator Scholarship for Civil Industry: Jarrod Hayes-Griss, Advanced Composite Structures Australia and RMIT University.

"Although highly prestigious awards for excellence in engineering, industrial design and business already exist, ours were the first – and as far as we're aware remain the only – national awards to recognise and reward the efforts and achievements of innovative Australian companies and individuals in the aerospace industry," said Avalon 2017 CEO Ian Honnery.

The fact that entrants were so eager to submit entries for the 2017 Aerospace Australia Limited Industry Innovation Awards is a reflection of both the quality and ambition of Australian companies and the growing prestige of these awards."

The National Innovation Award winners were presented with engraved glass boomerangs, symbolising the inventiveness of Australia's first peoples and their unique contribution to aeronautical history. The boomerangs were designed and made by Wathaurong Glass Arts, an indigenously owned and managed cooperative in Geelong.

The winners of the SME Innovation Grant and the Young Innovator Scholarships were presented with cheques for $10,000 each as rewards for their efforts and a small financial contribution to further innovation and the development of professional skills.

"Our purpose as a foundation is to promote the development of Australia's industry capacity in the fields of aerospace, defence, maritime and IT so we're putting our money – literally – where our mouth is," said Honnery.

"The fact that the awards have been won by such high-quality candidates speaks for the quality of the individuals, companies and organisations making up Australia's civil and military aerospace industry."

Roketsan takes aim at Australian opportunities

Turkish firm Roketsan is making a very serious pitch at the Avalon Airshow to promote long-range stand-off missiles to be carried by the new F-35 Joint Strike Fighter.

The company is hoping that Australia and other F-35 partner nations will buy its missile, a variant of the SOM (stand off missile) already in service with the Turkish Air Force aboard F-16 and upgraded F-4E aircraft.

"It has four variants. SOM-J is specifically designed for the F-35 internal weapons bay," says Roketsan project manager Sevsay Aytar Ortac, speaking at the Avalon Airshow on Wednesday.

"We are hoping all JSF partners will use SOM-J to fill the capability gap of F-35."

Turkey is also acquiring F-35s. Fitting the missile inside the weapons bay rather than placing it on a wing hardpoint means F-35 retains its full stealth capability.

SOM-J has a range of 250 kilometres with guidance by GPS, INS and terrain navigation. It also has Link-16 capability for mid-course targeting update or mission abort.

Roketsan says SOM-J is a next generation precision missile designed to be low observable, precision and able to be used in all weather against defended high value, stationary and moving targets on sea or land.

Chairman of the Roketsan board of directors Emin Alpman said most of their products were combat proven in the current fighting in the Middle East.

That includes MAM-L, an unpowered laser-guided munition designed to be released from UAVs, and 2.75 inch laser-guided rockets. The company manufactures a diverse range of munitions, including a Hellfire equivalent and guidance kits for Mark 81 and 82 bombs.

Aytar Ortac said Roketsan formed a teaming agreement with Lockheed Martin missiles and fire control division in 2014, working together to develop, market and produce SOM-J.

"As far as we know the Australian Air Force would like to fill this capability gap. There are only two options and one of them is SOM-J," she said.

The other contender for an F-35 standoff missile capability is Norwegian firm Kongsberg, with its JSM (Joint Strike Missile). Norway is also buying the F-35.

Roketsan is an Ankara-based Turkish firm which was founded in 1988 to manufacture rockets and missiles for the Turkish armed forces.

This is an updated and corrected version of the story which appeared in the print version of the Avalon Show Daily. *We apologise to Roketsan and Lockheed Martin for the inaccuracies in the original piece.*

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One careful owner – Defence releases military sales catalogue

Defence Industry Minister Christopher Pyne has released a new Australian Military Sales Catalogue as the first step in formulating a brand new Defence Exports Policy, hot on the heels of the new Defence Industry Policy Statement and the government's announcement of a new grants program to drive local innovation in military related technologies,

As the Australian Defence Force (ADF) progressively upgrades and replaces its equipment, it becomes necessary for the Department of Defence to dispose of old equipment. Instead of simply relegating valuable assets to regional scrapheaps or recycling centres, it has been recognised that there are more positive opportunities to dispose of surplus equipment in a more orderly manner, and in a way that delivers more value to Australia.


A RAAF PC-9/A at Avalon.

For example, the Government announced just prior to the Avalon Airshow that 10 refurbished Army Bushmaster Protected Mobility Vehicles had been sold to the Republic of Fiji to enable its Military Forces to support United Nations peacekeeping missions at the Golan Heights and in Syria. Prior to being deployed by Fiji to form part of the force protection mix that protects UN Observers, the subject vehicles will be fully overhauled, serviced, inspected and repainted in Australia to ensure they are fully operational and reconfigured to meet Fiji's specific requirements.

In another recent defence exports example, approval was secured for the sale of C-130H Hercules transports to Indonesia for $15 million, however, two refurbishment contracts attached to the sale terms & conditions saw work generated in Australia valued in excess of $100 million.

Regular opportunities to export surplus Australian military assets have now been aggregated and published in the latest update of the Australian Military Sales Equipment Catalogue. The new Catalogue lists surplus equipment available for export by Defence domain, including Bushmasters, the M113AS4 armoured personnel carrier and ASLAV light armoured vehicle.

In the air domain the catalogue lists the sale of up to 63 Pilatus PC-9/A training aircraft (which are soon to be replaced by the new-generation Pilatus PC-21), plus spares.

"The Pilatus PC9/A is a turboprop, tandem seat training aircraft primarily used by the RAAF for advanced flying training, flying instructor training and Joint Terminal Attack Controller training," the catalogue reads. "The PC9/A entered RAAF service in 1987 and was also used by the RAAF aerobatic team for public displays. Two aircraft have been upgraded to a modern glass cockpit configuration and another four aircraft are fitted with smoke grenade dispensers to facilitate Air Combat Controller training."

Also listed are spare parts from the Navy's soon-to-retire Sikorsky S-70B-2 Seahawk fleet (which are being replaced by the new MH-60R 'Romeo' Seahawk). "Up to 16 aircraft available from 2017," the catalogue reads.

Other capabilities listed in the new catalogue for potential export sale include: C-130 observer platform assembly and ventilation system; C-130 paratroop door negator upgrade; C-130 cargo compartment ballistic protection; and MRH 90 pyrotechnics and heliraft stowage system.

The Department of Defence area responsible for administration of the new Australian Military Sales Catalogue is the Australian Military Sales Office (AMSO), which manages the sale and exporting of surplus ADF equipment to approved foreign government customers under government-to-government arrangements.

Approvals for the sale of military equipment from Australia is nevertheless undertaken via a process independent from AMSO to ensure appropriate governance. Some equipment will nevertheless be subject to Country of Origin Foreign Government export approvals – for instance, United States International Traffic in Arms Regulations (ITAR) – and will therefore require United States Department of State approval prior to conclusion of the export deal.

AMSO offerings in the catalogue are presented in four broad groupings:

- Available now – materiel and capability systems in the disposals process;
- Expression of Interest – materiel and capability systems still in service with the ADF, but which may be subject to intensive management if interest is expressed;
- Allied technology – Australian defence industry solutions, for which AMSO will act as the broker for government-to-government sales; and
- Other capability.

Available equipment listings are also supported in the catalogue by information sheets identifying the type, quantity, origin and availability of equipment, and including any export controls. Although not catalogued, equipment spares and support and test equipment will be available for sale as part of any major item sale or can be sold separately. AMSO says it is important to note that availability dates are a guide and may be subject to change. Further, equipment is offered on the basis of as is – where is.

Speaking at the International Defence Exhibition (IDEX) in Abu Dhabi just prior to the Avalon Airshow, Minister Pyne said the Australian Government was "determined to use the defence dollar to drive a high technology, advanced manufacturing future. This is reflected in our new approach to the sector (and) our efforts to build a new partnership with defence-industry to deliver and sustain Australia's defence capability. (It is also) reflected in our new determination to reach out to the world, to our friends and allies, to the governments we share security interests with to see how we can work together, how Australian industry and ingenuity can help with the defence of all our nations."

Pyne went on to add, "We are determined to develop the Australian Defence Force's capability to ensure our national security while strengthening the Australian defence-industry, growing exports and expanding wider high technology manufacturing across the Australian economy more generally to create new jobs and underpin our prosperity – what I call our great national endeavour. We are working towards the creation of a defence industry that can not only protect Australia's interests, but generates innovative products that can assist our friends and allies and form an export industry that supports global peace and security."

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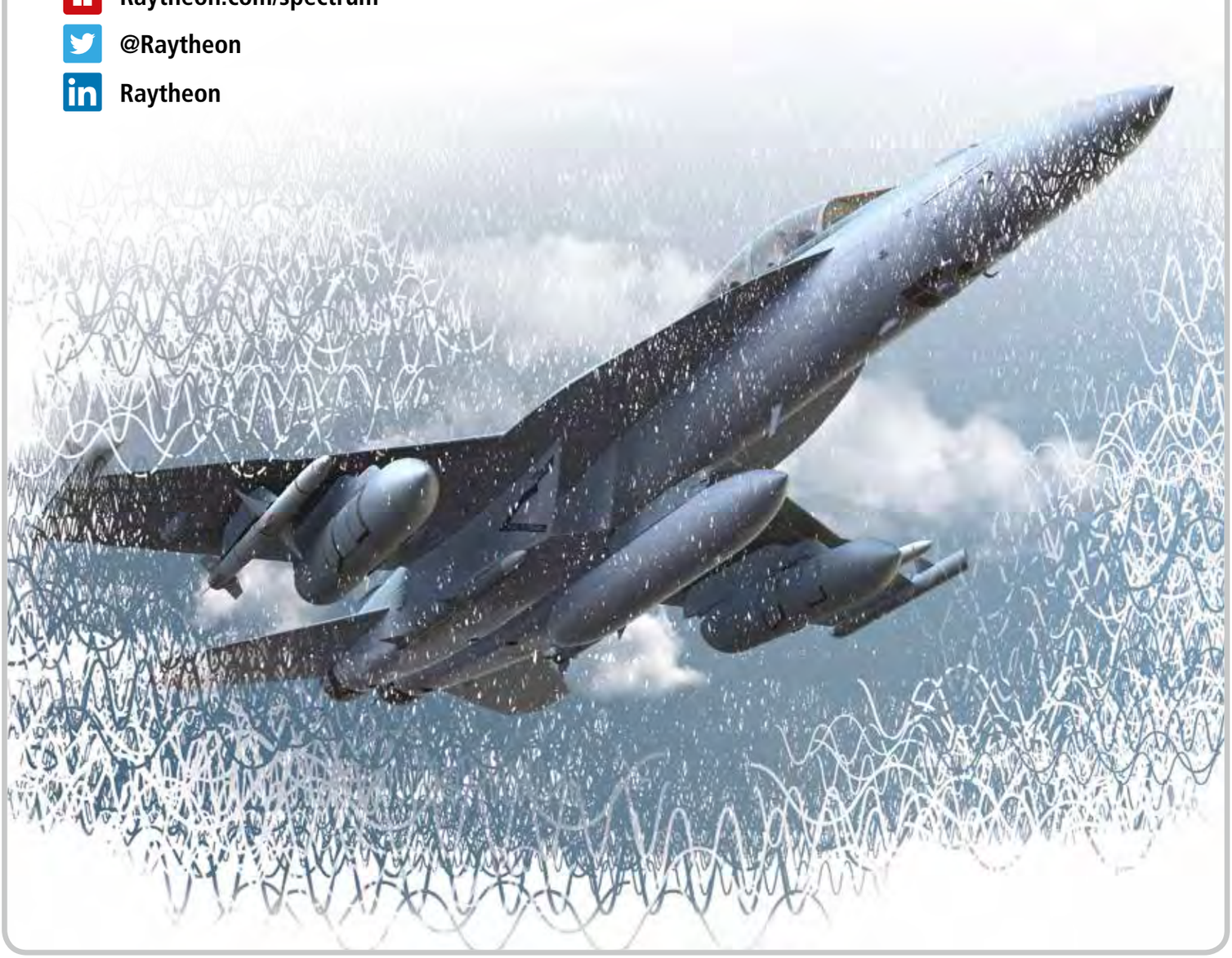

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Artist's rendering of the EA-18G *GROWLER*.®
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Tiger's future burning bright

Airbus Group Australia Pacific chief executive Tony Fraser says the troubled Tiger Armed Reconnaissance Helicopter (ARH) has a bright future amid improved reliability and serviceability rates.

The Australian Army's fleet of 22 Tiger ARH helicopters was the subject of a critical audit published in September 2016, which highlighted the program's lower than expected serviceability rates and growing obsolescence issues.

It also questioned whether upgrading the Tiger fleet provided value for money when the aircraft was slated for replacement in the middle of the next decade.

Fraser said much work has been done to support the Tiger program in recent times, which was paying dividends.

"We acknowledge we still have got work to do with Tiger," Fraser told reporters during an Airbus media briefing at the Australian International Airshow at Avalon on Wednesday.

"We'll continue to improve the supply chain and what we've done over the last two years through a dedicated taskforce was reduce the cost of ownership by 30 per cent.

"We acknowledge that's an issue still and we really need to continue to drive that down."

The Australian National Audit Office (ANAO) report found the helicopter suffered from lower than expected serviceability rates, faced growing obsolescence issues, and that the declaration of final operational capability (FOC) in April 2016 "was seven years later than planned, and was accompanied by nine operational caveats".

Under current Defence planning, according to the ANAO, the Tiger is due to be upgraded under the LAND 9000 Armed Reconnaissance Helicopter Capability Assurance Program, which was stood up in 2014, and then be replaced from the mid-2020s under plans outlined in the new Defence White Paper's Integrated Investment Program released in February 2016.

"Defence should conduct a thorough analysis of the value-for-money of investing further in the Tiger, pending the introduction of a replacement capability," the ANAO report said.

Airbus's Tony Fraser and Pierre Jaffre at Avalon on Wednesday.

Defence said at the time it accepted the ANAO recommendation.

Airbus Group Australia Pacific is a subsidiary of Airbus Helicopters.

Its activities include sales and support of Airbus Helicopters, the final assembly of 42 of the 46 MRH 90 Taipan helicopters currently being delivered to the Australian Army and Navy, and maintenance and support of a number of ADF platforms including the Tiger ARH, C-130J Hercules and AP-3C Orion.

Fraser, who started as Airbus Group Australia Pacific chief executive in the second half of 2015, is a retired Major General in the Australian Army.

He said both the company and operators of Tiger were "very comfortable now" with a machine he described as an "exceptionally manoeuvrable and capable aircraft" with great reconnaissance capability.

"Talking to the commanding officer of the regiment, they now talk about the capability they have and the things that it can do and they talk about it with pride," Fraser said.

"I can put my hand on my heart as an ex-operator who carried responsibility for our troops that I am comfortable that this nation and Defence can carry that onto operations should the government require it to do so.

"I think Tiger has got a bright future. Europe is investing in the development of Tiger and the continuation of Tiger and we will leverage off that."

Separately, Fraser said the operation of the MRH 90 Taipan was also improving.

"The availability we've had this week is the highest we've had in MRH 90. Just under 70 per cent," Fraser said.

"We will continue to work on that. Obviously, that's a high demand on a sophisticated machine still maturing and we will continue to reduce the maintenance burden on it through engineering mechanisms as well as the personnel to conduct the maintenance."

Meanwhile, Airbus Helicopters vice president sales and customer relations for Asia Pacific Fabrice Rochereau said the civil helicopter market continued to be "very difficult".

Although oil prices have risen recently (civil helicopters are used extensively in oil and gas exploration) the increases were "still not enough to see the market grow unfortunately".

CASA certifies Bell Helicopter's 505 Jet Ranger X

The Civil Aviation Safety Authority (CASA) has issued Australian type certification to Bell Helicopter for its new five-seat single turbine 505 Jet Ranger X.

"We are excited that the Bell 505 Jet Ranger X can now be delivered to operators in Australia," said Bell Helicopter's Asia Pacific managing director Sameer A Rehman. "The Bell 505 will fundamentally change the way the world views the short light single market."

Announced on March 1, the CASA certification adds to the Transport Canada Civil Aviation type certification which Bell attained on December 21. The US Federal Aviation Administration has yet to certify the type.

The Australian certification effort for the 505 was supported by Hawker Pacific, Bell's authorised Australian and New Zealand distributor.

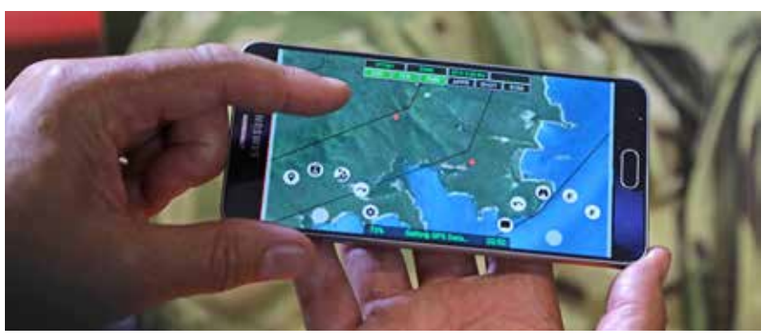
Hawker Pacific will deliver Australia's first two 505s to north Queensland's Nautilus Aviation mid-year. Nautilus will use the helicopters for tourism and light utility operations.

A further two machines will also be delivered to a New Zealand customer before year's end.

The very first customer delivery of the 505, to Arizona-based Pylon Aviation, is likely to occur at next week's Heli-Expo in Dallas, Texas.

"Australian aviation has long set the benchmark of safety, reliability and the need for aircraft to continually meet performance requirements," said Rehman. "The Bell 505 is perfectly suited for discerning Australian operators and will raise the bar by which others in this product segment are judged."

With more than 400 letters of intent (LOI) for the 505 since the design's initial launch in 2014, Bell says it saw a significant increase in order activity for its helicopter catalogue during the back half of 2016 as well as confirming a strong LOI conversion rate for the 505.



There's an app for that

There are all sorts of smartphone apps available but how about one for calling in airstrikes on really annoying people?

It could also be used for directing artillery or naval gunfire missions. Of course you need more than the app before you can start bringing down pain. You would also need a suitable laser range finder and tactical radio with data links.

Rockwell Collins Australia is developing this smartphone app as a possible alternative to the ruggedised laptop carried by Australian Defence Force Joint Terminal Attack Controllers (JTACs), the soldiers who specialise in calling down fires on enemy targets.

"What we are looking at is the Firestorm targeting system used by the ADF to conduct joint fires, calling in artillery or close air support," said Rockwell Collins Australia managing director Nick Gibbs at Avalon on Wednesday.

"We are looking now at the latest generation of that product which is moving towards an Android type platform with a much simpler user interface but still retaining the functionality to allow joint operations."

Gibbs said the Australian team members were working to develop the product line and evolve it to meet ADF needs.

For soldiers the benefits are that there's much less weight to carry around, a lower power requirement and a simplified user interface.

Although the initial product has been developed on an Android Samsung phone, final versions should be "platform agnostic". In other words it would work as well on an iPhone.

The capability will be officially demonstrated to the ADF in October.

"We are continuing to evolve the capability and over the next few years we should be able to roll out our full capability. It has been developed for a number of different customers around the world and not just Australia," Gibbs said.

Rockwell Collins supplied the army with the Firestorm JTAC system in 2015 under a phase of Land 17. The company is based in Sydney and employs 75 people on a range of projects including manufacturing elements of the electro-optics system for the F-35.

RUAG is at the Avalon Airshow promoting the Dornier 228, which the company says is the most versatile and advanced high-wing aircraft in its class.

"The platform itself is a workhorse; it is a multirole platform," said Martin Busser, senior vice-president for sales and marketing at RUAG Aviation.

Key features of the Dornier 228 include long range, high utilisation rates, high payload and low operational costs, the company says.

RUAG is targeting three different markets for the aircraft: special missions, such as maritime patrol; fly-in fly-out operations; and commuter flights.

"Safety is certainly a strong point of the Dornier, especially if you operate over jungle; if you operate in mountainous areas, and over water," Busser emphasised.

New team to tackle Defence Innovation grants

Leading national boutique industry assistance consulting firm – TCF Services – has assembled a team of defence-industry experts to form a new consulting practice to specifically assist existing defence SMEs, and/or potential new Defence suppliers access Defence Innovation Grants and other R&D funding support available under new Australian Government innovation programs.

Over the past 26 years, TCF Services has delivered over $2 billion in grants and tax incentives to its clients through a variety of government industry assistance programs, including structural adjustment schemes relating to the Automotive and advanced Textiles sectors.

TCF Services has since expanded its advisory expertise across all industry sectors to deliver benefits under the R&D Tax Incentive, in combination with activities that coordinate for clients their access to other Commonwealth and State innovation & export assistance initiatives spanning the National Innovation and Science Agenda (NISA) through to the new $1.6 billion (over 10 years) Defence Innovation Program.

Via R&D Capital Partners, a TCF Services joint venture, cash advances on entitlements due under the R&D Tax Incentive can also be provided to clients to help them accelerate R&D activities to achieve a greater equity valuation.

The Australian Government announced last December a formal mechanism to roll-out a major new approach to stimulating Defence innovation, principally via two new grant initiatives: The Defence Innovation HUB, and the Next Generation Technologies Fund. HUB grants of over $1.7 million have already been announced, with over 70 innovation proposals currently under consideration.

TCF Services-Defence has already started registering clients on the Defence innovation web portal, and is preparing several HUB grant proposals for clients using a proprietary seven-stage 'A to G' (Application to Grant) client engagement model. The 'A to G' model has been specifically developed for ABN-registered small to medium-sized enterprises undertaking R&D and innovation relevant to Defence, to help them more easily access the $1.6 billion of assistance now on offer.

New appointments to the TCF Services-Defence consulting practice include:

- Trevor Thomas, as strategic programs director, defence – Trevor became renowned throughout the Australian defence industry for his analysis of Defence's future capability requirements, when after publication of the 2009 Defence White Paper he distilled the entirety of the Australian Defence Force's Future requirements into a single wall chart. Trevor has since replicated this work for the 200+ projects in the 2016 Defence Integrated Investment Program (IIP), with the resulting analysis tool providing an invaluable asset for TCF Services-Defence to advise clients on innovation likely to have the highest alignment to future Defence priority needs.
- Gerry Bluett, as director, defence industry – Gerry is a reputable and long-term player in the Defence business space, and brings to TCF Services-Defence an intimate knowledge of emerging technologies relevant to ensuring Australia's national security, as well as a range of industry and university contacts to help advance research collaborations focused on Defence's priority future capability needs. Gerry's established connections within the Defence Science community will also be critical to developing comprehensive defence innovation proposals that get to the heart of addressing the priority future capability needs of the Australian military, as outlined in the 2016 Defence White Paper.
- Jarrod Smith, as senior consultant, defence – Jarrod brings to the TCF Services-Defence team critical knowledge of the organisation and culture of Defence's Capability, Acquisition and Sustainment Group, including practical experience and familiarity with populating Defence Innovation HUB contracting templates, as well as synthesising with industry changes to intellectual property management provisions now embodied within Defence innovation HUB grant contracts.

In undertaking their work for clients, the TCF Services-Defence team will also have access to the wider resources of the TCF Services group, including PhDs in physics, chemistry and mechanical engineering, along with other highly qualified consultants with IT, science, IP, accounting and legal qualifications.

"The benefit of this base of expertise to clients will be reflected in the more substantive distinction of experimental activities within the technical descriptions of Defence innovation proposals, which in parallel will be supported by investigative work to ensure the highest alignment with Defence future capability priority needs," TCF Services managing director, Gerry Frittmann, said.

Refer to www.tcf.net.au for further information.

Gulfstream goes where the commercial airlines don't

While there are plenty of commercial airline options for those whose business requires travel from Europe to Asia, that is not the case everywhere around the world.

For example, corporate executives face limited air links when flying between China and Africa, or Asia to South America.

The choice these folks face is either to undertake a multi-stop itinerary that could involve hours in transit or putting a potential business opportunity in the too-hard basket and staying home.

Gulfstream regional senior vice president for international sales Asia Pacific Roger Sperry offers a third option. A business jet.

The Savannah-based aircraft manufacturer boasts some of the longest range business aviation aircraft in the world, including its flagship G650ER that is on display at the Australian International Airshow at Avalon this week alongside sisterships the G550 and smaller G280.

And with all the necessities for modern business women and men – high speed internet, conference facilities, sleeping areas – Sperry says aircraft such as the G650ER with its 7,500nm range when cruising at Mach 0.85 can pave the way for opening up new ventures in faraway lands.

"It gives corporations the confidence to expand their business and to be there face to face," Sperry said on Wednesday.

"You can take a look at a CEO and a management team and say what is it worth per hour of their time and if you can save on a long-range trip an hour or two then that goes to the bottom line.

"We've got companies in Asia that will do business in Africa, they will do business in South America and what this does, it gives them an aircraft that has far better range on it which makes them more efficient."

Gulfstream has 18 aircraft in Australia and New Zealand, including five of the ultra long-range G650ER variant that Sperry expected would grow in popularity in the period ahead as current owners trade up to larger, more capable business jets.

"What we are seeing in Australia is there is starting to be a larger number of these aircraft coming down here to replace competitor airplanes if you will, the older Gulfstreams, the Brand Xs, just because of the capability of the aircraft," Sperry said of the G650ER.

Sperry said Australia was an important market for Gulfstream, which in 2016 established a full-time field representative in Australia and currently had about $5 million worth of spare parts in the country and $50 million in the wider Asia Pacific region.

"The local market is good. We are very optimistic about the market," Sperry said.

"We are placing an emphasis in this market. If we didn't believe in it and we weren't optimistic we wouldn't be going to that expense."

Sperry said Gulfstream was making good progress on its two new aircraft programs the G500 and G600, which were both launched in 2014.

The G500, which has a maximum range of 5,000nm and seats up to 19 people, had its first flight in May 2015 and there were currently five aircraft in the test fleet, including one with a full production interior. The program has accumulated about 2,350 hours in the flight test program, with certification planned to take place before the end of 2017.

Meanwhile, the 6,200nm-range G600 has so far clocked up about 150 hours since its first flight in December 2016. The second flight test aircraft took to the skies at the end of February, when it reached an altitude of 51,000 feet. Gulfstream expected the G600 to receive certification before the end of 2018.

The G500 and G600 feature a number of technological advancements such as new interactive sidestick controls, eliminating the yoke seen on other Gulfstream models.

"The projects have been going extremely well," Sperry said.

"The bottom line – we are ahead of schedule."

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