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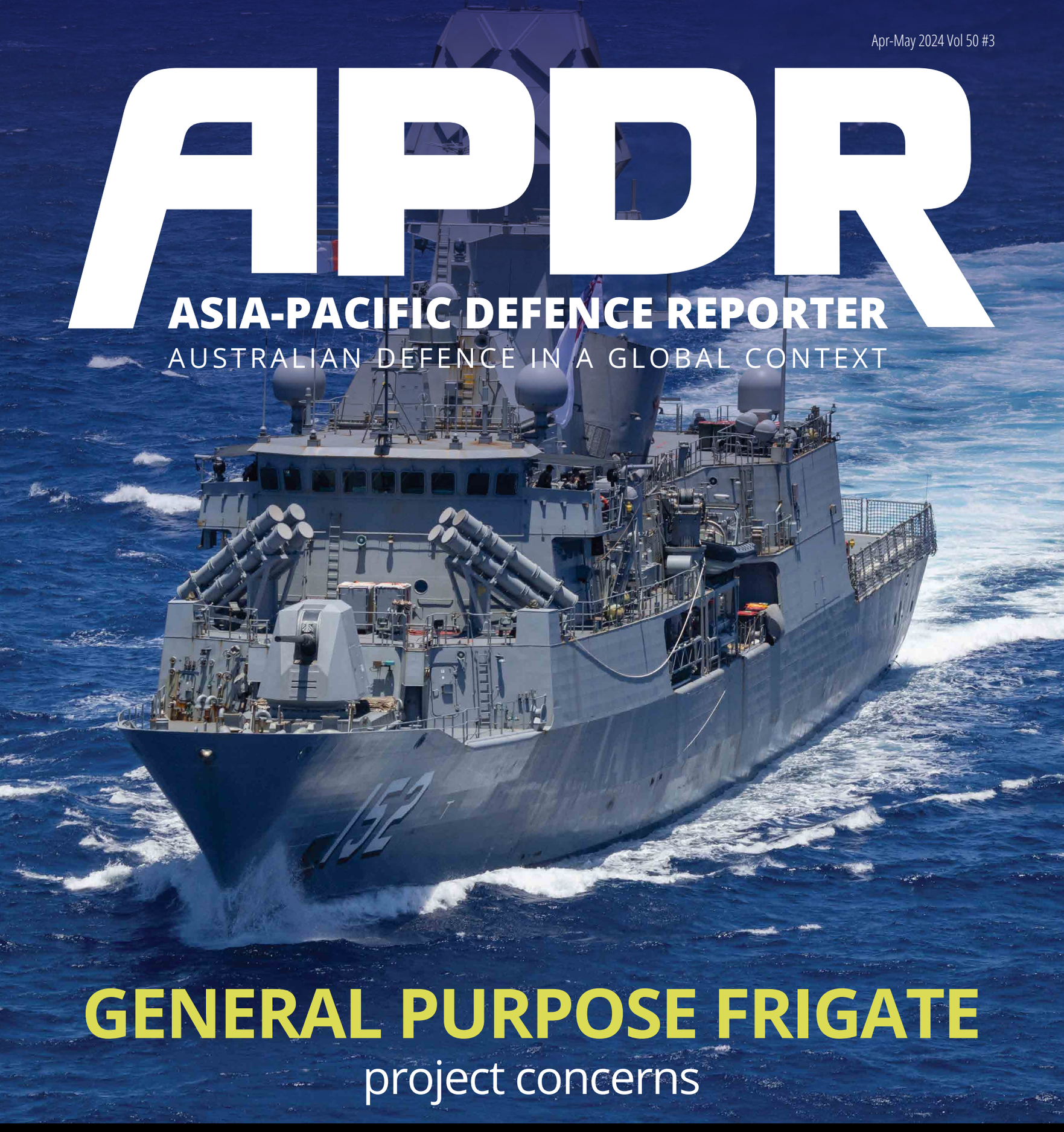
APDR

ASIA-PACIFIC DEFENCE REPORTER

AUSTRALIAN DEFENCE IN A GLOBAL CONTEXT



GENERAL PURPOSE FRIGATE
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An unblinking eye on Australia's horizon.

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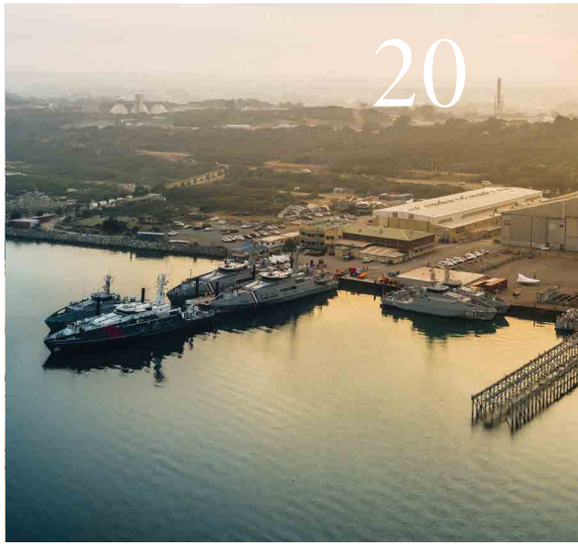

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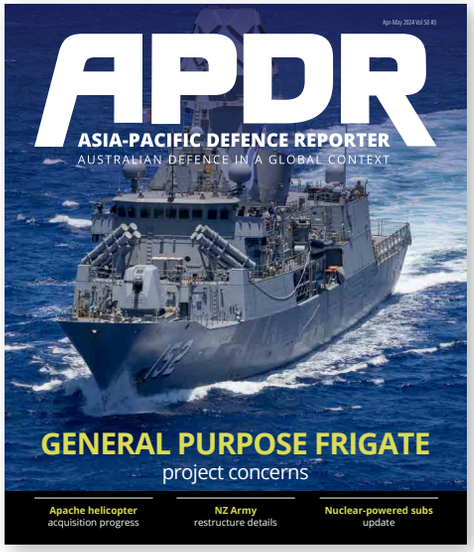

Cover description: HMAS Warramunga underway at sea during a trilateral maritime cooperative activity between the Australia, the United States and France. (DoD photo / Leo Baumgartner

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Nothing particularly new in the National Defence Strategy

Kym Bergmann // *Canberra*

A constant surprise is not only the frequency with which governments re-announce things but also how these are often reported in the media as being new and exciting. On April 17 Defence Minister Richard Marles simultaneously released the National Defence Strategy and the Integrated Investment Plan (IIP), neither of which was particularly new, let alone revolutionary.

Much of the subsequent coverage was about how Defence funding is receiving a huge boost and the ADF will be far more powerful, able to protect us from an undefined enemy presumed to be China. This is basically a reprint of the government's news releases and speeches and overlooks the fact that either most of the details are already known, or the promised funding increases are loaded at the back end of the 10-year period covered by the IIP.

The proposed lift in Defence expenditure to 2.4% of GDP by 2033-34 is a hope, it is not a cast-iron commitment as Mr Marles is fond of re-stating. Perhaps he genuinely does not know how the budget process works because – strictly speaking – governments fund activities one financial year at a time, namely the one they are presently in. Everything else is less certain and that level of ambiguity increases further into the future you go.

In the IIP, funding is listed as Approved and Unapproved – and many commentators lump it all together. Approved means: yes, you can start spending it; Unapproved means: for planning purposes only, you can assume that you will be allowed to spend it. However, even Approved projects can be cancelled, and two very pertinent examples are the Attack class submarine project and AIR 7003, the acquisition of MQ-9B armed drones. Both were certainties until they suddenly were not.

The most obvious disruption to any plan is a change of government. All incoming administrations are entitled to thoroughly review commitments made by their predecessors and change them when necessary. It's a shame Labor didn't do that with AUKUS and simply signed off on the previous government's deal, including obnoxious elements such as donating $4.7 billion to the already massively profitable US submarine industrial base, at the expense of Australian capabilities.

Part of the Minister's speech was to attack the opposition – that of course has to feature – with the claim that the Coalition was still stuck in the belief that Defence spending should remain at 2.1% of GDP. Shadow Defence Minister Andrew Hastie must have seen that one coming because within a few hours he had gone one better by saying that whatever Labor plans to spend, the Opposition will spend even more.

Incidentally, APDR has long held the view that Defence spending should be based on an assessment of what is needed rather than any particular GDP number, but that seems far too rational.

When talking Defence spending, a factor that is rarely mentioned is inflation – which is strange since it is so obvious and constant. If the Defence budget is increasing at 3% per annum and inflation is also running at 3% then the practical effect is that the actual amount being spent on the military is going up by 0%. This is one of the reasons why the current Defence spend is under pressure because, despite the denials of the government, prices are still rising faster than underlying Departmental assumptions.

Should a government really want to make an impact it would commit to increasing funding on top of the rate of inflation. That would mark a genuine increase, but that hasn't happened. Another way of increasing certainty is to award acquisition contracts. Once a thing is underway, governments are reluctant to cancel them because of perceptions of sovereign risk. The Attack class was still in the design phase when it was axed, though the case of the MQ-9B is still shrouded in a great deal of mystery.

Speaking of which, the government is now speaking of the need for an armed drone. Yes, obviously so – and AIR 7003 should never have been cancelled in the first place. Someone should pick up the phone and call General Atomics, but one cannot help but think Defence planners have in mind something else entirely, such as a quadcopter with a hand grenade.

Some examples of what was re-announced but reported as if it were fresh information included: the cancellation of a fourth F-35 squadron (that was in the DSR); the acquisition of long-range strike weapons (it's been well known for years that we are getting Tomahawk; LRASSM; and Naval Strike Missiles); and even HIMARS was mentioned for the hundredth time as something new.

At APDR we regularly grind our teeth when it comes to nuclear-powered submarines, but their acquisition is spoken of in the IIP as a certainty. We have once again tackled this in the current edition, pointing out that there are some very important preconditions to the US selling second hand Virginia class boats to us, including their rate of production needs to reach 2.33 per year – and presumably stay there – and that a future President will need to legally certify that the sale does not diminish the capabilities of the USN.

It is commendable when governments release information about the details of Defence spending, even if the numbers and categories are quite broad. It is far better knowing that than being kept in the dark. The approved spend for nuclear-powered submarines is $13 billion. As far as we can calculate, $4.7 billion is a present to US industry; $7 billion is improved infrastructure at HMAS Stirling for the rotational force of US and UK SSNs; and another $2 billion for constructing an extremely large shed at Osbourne for the future build of the British-design AUKUS submarine.

None of that money is going to the Australian defence industry, only to construction companies.

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RAAF MQ-4C (Northrop Grumman photo)

NORTHROP GRUMMAN EXPANDS AUSTRALIA MQ-4C TRITON SUPPORT TEAM

BRISBANE, Australia – 16 April 2024

Northrop Grumman Australia (NYSE: NOC) has signed a contract with L3Harris Corporation (L3HCA) for the operation and maintenance of command-and-control systems aboard Australia's MQ-4C Triton multi-intelligence uncrewed aircraft fleet. The collaboration is another milestone in advance of delivery of the platform to the Royal Australian Air Force (RAAF).

- As prime systems integrator on Triton, Northrop Grumman has collaborated with several suppliers to integrate and maintain key systems and technologies on the platform to provide the capabilities required by the RAAF.
- The Interim Sustainment Support Contract covers maintenance of the Triton's Wideband Command, Control and Communications (C3) Subsystem, which was developed by L3HCA.
- Starting this month, L3HCA will provide seven communications technicians and field service representatives to work with the Northrop Grumman team.

Experts:
Christine Zeitz, chief executive and general manager, Australia & New Zealand, Northrop Grumman: "L3Harris will support Triton's wideband C3 functionality as we work collectively to deliver next-generation technology solutions that will help keep Australia safe."

Andrew Rushbrook, managing director, L3Harris Communications Australia Pty Ltd, and regional vice president, L3Harris Tactical Communications: "L3Harris is delighted to be working with Northrop Grumman Australia to deliver this critical capability to the Commonwealth. Our wideband C3 solution for Australia's MQ-4C Triton will help establish a world-class sovereign capability."

Details on Triton:
Built for the U.S. Navy and RAAF, the multi-intelligence MQ-4C Triton supports a wide range of missions including maritime patrol, signals intelligence, search and rescue and communications relay. These aircraft provide commanders with persistent surveillance for the prediction of an adversary's behavior, enabling better planning and enhancing joint military responses.

Northrop Grumman successfully completed the first flight of Australia's MQ-4C Triton uncrewed aircraft at its Palmdale facility in California in November 2023. The flight marks a major production milestone as Northrop Grumman progresses toward delivery of Australia's first Triton in 2024. All four Australian Tritons currently under contract are progressing as planned through their production schedules.

Northrop Grumman is establishing a dynamic support environment for the progressive delivery of the Triton systems into Australia. This includes establishing ground stations at RAAF Edinburgh, South Australia and facilitating air vehicles into RAAF Tindal, Northern Territory. The company is building a highly qualified Australian workforce across both locations, leveraging extensive knowledge and experience gained supporting U.S. Navy Triton operations.

Australia is part of the Triton cooperative program and is helping shape the requirements of the system. Together, U.S. and Australian defense forces will share data collected by their respective Tritons.

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READY. RELIABLE. RESPONSIVE.

Head Land Systems, Major General Blain and Managing Director Rheinmetall Defence Australia, Nathan Poyner, signed the Production Contract for the Boxer Heavy Weapon Carrier Vehicle Export, observed by German Ambassador to Australia, Beate Grzeski, in Brisbane on 10 April 2024. (DoD photo / Justin Nicholas)

LANDMARK PRODUCTION CONTRACT SIGNED FOR BOXER EXPORTS

10 April 2024

Australia's largest ever defence export agreement has taken its next step with the signing of a production contract between the Australian government and Rheinmetall Defence Australia.

The signing of the production contract fulfils the intent of the bilateral agreement signed by the Australian and German Governments in March to export more than 100 Australian-made Boxer Heavy Weapon Carrier vehicles to Germany. This contract, worth more than $1 billion to the Australian economy, will see Boxer Heavy Weapon Carrier vehicles, built at Rheinmetall Defence Australia's Military Vehicle Centre of Excellence in Redbank, Queensland, supplied to the German Army.

This contract will secure 600 direct jobs in Queensland, in addition to the economic opportunities that will flow through the defence supply chain. The first vehicle to be built in Australia is scheduled to be delivered to the German government in 2026 with the final vehicle due in 2030.

Major General Jason Blain, Head Land Systems Division, said: "This contract will supply our security partner, Germany, with one of the most advanced armoured vehicles in the world, and supports Australia's world-class defence industry, not only here in Queensland, but throughout the national supply chain. This contract signing signals the strength of the ongoing partnership between the Australian government and our nation's defence industry, including Rheinmetall Defence Australia. Rheinmetall Defence Australia has strong, enduring partnerships with a large number of Australian companies skilled in the delivery of military vehicle capabilities."

MILLIONS IN GRANTS TO HELP INDUSTRY DELIVER PRIORITY CAPABILITIES FOR DEFENCE

16 April 2024

Eight cutting-edge small to medium-sized businesses delivering priority capabilities for Defence will be boosted by grants totalling $3.47 million from the Albanese Government.

The Defence Global Competitiveness and Sovereign Industrial Capability Priority grant programs have helped Australian businesses boost manufacturing, harness their expertise and increase jobs.

In total, 239 grants worth more than $104 million have been awarded to Australian businesses through both programs.

In recent rounds, businesses have been awarded grants to produce a diverse range of components for use by Defence. These uses include hybrid rocket motors, explosive ordnance, self-propelled artillery vehicles, radar and surveillance systems, communication systems, anti-drone technologies, robotics and submarines.

The Defence Industry Development Grant program is expected to be launched in June 2024. This new program, which is aligned with the Defence Industry Development Strategy, will have dedicated streams for supporting eligible Australian businesses to develop their capabilities in relation to sovereign industrial priorities, exports, skilling and security. More information can be found here.

The latest recipients are:

- **QPE Advanced Manufacturing** (SA) will receive $1 million to acquire and commission a five-axis computerised numerical control (CNC) mill, CNC cylindrical grinder and optical scanning system. These systems will assist the manufacturing and maintenance of components used in submarine and aerospace domains.
- **Hexion Australia** (WA) will receive $1 million to establish a hexamine production facility for use in explosives ordnance and munitions manufacturing.
- **Gilmour Space Technologies** (Qld) will receive $715,000 to design, build and commission a facility for production of high-test peroxide as a propellant for use in hybrid rocket motors in space vehicles.
- **Elexon Electronics** (Qld) will receive $338,000 to acquire and commission a solder paste inspection system and a computed tomography x-ray machine for automated inspection of printed circuit boards for defence radar and communications systems.
- **Betaserv** (Tas) will receive $146,000 to acquire and commission a suite of scanning capabilities to allow phased array ultrasonic testing of armour-plating in self-propelled howitzer artillery vehicles.
- **Sentient Vision Systems** (Vic) will receive $108,000 to acquire and integrate enhanced data-processing capabilities which support the development of artificial intelligence models for image-based surveillance and reconnaissance solutions.
- **Reach Robotics** (NSW) will receive $104,000 to acquire and commission a hydrostatic pressure chamber to conduct product validation of underwater robotic arms to a depth of 6000m as well as a coordinate measuring machine, lathe and vacuum pump for validation of precision components.
- **Droneshield** (NSW) receiving almost $59,000 to acquire two spectrum analysers for use in developing radio frequency (RF) detection and RF finding sensors used in anti-drone and electronic warfare systems.

Minister for Defence Industry, the Hon Pat Conroy MP, said:

"Small to medium-sized businesses play an important role in developing and sustaining the capabilities the Australian Defence Force needs to protect us and our national interests.

"Through Defence grant programs, the Albanese Government continues to help innovative local businesses grow, and create high-skilled, well-paid jobs.

MQ-28A Ghost Bat aircraft in a hangar. (Boeing / DoD photo)

BOEING MQ-28 GHOST BAT FACILITY A MAJOR MILESTONE FOR AUSTRALIA

9 April 2024

Boeing Australia is constructing a new production facility to manufacture the MQ-28 Ghost Bat unmanned combat aerial vehicle (UCAV), marking a major milestone in Australian aerospace manufacturing. The country's defence minister has earlier stated that the MQ-28 is the first domestically designed, engineered, and manufactured military aircraft in over 50 years, underscoring the significance of this project. Boeing's collaboration with Australia will not only secure jobs but also aim to bolster the local defence industry, which so far involves 55 companies across the country. To counter the growing assertiveness of China in the Indo-Pacific region and to promote indigenous UAV production, Australia is expected to undertake more initiatives like this over the next decade, says GlobalData, a leading data and analytics company.

GlobalData's report, "The Global Military Unmanned Aerial Vehicles (UAV) Market Forecast 2023-2033," reveals that Australia is expected to spend about $5.1 billion on the procurement of various unmanned aerial vehicles over the next 10 years. Out of which, high-altitude, long endurance (HALE) UAVs, like the MQ-28 Ghost Bat, are expected to receive up to 51% of the funding.

Aamir Chowdry, Aerospace & Defence Analyst at GlobalData, comments: "China's growing militaristic aspirations in the Indo-Pacific are exemplified by its recent security deals with the Solomon Islands to provide armed personnel for internal policing purposes. China has also proposed a similar agreement with Papua New Guinea in 2023. These events raise concern about China's growing influence in the region, which was previously considered under Australia's sphere of influence."

As the Ghost Bat can be controlled by manned aircraft like the F/A-18F Super Hornet and the EA-18G Growler, it can assume the role of a loyal wingman by venturing into potentially dangerous conflict zones far ahead of the manned aircraft. This essentially allows manned aircraft to stay outside of hostile zones, keeping the pilots safer.

Chowdry concludes: "Australia is part of a security alliance named Quadrilateral Security Dialogue (Quad) along with the US, Japan, and India. One of the objectives of this alliance, as speculated by many, is to counter any threats from China in the Indo-Pacific region. The procurement of advanced platforms like MQ-28 Ghost Bat will certainly provide an edge for the Australian Armed Forces and its allies to counter any threats and deter potential conflict in the region."

The guided-missile submarine USS Georgia (SSGN 729). (U.S. Navy courtesy photo)

AUSTRALIAN FIRM JOINS US NUCLEAR-POWERED SUB SUPPLY CHAIN

14 April 2024

The Australian government said it welcomes the initial purchase order of processed Australian steel by a major U.S. military shipbuilder, marking another important milestone in the AUKUS partnership and providing a significant boost for the defence industry and local jobs.

Australian steel manufacturer Bisalloy Steel will process steel at its Port Kembla facility for Newport News Shipbuilding, a division of HII, the largest military shipbuilder in the U.S. and one of two U.S. companies that designs and builds US nuclear-powered submarines.

Importantly, the integration of Aussie steel into the Newport News Shipbuilding supply chain paves the way for further opportunities for local suppliers and potential to create more well paid and highly skilled jobs in Australia.

This follows the announcement in December 2023 of the Australian Submarine Agency (ASA) entering into a contract with Bisalloy Steel for the qualification of Australian steel for the use on Australia's SSN-AUKUS submarines, and to increase the resilience of the trilateral supply chains.

Newport News Shipbuilding (NNS) will use the steel for training and testing with this order representing a critical step in strengthening the industrial supply base for the AUKUS program.

The Australian government is continuing collaboration with AUKUS partners and industry to develop the Australian supply chains and facilitate industry participation in the supply chains of the United Kingdom and United States. A key initiative to support this objective is the Defence Industry Vendor Qualification (DIVQ) Program which was launched in January 2024. DIVQ will help to accelerate the qualification of Australia products for entry into supply chains of our AUKUS partners.

The Australian Submarine Agency and our AUKUS partners will engage with and invite relevant industry sectors to participate, through the ASA's industry portal (www.asa.gov.au/business-industry). The portal is always open and new registrations for companies wishing to participate are being accepted daily.

Minister for Defence Industry, Pat Conroy said: "This order of Aussie steel from a global leader in shipbuilding is not only testament to the efforts of the hard-working women and men at Bisalloy but also underscores the Albanese Government's commitment to supporting local industry. This is a wonderful early example of opportunities for Australian companies to be part of the supply chains for the much larger submarine programs of our AUKUS partners. The Australian Government is committed to developing Australia's industrial base to not just build and sustain our nuclear-powered submarine program, but to strengthen the AUKUS trilateral supply chains."

SAAB DELIVERS ADF FIELD HOSPITAL TRAINING

15 April 2024

Saab Australia recently hosted ADF personnel at its Deployable Health Capability Support Centre (DHCSC) in Queensland to deliver CMR 2 Introduction into Service training to enable the deployment of Australia's new mobile field hospital capability.

Under the JP2060 Phase 3 acquisition contract, Saab and strategic partner Aspen Medical are training more than 2,500 Australian Defence Force (ADF) personnel to use flexible and modular field hospitals during military and humanitarian missions.

Saab has partnered with Philips, Aspen Medical, GDS, Marshall Land Systems and Ventia to design, integrate and deliver Defence more than 550 health modules to provide clinical care, including surgery, advanced medical imaging, trauma and intensive care services.

The project is being delivered at the 14,000 square metre DHCSC that is integrated into the ADF's Joint Logistics System and includes the state's largest Central Sterile Services Department.

"This project is a shining example of collaboration between a prime system integrator, industry partners and Defence," said Saab Australia Managing Director, Andy Keough. "Since being awarded the contract in 2020, people from all of these organisations have been working collaboratively to deliver lifesaving deployable health capabilities. The training that's being provided on-site at the DHCSC will enable the ADF to deploy flexible field hospital solutions around the world and ensure the Commonwealth gets the best value from this major investment."

ADF Commander Joint Health, Rear Admiral Sonya Bennett, with Saab Australia Managing Director, Andy Keough, during a recent visit to Saab's Deployable Health Capability Support Centre. (DoD / Saab photo)

Aspen Medical General Manager APAC Operations Mick Humphreys said Aspen was delighted to be able to draw upon its considerable deployable hospital experience in conflict zones and humanitarian crises, from Africa to the Middle East, and across the Pacific, to the benefit of the ADF. "This real-world experience plus the quality of our JP2060 team on the ground is developing best-in-class practical operator and maintenance training for ADF clinicians."


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ROKS Chungnam, FFX Batch-III launching ceremony, April 2023 (HHI photo)

Government bungles future frigate choices - updated

Kym Bergmann // *Ulsan*

On February 20 the government finally released its blueprint for the non-submarine part of the RAN, entitled Enhanced Lethality Surface Fleet. The document claimed that the number of surface combatants will be substantially increased to 26 platforms – eventually. Currently the RAN operates three Air Warfare Destroyers and eight Anzac frigates, with two of the latter soon to retire.

The number of Hunter class frigates – due to be delivered from 2032 - has been reduced from nine to six and central to the growth of the future fleet is the rapid acquisition of up to 11 General Purpose Frigates. To get them as fast as practicable, the first three will be built overseas in the yard of the designer with construction of the remaining eight transitioning to the Henderson precinct in West Australia.

As far as anyone can tell, the government's announced increase in Defence funding for the next decade of $11 billion will go mainly on these new frigates. The Integrated Investment Plan released on April 17 gives the unapproved funding for the project as between $7 billion and $10 billion – but doesn't say whether that is for 7 ships (the minimum number) or 11 (the ideal number)

The Surface Fleet report says:

The Government has directed these ships be acquired rapidly with an established international shipbuilding partner through a hybrid offshore then onshore build strategy, transitioning to the consolidated Henderson shipyard in Western Australia. Four platforms have been identified by

the independent analysis as exemplars to form the basis of a selection process for this new general purpose frigate:

Meko A-200	(Germany)
Mogami 30FFM	(Japan)
Daegu class FFX Batch II and III	(South Korea)
Navantia ALFA3000	(Spain)

The problem is that there is no such thing as a Daegu class FFX Batch III. The third batch of Korean FFX is the new Chungnam class, the first of which is undergoing sea trials and will be delivered to the ROKN in December.

To add to the confusion, elsewhere Hyundai Heavy Industries (HHI) is listed as the supplier of Daegu frigates. This is also incorrect. The designer and lead yard for Daegu class frigates – FFX Batch II – is Hanwha Ocean, formerly DSME. Construction of all eight of these ships is finished with the final one commissioned in October last year.

The Chungnam ships are larger at more than 4,000 tonnes, have a more robust construction and – most importantly – have an integrated radar mast with four fixed electronically scanned arrays. This makes them very suitable to be equipped with similar Australian naval radars from Canberra-based CEA, which have been mandated for all surface combatants.

The 3,500 tonne Daegu class have a conventional rotating radar and would have difficulty being modified for an Anzac frigate style radar mast because of the necessary increase in top weight. Modifying the Chungnam class would be simple since the mast – developed by Korea's Agency for Defence Development (ADD) – looks to be of the same overall dimensions, height, and presumably weight as the Anzac frigate configuration.

Korea has an innovative approach to naval shipbuilding that is more complex than a lead-yard, follow-yard system – though that is still an important ingredient. Everything is run by the powerful Defense Acquisition Program Agency (DAPA) – APDR has featured interviews with its former head – and it reserves the right to put the construction of some ships in a series out to tender.

For the Chungnam class, even though HHI is the designer and lead yard, ships two to four will be built by a new player, SK Oceanplant, and the final two by Hanwha Ocean. This is because SK Oceanplant underbid both HHI and Hanwha with what may prove to be a costly commercial strategy.

Both the Daegu and Chungnam class share several features such as a 16 cell VLS, 5" main gun, torpedoes and an embarked MH-60R helicopter. Either could be equipped with the Australian Saab 9LV combat management system because this would be achieved by swapping out operator consoles and racks of processors with little impact on the ship.

ROKS Jeongjo the Great KDX III Batch-II launching ceremony, July 2022 (HHI photo)

Put simply, the Daegu is good – but the Chungnam is better, and of the two designs is much closer to what the RAN needs. Hopefully it will swallow its collective pride and confirm that it meant Chungnam from HHI and not Daegu from Hanwha Ocean – though the way might be open for both companies to submit bids.

In parallel, Hanwha Ocean has offered to buy Austal, which is the presumed future builder of the General Purpose Frigates at its Henderson yard in West Australia. If successful, this would not seem to be an impediment to the company building the Chungnams there after HHI has constructed the first three in their massive Ulsan parent shipyard.

The initial Hanwha offer has been rejected, but there is no reason why it could not be resubmitted with different terms. At the very least, it signals the willingness of the company to invest in Australia, which the other bidders are unlikely to do for purely commercial reasons.

By the way, it took the author about one hour to figure out the situation in Korea looking at the ROKS Chungnam tied up at Ulsan and speaking with its commanding officer. Even this level of analysis looks to be beyond the team who wrote the independent review into the RAN surface fleet, or the team who drafted the government's response to it.

The entire process surrounding the General Purpose Frigate acquisition seems characterised by a high level of disfunction within Defence, so the confusion about which Korean design is being sought is understandable, if not excusable. Apparently, the builders of the listed designs have been blocked from having any contact with Australian entities critical to the success of the project.

This means, for example, that no discussions can take place with: CEA (radar suite); Saab Australia (9LV combat management system); or Austal (prospective builder at the Henderson Precinct). This, in turn, has given rise to speculation that if the government insists on a "Minimum viable capability" approach this will mean taking ships directly from the parent shipyard with no Australian-specific modifications.

If this happens it would be a regulatory nightmare because Australia has all sorts of domestic and international rules to adhere to – including things like Occupational Health and Safety legislation. To get the speedy delivery of ships from Europe or North Asia, presumably these would all have to be waived.

Another consequence of a "Minimum viable capability" approach would be to knock out the Koreans and the Japanese because all of those designs come with completely unfamiliar combat and communications systems – amongst other things. The combat systems tend to come from suppliers such as Hanwha and Hitachi – and while based on principles developed by the USN are likely to be different from the Saab 9LV / Aegis

The Japan Maritime Self-Defense Force (JMSDF) Mogami-class frigate JS Noshiro (FFM 3), bottom, and the Murasame-class destroyer JS Yuudachi (DD 103), top right, break away from formation with the U.S. Navy's only forward-deployed aircraft carrier, USS Ronald Reagan (CVN 76). (U.S. Navy photo by Mass Communication Specialist 2nd Class Caroline H. Lui)

combination that is now on all of the surface fleet.

The two European bidders – Navantia and tkMS – arguably have more flexibility with regard to combat systems because, strictly speaking, they could argue that there is no such thing as a parent yard baseline system.

This is because the Navantia ALFA3000 has not yet been constructed – but is a family of multifunction warships that can incorporate whatever the customer wishes. However, it should be noted that this design features a mechanically scanned radar array, rather than the CEA fixed face AESA that the RAN presumably would like to acquire.

A parallel situation exists with tkMS and the MEKO 200. The company has delivered a lot of MEKO frigates – about 70 and still counting - including the 10 Anzac class for Australia and New Zealand that are now getting long in the tooth. Some use mechanically scanned radar arrays and others – such as those of the RAN – have fixed faces, including a suite from CEA.

If the RAN were to dogmatically hold tkMS to the latest reference MEKO 200 for Egypt, that comes with a Thales combat system and a rotating AESA radar, which again is different from what one assumes to be the ideal Australian configuration.

To this mix can be added an obvious desire on the part of the RAN to get their hands on General Purpose Frigates as soon as possible to plug a looming capability gap entirely of their own making. Even a child can calculate that a ship that has a life of thirty years built before the year 2000 is approaching obsolescence quite soon. Even combat systems and hull & machinery upgrades can only go so far.

The original plan to replace eight Anzacs with nine Hunter class frigates went off the rails years ago when it was apparent that the slow delivery schedule of the latter was not compatible with the age and capability of the former. In other words, work on acquiring the General Purpose Frigates should have started at least five years ago.

But we are where we are, and the question becomes: of the five designers, who can build them the fastest? This is highly speculative, but the Koreans – both Hyundai HHI and Hanwha Ocean – would be very difficult to beat. The author has visited both yards in Ulsan and Okpo, respectively, and the scale and speed of production is extraordinary.

For example, in Ulsan the latest KDX destroyer – the Jeongju the Great – is undergoing sea trials. This 11,000 tonne Aegis-equipped destroyer has 128 VLS cells making it arguable the world's most powerful warship other than an aircraft carrier – and given its size could be more properly classified as a cruiser rather than a destroyer. It has many additional features familiar to the RAN, such as a 5" main gun and an embarked MH-60R helicopter. It also has a large, variable depth towed array.

Keel laying was in October 2021 and launch in July 2022 – a completely astonishing nine months. The overall program is also unbelievably brisk from an Australian viewpoint. Contract signature was in October 2019 and the ship will be delivered – after very extensive sea trials – in November this year. That's five years from go to whoa – and compares very favourably with the 14 years for the first Hunter class.

But there's more – because HHI have 10 huge dry docks, they can build identical ships in parallel. This means that if Australia placed an order for three Chungnam class in the very near future they could have two of them – and possibly all three – by 2028. HHI are cautious about the build time for the class because the first was not entirely under their control because they had to wait for the delivery of the radar mast from the Korean Agency for Defence Development (ADD).

What can be said is if they can build an 11,000 tonne KDX in nine months, then a 4,000 tonne Chungnam will certainly be quicker than that. It is highly likely that Hanwha Ocean could offer to do the same thing for three of the smaller Daegu class built at Okpo.

Calibrating the other designers is not easy, but of the two European yards tkMS have a reputation for speed. This is partly because of the modular nature of the MEKO design combined with typical German industrial efficiency and can design and build a frigate in just under four years, if pushed. However, it is unclear whether they would be able to produce more than one ship at a time.

Navantia and Mitsubishi Heavy Industries are for the moment less well known when it comes to speed of construction and this will come down to issues of available workforce, order book and facilities. An imponderable is that while Navantia definitely want the contract for the General Purpose Frigate, the position of MHI is unknown – and might remain that way given the Australian government's attempt to totally suppress any information about the project.

The main worry in all of this is if the RAN is compelled to take ships that do not feature a CEA radar suite and a Saab 9LV combat management system they will be substantially different from the rest of the surface fleet. This will impose a large additional sustainment cost and might in some circumstances lead to a new frigate having less capability than the 30-year-old Anzacs that are being urgently replaced.

Disclaimer: the author travelled to Ulsan as a guest of HHI specifically for the contract signing for the delivery of the submarine the ROKS Shin Chae-ho. The company has been banned by the Australian government from discussing any aspect of the General Purpose Frigate program, as have all other bidders)

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The RAN is acquiring 6 locally built Hunter Class Frigates

Geoff Slocombe // *Victoria*

After a period of uncertainty about the Royal Australian Navy's plans for new frigates, BAE Systems Australia (BAESA) was contracted in December 2018 to study and prepare to build nine UK designed but Australian built Hunter Class Frigates. Defence describes this as Project SEA 5000 Phase 1, with the initial order being reduced to six because of the Surface Fleet Review.

The Australian vessels are based on BAE Systems' Type 26 Global Combat Ship design, currently being constructed in Glasgow for the Royal Navy.

The frigates are being modified to meet the RAN's operational requirements. These modifications include incorporating the leading-edge Australian CEA phased-array radar, the Aegis combat management system, a Saab Australian Tactical Interface and the integration of the Seahawk Romeo Maritime Combat Helicopter.

Each warship will be based on an acoustically quiet hull and feature unique sonar capabilities, modular digital design and open systems architecture to facilitate through-life support and upgrades as new technology develops.

The formidable fleet is being designed for maximum versatility and flexibility in operational roles, from humanitarian and disaster relief operations to high-intensity warfare.

The ship's integrated mission bay and hangar is capable of supporting multiple helicopters, unmanned vehicles, boats, mission loads and disaster relief stores.

A launcher can be provided for fixed-wing unmanned aerial vehicle operation, and the flight deck is capable of landing a Chinook helicopter to transport land forces

BAESA subsequently accepted the brand-new Osborne Naval Shipyard in South Australia as their construction site. They have refined their processes and systems through prototyping work, and in late 2023 commenced construction of the first scheduled protection block, which will be used – along with three other blocks – in the first Hunter class frigate.

Continuous naval shipbuilding at Osborne is building the Australian shipbuilding workforce, which is growing month-on-month as a result of the Hunter Program. By the end of 2023 BAESA had more than 1,800 people working on the program, with more than 1,500 of those here in Australia.

Of special note is that this also includes BAESA employees in the firm's early careers program, which currently employs 25 apprentices, with an additional 24 apprentice placements planned by mid-2024. 29 graduates are currently rotating through the program, and a further 14 interns are working within the business.

The Hunter Frigate Building Program is anticipated to create and sustain more than 5,000 jobs with BAESA and the wider Australian defence supply chain over the life of the program, including up to 1,000 apprentice and graduate roles.

Through the Hunter program, BAESA is committed to maximising opportunities for Australian industry. Local companies are progressively being engaged to support the manufacture of the first batch of three Hunter class frigates.

BAESA has placed more than 80 contracts with Australian suppliers, with more than 30 placed for Batch 1.

More than 1,800 Australian businesses, representing every Australian state and territory, have registered their interest in working on the Hunter program through the Industry Capability Network.

Hunter Class Frigate Program progress

During the prototyping phase, BAESA say they have demonstrated new, more efficient ship-build methods and innovations and incorporated them into their shipbuilding process.

The high-level quality and productivity being achieved at the Osborne Naval Shipyard has resulted in the start of construction of the first Hunter-designed ship block, effectively recovering 13 months of schedule.

Each Hunter class frigate comprises 22 blocks, including the mast – each block is made up of between one and seven steel units.

All five Hunter Frigate prototype blocks are currently in various stages of completion, with the first two – Block 16 and Block 10 – having completed their blast and paint process by the end of 2023.

The process of building a warship like Hunter begins with the design, which has been completely digitised.

This digitisation extends to the shipyard itself, and the BAESA supply chain.

A connected shipyard, connected worker, connected ship, and connected fleet all serve to support an enduring sovereign industrial capability that will embed a continuous naval shipbuilding capability within Australia.

The BAESA strategy to maximise opportunities for small to medium Australian suppliers to participate in the build and sustainment phases has been a success. By early 2024 more than 1400 Australian companies had pre-qualified for inclusion in the Hunter Class Frigate supply chain.

Aegis Combat Management System

The Australian Hunter Class Frigate Aegis combat management system has an Australian interface developed by Saab Australia.

The main elements are:

- An Australian designed and built CEAFAR2 phased array radar;
- Systems integrated to support Australian weapons;
- Can operate an integrated Seahawk Romeo Maritime Combat Helicopter;
- Australian communications systems; and
- Meets Australian legislative requirements.

In Conclusion

Of particular interest is that BAESA's strategy will provide the Australian Defence Force with its high levels of anti-submarine capability within a few short years.

Initial Operating Capability for the first Hunter Class Frigate, HMAS Flinders, is expected to be reached in 2031.

HMS Anson (BAE Systems photo)

Australia to spend at least $13 billion on nuclear-powered submarines in a decade

Kym Bergmann // *Canberra and Ulsan*

While still short of a lot of detail, the government's Defence Integrated Investment Program released on April 17 at least provides rough orders of magnitude about where all the money is going. Table 1 shows that the approved funding for acquiring nuclear-powered submarines from next financial year out to 2033-34 is $13 billion.

Unapproved funding is a further $40 billion - $50 billion. Other government statements, or information dragged out under questioning, shows that a breakdown of the approved spend is:

- $7 billion on expanding HMAS Stirling infrastructure to support the rotational deployment of US and UK nuclear-powered submarines
- $2 billion on a new facility at Osbourne for the eventual construction of the British-designed AUKUS submarine
- $4.7 billion to the US submarine construction industry base as a still poorly explained gift or entry fee to allow the possible purchase of

ROKS Shin Chae-ho (SS-086) during sea trials (HHI photo)

second-hand Virginia class submarines in the 2030s.

That's $13.7 billion – or $700 million beyond the approved funding – that will give Australia almost zero (0) additional military capability.

The works at Stirling – already behind schedule – involve pouring a lot of concrete for bigger and stronger wharves for nuclear-powered submarines. It also includes about 1,000 houses for the crews and support staff for the rotational deployment of US and UK boats from 2027 onwards.

The one part of the plan that might be considered a direct benefit to the RAN is the construction of a huge dry dock able to accommodate either a Virginia or Astute class SSN in need of work. Of the two, Virginias are the largest at 10,000 tonnes and 147 metres in length. Presumably the designers of the facility will make it even bigger so that it can also take surface ships such as the 149-metre-long Hunter class.

However, the bad news is that this part of the work is lagging and a site within, or near, the Henderson shipbuilding precinct hasn't even been selected. When work might start – let alone finish – is anyone's guess.

The planned future submarine construction facility at Osbourne is a very large shed that will need to be outfitted with overhead cranes and all the other paraphernalia that goes with heavy engineering. It won't be needed until the late 2030s by which stage work should have commenced in the BAE Systems lead yard at Barrow-on-Furness in Scotland.

Using Freedom of Information Legislation, the 'West Australian' newspaper was able to extract the information from the Australian Submarine Agency that to support the rotational deployment – in reality no different from permanent basing – a nuclear-capable dry dock will be needed by 2032. Why his harmless piece of information needed to be concealed from the public is anyone's guess.

APDR knows very little about constructing a dry dock, but its presumably much more complicated than digging a big hole next to the ocean and pumping water in and out of it. The fact that work hasn't even been planned should be a concern, but like many things associated with nuclear-powered subs – such as storing the highly radioactive components at the end of their lives in Australia or deciding on the location of the mythical East Coast base – it will be waved off as a problem for the future.

In releasing the IIP, Defence Minister Richard Marles repeated the assertion without qualification that the first Australian-flagged Virginia class submarine will enter service in the early 2030s. As we wearily point out: a) it will be a second-hand submarine; b) a sale will only be possible if the US is building new Virginias as a rate of 2:33 per year; and c) the President at that time – presumably in the late 2020s – will have to legally certify that a sale to Australia will not diminish the capabilities of the USN.

On point b), concerns continue that cutting Virginia production to a single submarine in 2025 will interrupt the current expansion of the US industrial base. One of the strongest supporters of AUKUS in the form of Congressman Joe Courtney from Connecticut repeated his warnings, coincidentally also on April 17, writing:

"Consistent funding for two VA-class submarines per-year is absolutely necessary to promote the long-term health of the domestic shipbuilding industrial base and the workforce on which it relies. This industry cannot thrive as a feast-or-famine endeavour. A clear market signal of consistent two-per-year funding is absolutely vital to maintain and grow the necessary highly-skilled workforce and promote the industry partnerships needed to ensure success in efficient submarine production."

Speaking of consistency, these realities are being consistently ignored in Australia and the political situation in the US is being misrepresented. Whenever a question arises about a possible Donald Trump Presidency and the impact on AUKUS, the refrain is that the deal has bipartisan support.

In the US system, it is the President who appoints the Secretaries of Defense and then the individual services, and in the context of AUKUS the person responsible for the Navy will be key. No one – and we mean no one – has a clue about who President Trump will appoint to these positions should he be elected in November, but if they don't like the look of AUKUS the deal won't happen – even if it has the support of every single member of Congress.

Meanwhile, in a parallel universe:

On April 4 South Korean shipbuilding giant Hyundai Heavy Industries contractually delivered yet another submarine as part of an attack class program that started in 1994. This is the 21st submarine in a planned series of 27 SSNs that will make the Republic of Korea Navy (RoKN) an even more formidable force than it already is.

Named the Shin Chae-ho – after a nationalist scholar and author (1880-1936) known in particular for his resistance to Japanese occupation – the 3,500 tonne boat is among the world's most advanced conventional diesel-electric submarines.

South Korea has been building submarines in tranches, and Shin Chae-ho is the final one in

what is known as the KSS-III Batch 1 program. The even more advanced KSS-III Batch 2 boats are under construction and the first is on track to be delivered on schedule, in 2028 – though some sources say it might even be delivered two years earlier than that.

A final group of KSS-III Batch 3 submarines is being designed. These are expected to be even larger than Batch 1 & 2, which are already the western world's biggest conventional submarines.

The six Batch 1 & 2 boats all have Vertical Launch Systems for a variety of land attack missiles, as well as six torpedo tubes. All have Air Independent Propulsion giving underwater endurance of +20 days – and the Batch 2 submarines will have improved performance using lithium-ion batteries rather than the lead-acid ones used in earlier generations, including those of KSS-III Batch 1.

For people still struggling with the concept of lithium-ion propulsion, don't think of KSS-III Batch 2 submarines in outdated terms – think of them as an underwater Tesla that only needs to come close to the surface every three weeks for a quick recharge of its battery pack before silently submerging and continuing its mission.

In contrast, nuclear-powered submarines – such as the ones Australia is rather optimistically hoping to buy – are propelled by giant steam engines that rather than burning coal as a heat source instead use decaying highly enriched Uranium 235.

But getting back to the launch of Shin Chae-ho (SS-086), the ceremony was attended by representatives of nine nations, including Australia's Director General Submarines, CDRE Michael Jacobson.

According to HHI, the submarine has been built with the latest fuel cell, lead-acid battery propulsion system, and state-of-the-art noise control technologies, boasting significantly improved covert mission capabilities and survivability.

The company says it can be armed with guided missiles, torpedoes, underwater mines, and can fire SLBMs (Submarine Launched Ballistic Missiles) from its vertical launch system, making it a key asset for the marine based underwater kill chain system.

The Shin Chae-ho has gone through a 30-month test and evaluation period since its launch ceremony in September 2021. After being delivered to the ROK Navy, the submarine will go through force integration and join missions later in the year.

"I am glad to have this opportunity to share the excellence of our submarines, which have been delivered on time, with the world. We will continue to work with the Government as part of our 'Team Korea' effort to stay fully committed and make tangible results in K-defense exports." said Wonho Joo, Senior Executive Vice President of HD Hyundai Heavy Industries' Naval & Special Ship Business Unit (NSSBU).

The RoK adopted a crawl-walk-run approach to the SSN project. KSS-I submarines used mainly German technology; KSS-II saw a transition to far greater use of Korean technologies – and the Batch 3 boats are almost entirely Korean. This has been the result of a 30-year cooperative strategy between local industry, the RoKN and the powerful Defense Acquisition Program Administration.

The Virginia-class fast-attack submarine USS North Carolina (SSN 777) returns to Joint Base Pearl Harbor-Hickam. (U.S. Navy photo by Cmdr. Amelia Umayam)

As well as the submarines themselves, most of the weapons, sensors and various subsystems are almost entirely Korean.

Coincidentally, the RoK and Australia both decided in the mid 1980s to embark an ambitious whole-of-nation endeavor to develop an SSK fleet. At first, Australia sprinted ahead with the launch of the first Collins in 1993. Its specification was for the world's quietest and most heavily armed conventional submarine, and after well-publicised teething problems – especially with the US combat system – it did indeed achieve those goals. Even today it represents a formidable, if ageing, capability.

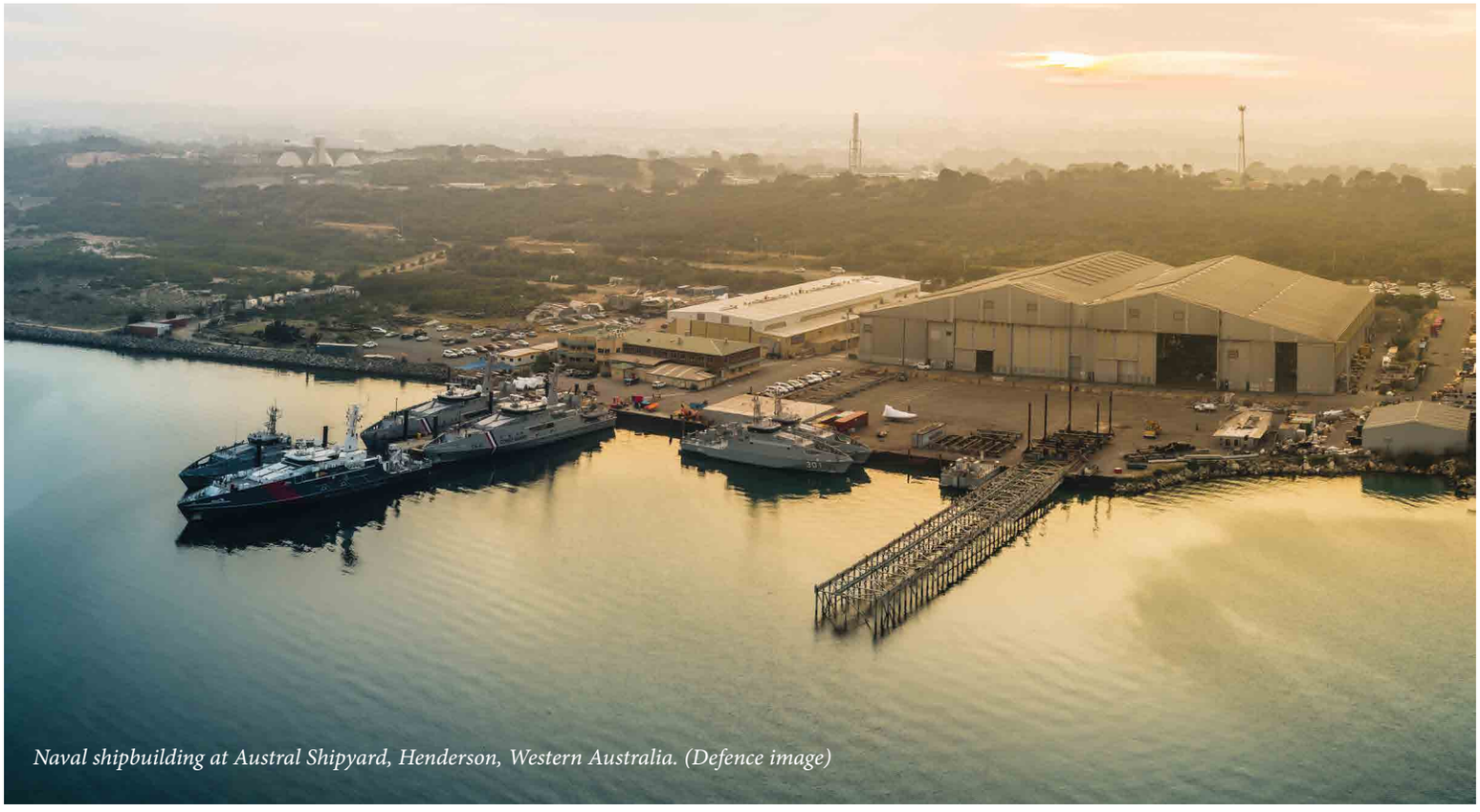
But by the early 2000s the pathways diverged. In Australia a sort of torpor set in, encouraged by the nationalisation of the Australian Submarine Corporation at the start of the decade, turning it into an extension of the Department of Finance. The senior management of the company spent several years obsessing about its re-privatisation, which was on track to occur in 2009.

This effort was one of the few – possibly only – failures of then Finance Minister Lindsay Tanner. When the proposed sale of ASC was brought to Cabinet by Tanner for consideration – for which he was an enthusiastic advocate - Prime Minister Kevin Rudd's national security advisor whispered to him "PM, the Americans won't like that." And that was that. And here we are today.

The program to replace Collins known as SEA 1000 – approved in the 2009 White Paper – spluttered and fizzled with a prolonged display of collective incompetence, first involving the purchase of submarines from Japan; then the French-designed retro technology Attack class; and now of course the disastrously expensive exercise to purchase nuclear-powered SSNs from the Anglosphere.

Meanwhile, South Korea plowed on in their relentless, thorough, professional way – and indeed will have 24 SSKs on schedule by 2030 and the full complement of 27 a few years after that. With earlier submarines well into refit and upgrade programs, Korea has also managed to create an entire ecosystem centred on Hanwha Ocean and HHI with sales to Indonesia and potentially a number of other countries including Poland and Canada.

The contrast with Australia could not be starker.



Naval shipbuilding at Austral Shipyard, Henderson, Western Australia. (Defence image)

Shedding a Tier for the Defence Industrial Base

A Special Correspondent // *Canberra*

The long-awaited Defence Industry Development Strategy like so many of its predecessors before it, promises industry that through a series of reforms (like the everlasting goal of improving contracting and yet another series of 'high priority' capabilities for developing industry) a brave new world will emerge (beyond the term of this Government, no doubt) where doing business with Defence will be slicker and more profitable than ever before.

Unfortunately, for those of us who have seen it all before, DIDS reads like a mix between a political manifesto and a Defence graduate program research paper. No doubt the intent is laudable. However, the dubious combination of another inexperienced Minister and naivety in the drafting team have led to the new DIDS repeating many of the mistakes of history.

"Australia's defence industrial base is an ecosystem of businesses", it pronounces – a blinding statement of the bleeding obvious. And then it proceeds to "broadly categorise" the entire industrial base into three distinct and arguably separate tiers – as viewed from and by Russell Hill.

DIDS is right; Defence industry is an ecosystem of businesses. But it is not a 'Defence ecosystem', nor is it characterised by neatly tiered companies. Defence industry is an ecosystem of businesses integrated into Australia's wider industrial landscape and operating dynamically across the spectrum of supply changing their capability and capacity along with their technical and commercial approach in response to constant change in the business environment.

The reality is that today's service provider is tomorrows prime as much as today's maritime systems supplier is tomorrow's land platforms manufacturer. Such is the nature of a modern vibrant and innovative industry base. And that is exactly what Australia needs. More importantly it's what Defence really needs if it is to capture the maximum value and return on investment

in the Defence industry sector.

Therefore, by following the age-old model of 'boxing companies into rigidly defined tiers, each one with preconceived concepts of capability and capacity' DIDS is not only completely misrepresenting industry as a whole it is also potentially depriving Defence of the long-term benefits inherent in the reality that industry operates outside a false paradigm that has its origins in the cloisters of Russel Hill.

Unfortunately, today's "broad categorisation" is tomorrow's 'carved-in-stone' business model. Across Defence, all industry is now neatly designated into a tier and, therefore, can be assessed and evaluated in perpetuity by definition rather than by realistic assessment as and when it is relevant to do so. In a typically rigid (but somewhat lazy) public policy approach, 'things are 'by the book' and 'no further correspondence will be entered into'.

The result is that DIDS delivers yet another excuse for not talking to Australian-owned Defence SMEs because Defence must only engage with Tier 1 companies as only they can deliver the capability and capacity that Defence is looking for and that can be neatly rationalised under the concept that only Tier 1 companies offer value for money in terms of risk management.

The DIDS business model thinking is totally 1980s – based around ideas of the pressing need that to do its business Defence only needs to acquire exquisite and expensive platforms, systems and products. Ones that can be delivered exclusively by primes and large OEMs (most of which are overseas companies, but some of which have a local operation) at hugely eye-watering cost and over greatly extended timeframes.

In such a regime little attention is paid to smaller companies offering innovative solutions (albeit perhaps lacking some of the deeper aspects of integration and interoperability that dominate many Defence requirements sets) and commercial agility…the sort of companies that typify Australia's wider industrial base.

Ultimately, the DIDS completely misrepresents the true nature of Australian business and, also the reality of the world around us. It is simply ignorant to ignore the fact that companies from across the ever-changing and endlessly dynamic spectrum of industrial operations can and will provide significant capabilities to the ADF as and when circumstances dictate. They don't need to be 'tiered' they need to be 'supported' – and ultimately the only support that matters is purchase orders to Australian business.

Contemporary military operations are evidence of the fact that companies of all levels and not necessarily 'Defence specific' companies are providing equipment right here, right now. In the Black Sea simple Uncrewed Surface Vehicles have changed the nature of the maritime conflict, inflicting shipping losses, eliminating the risk of an amphibious landing and forcing re-basing of major ship assets.

It is simply not the case that some of the most lethal and successful UxVs being used by Ukraine forces came from what the Australian bureaucracy terms 'Tier 1 suppliers'. Systems such as Ukraine's 'Sea Baby USV' are said to have come from collaboration with specialists from the Ukrainian Navy and 'assorted' private companies".

Reading between the lines and observing the rapid development (including crowdfunding), it seems that Sea Baby was delivered by an amalgam of companies operating across a number of levels of capability and capacity and working under 'fit for purpose' contracting regimes appropriate to prevailing circumstances. That's what DIDs needs to reflect…not some archaic structure convenient to the Canberra bubble and relevant nowhere else. There are countless other examples in contemporary conflict.

Defence needs to work hard and focus on finding a way to accept, encourage and coordinate the delivery of capability directly from the entirety of the Australian defence industrial base, not wasting its time writing one pointless industry policy or strategy after another. Defence doesn't drive defence industry; the national industrial landscape drives it. Defence is a beneficiary of that landscape not the architect of it.

The bottom line is while the country may need a national industrial strategy Defence does not need one of its own. Sure it can have its own 'Defence annex' in a national plan but only when that annex is crafted by industry experts in an industry specific department, not by Defence itself. Defence has better things to do and it should focus on doing them.

Part of that is acquisition but that is much less about sustaining an industrial base than it is about using the one that will evolve naturally if you have the bureaucratic courage to let it do so. Defence needs to have conviction in the fact that if it gets on with the business of acquiring optimal equipment from the optimal supplier it will create the optimal Defence industry base to meet its needs.

The message is 'stop trying to drive the bus and let the bus driver take care of that for you'. And, for the record, acquisition isn't about changes to contracting, it's about a meaningful and sustainable long-term capability plan that is executed without prejudice. But getting Defence to that point is space is a challenge in itself.

Australia is a small nation, and it needs to maximise the return from of every resource at its disposal, It does not need to generate one artificial construct after another that imagines Defence industry into apparently neatly ordered tiers that fits with some unrealistic view of what 'Utopia' might look like.

Should Defence feel that it needs an industry policy then make it an internally facing document. Something that recognises how industry actually works and describes how Defence can use that for its own needs but without getting in its own way. A policy that discusses how Defence staff might understand better how industry runs and what it needs, how to better engage with industry at all levels without being hamstrung by nonsense like ill-defined and poorly executed probity policies and how it can communicate its needs to industry much better and in a way that complements contracting methodologies rather than complicating them.

Its all about exchange of information between Defence and industry because whether we like it or not both sides operate far differently and in ways where neither side can or will understand fully.

In conclusion, DIDS is yet another attempt by Defence to describe 'industrial Utopia' not as it is but as Defence sees it. It fails to comprehend that Defence and industry operate synergistically but very much separately and both with their own particular drivers. There is no doubt the drafters of DIDS gave the Government exactly what it wanted to see.

Job well done…a glossy full of statements about 'what' and nothing binding in the form of 'how'. Something that can either be implemented over a period of several terms of Government or thrown away when the convenience of a change of Government happens. A policy where ultimately nobody is held to account for anything, and nobody is hurt through it all… nobody except industry and the national interest in innovation and value for money in Defence contracting, that is.

Australia prepares for AH-64E Apache deliveries

Kym Bergmann // ***Singapore***

The Apache series of attack helicopters are undoubtedly the most prolific and in-demand machines of their type in the western world – and possibly the entire globe. The AH stands for Attack Helicopter, and they started life in the 1970s when conflicts such as the Vietnam War demonstrated the effectiveness of heavily armed and well protected helicopters in combat. To date around 2,500 have been built – and production continues.

Author with US Army AH-64E crew (Boeing photo / D. Sidman)

The 10-tonne, twin engine helicopters first saw action during the US invasion of Panama in 1989, but the first significant display of their capabilities was during Operation Desert Storm in 1991 when a total of 277 were deployed to Saudi Arabia. One of their first missions was successfully crippling part of the Iraqi air defence network in the first few minutes of fighting and they went on to destroy around 500 ground targets – principally armoured vehicles – during the 100-hour ground war.

Since that time, they have been used highly successfully by the US and allies such as the UK in every major conflict since. These include deployments to the Balkans, Afghanistan, Iraq, and Libya. They are used extensively and continuously by Israel. As a heavily armoured flying tank, they have proved resistant to most ground fire – though not totally impervious – and even when heavily damaged usually managed to return safely.

Produced by Boeing, the latest in the series is the AH-64E model, first fielded in 2013, which itself is the subject of continuous upgrades and improvements. They have been sold to 20 operators in 18 countries (counting Australia), including in our region: Indonesia; Japan; Singapore and South Korea.

Their armament consists of an M230 30mm chain gun located on the chin, and a variety of pylon-mounted munitions such as Hellfire anti-tank guided weapons (ATGW). It can also carry Hydra 70mm unguided rockets as well as other munitions including Stinger air-to-air missiles and – more recently – the Spike non-line-of-sight ATGM. In addition to night vision systems, it can also use a mast-mounted Longbow radar for both surface and air target detection and engagement.

While it had been expected for some time, official notification of the FMS case for 29 AH-64Es occurred on June 3, 2021, with an estimated value of US $3.5 billion, or AU $5.4 billion. The large package included items such as 64 T-700 engines; 18 Longbows; 29 pilot night vision sights – and a variety of weapons, including Hellfire missiles and 2,000 advanced precision kill weapon systems – another name for Hydra rockets fitted with laser guidance kits

APDR was fortunate enough during the Singapore air show to speak with an Apache subject matter expert in the form of Terry "TJ" Jamison, Boeing's Director of Business Development, Attack Helicopter Programs. He has flown numerous US Army combat helicopter types and is a former Apache pilot and unit commander, seeing action in a number of engagements including Mosul in Iraq during 2007-8. At one time in Afghanistan, he had 72 Apaches under his command.

For the Australian program, Mr Jamison explained that Boeing will start delivering

Apaches late in 2025 to support the declaration of Initial Operational Capability (IOC) in 2026. The last of the helicopters should arrive by late-2027.

The Australian AH-64Es are almost an identical configuration to those of the US Army – which has advantages for interoperability and interchangeability. The pilot and maintainer training were also covered by the original FMS case and will initially be conducted by the US Army. Boeing will supply the Longbow Crew Trainer simulation device for the aircraft.

Mr Jamison also summarised the Australian industry component of the program that is in two separate sections. The first are four companies that will supply components and parts for the Australian-specific helicopters. They are Cablex; Ferra; Mincham; and Axiom Precision Manufacturing. The second group of two companies will be supplying components into the global Apache fleet going forward – including future new orders - and they are Cablex (again) and Thomas Global Systems.

Thomas in particular is a beneficiary, manufacturing multi-function displays that will go into all new Apaches but could also retrofit a large number of older models. For example, the US Army still has approximately 85 AH-64D models that could be upgraded.

According to Mr Jamison, there are currently around 1,300 Apaches flying and the company expects that number to grow with nations such as Poland showing a strong interest in them. He described the importance of interoperability and interchangeability, saying:

"I saw this as a Brigade commander in Afghanistan, where we had Dutch Apaches operating that needed some maintenance support – they were due a 500 hour overhaul – and the US Army was able to do that for them. We could do that because we operated exactly the same aircraft."

He also emphasised that Australia will not just be acquiring an excellent helicopter but it is also part of a US Army major modernisation effort that will bring extra capabilities at no cost. He

Apache v Tiger – why not keep both?

In APDR we have argued that it is not necessary to replace Army's 22 Tiger Armed Reconnaissance Helicopters because they have about 15 years of flight life left in them. However, that argument has been lost – and just as the government rushed to dispose of Taipan utility helicopters to replace them with Blackhawks, there are worrying signs that it is planning something similar for the Tiger fleet.

However, there are some alternate scenarios. The first and simplest is to keep Tiger and the add the new Apache AH-64E to the mix. More than a year ago APDR put exactly that idea to Chief of Army, Lieutenant General Simon Stuart, who replied that while the concept had some merit there simply wasn't the budget to keep two fleets. Memo to government: if Army can't find more money give them an extra $100 million per year.

That figure is arrived at by looking into the ADF support budget for 2023-24, and Tiger doesn't even make it onto the ADF Top 30 Sustainment Project list. There are three other activities listed at $96 million each, so the Tiger fleet is obviously below that.

The amount of $100 million is a rounding error in a Defence budget North of $50 billion per annum – and growing - that would give Army a lot of extra firepower and would also ensure no capability gap before the final Apache arrives.

If that isn't to everyone's taste, how about converting some or all the Tigers into an uncrewed configuration so that they can work with the new Apache fleet in that fashion – after all, we are told MUM-T is the way to go. Prime contractor Airbus Helicopters has done a lot of work in the uncrewed / optionally crewed space – and since the Tigers won't run out of airframe life until about 2038, why not take advantage of that?

Finally – start planning now to donate them to Ukraine, assuming that country is interested in receiving them. Defeating the Russian invasion looks to be a medium-term proposition – and there is a lot more that Australia could, and should, be doing. Strangely, it looks like Defence is trying to spike that idea, hinting to Ukraine that the Tigers won't be available until 2028.

This is news for everyone, since officially they will retire next year. Could it be that Defence is trying to discourage Ukraine because they have already cooked up a secret disposal strategy? We will continue to watch this space in the hope of heading off another Taipan-like fiasco.

started with some history:

"We started with the Alpha model, built during the Reagan administration for the purpose of fighting a near-peer adversary on the plains of Europe. It was a very effective aircraft – and we really saw that play out during Desert Storm.

"As the battlefield became more complex, we had to update the aircraft. The Alpha model was before the advent of glass cockpits, so we had to transition to those and other modern technologies for the Delta model, which was a significant leap forward. We changed a line-of-sight- engagement capability to a non-line-of-sight system with the addition of a fire control radar.

"We kept adding even more technologies to the Deltas – I know, I used to fly them – and the result was that they became heavy and as a result we lost the sportscar performance we had with the Alphas. As a result, the US Army moved to the Echo model and what that did was move to a brand-new redesigned fuselage that takes advantage of composites and improved aerodynamics with a much cleaner airframe.

Thomas Global Systems to design and manufacture cockpit avionics for the global fleet of Boeing AH-64E Apache helicopters.

In March 2023, Thomas Global Systems secured a multi-year supply contract from Boeing to design, qualify, and manufacture high-integrity cockpit avionics for the global fleet of AH-64E Apache helicopters. This significant partnership encompasses key components such as the Keyboard Unit and Enhanced Upfront Display, strategically aimed at updating display technology with the latest Active Matrix LCD (AMLCD) system that maintains NVIS compliance. The transition to an AMLCD display enhances visibility and readability and ensures seamless compatibility with night vision systems.

Keyboard Unit and Enhanced Upfront Display (Thomas Global photo)

As the program progresses from its initial design phases, Thomas Global, in collaboration with Boeing, successfully completed the Critical Design Review in March 2024. Subsequently, the prototype is anticipated to be unveiled later this year. As a Total Apache supplier, the cockpit avionics upgrades pioneered by Thomas Global Systems will be supplied to aircraft within the Australian fleet, as well as US domestic and international Apache fleets.

The manufacturing process under the contract will take place across Thomas Global's advanced manufacturing facility at its Sydney headquarters and its engineering and production lab in Irvine, California. This strategic approach ensures maximum integration of Australian Industry Capability content within the Program, further bolstered by the expertise and flexibility of Thomas Global's Irvine engineering team.

Thomas Global Systems has secured an Australian Modern Manufacturing Initiative (MMI) grant to fortify the contractual obligations earmarked for expanding its advanced production facilities in Western Sydney. This expansion initiative aims to not only facilitate the seamless delivery of the specified program but also cater to the production of additional mission-critical equipment for the Defence Industry. This includes high-integrity Cross Domain Solutions tailored for the Army's combat vehicles, specialised gunnery displays designed for United States Infantry Fighting Vehicles, and Immersive Tactical Trainers engineered to enhance training exercises across a spectrum of armoured vehicles including Abrams and Boxer.

With a proven track record of supplying Design Assurance Level A avionics to major commercial airlines such as Delta Air Lines, Lufthansa, LATAM, FedEx, Japan Airlines, and SkyWest Airlines, alongside military operators including the Royal New Zealand Air Force and US special mission platforms, this contract stands as a resounding vote of confidence in Thomas Global's expertise in avionics engineering and advanced manufacturing capabilities.

Later this month, representatives from Thomas Global Systems will visit Boeing's Apache production facility in Mesa, Arizona.

Thomas Global's CEO, Angus Hutchinson said, "This successful collaboration with Boeing Defense underscores our global competitiveness and the trust placed in us to deliver critical cockpit avionic technology to major US military programs. The program not only emphasizes the strength of our partnership but also highlights the confidence placed in us by our US and international counterparts,

"The use of composites reduced weight and added strength. Probably the most important was to change the Delta model transmission and drive train that couldn't handle the full power of the T-700-701D engines, so we had to down rate them and reduce their output. With the Echo model we have an entirely redesigned drive train and transmission that is lighter and stronger, which unlocks the full power of the engines.

"That meant a return to the sportscar-like performance that we had in the original model. The difference is dramatic."

Mr Jamison explained that the US Army plans to operate AH-64Es out to the 2050s or even 2060s. With this in mind, Boeing has started internal work on the Apache Modernisation Program with the company investing in researching future technologies to be ready for the time when they are needed on the battlefield.

In addition, Boeing is under contract with the US Army for the design work for a move to new engines that are even more powerful.

Asked if the cancellation of the US Army's FARA helicopter project - the Future Attack Reconnaissance Aircraft – meant funds have now been freed up to spend on Apache, Mr Jamison explained:

"FARA was never about replacing Apache. You have to remember that an Aviation Brigade in a US Army Division has an attack battalion and an air cavalry squadron. Prior to 2013, those air cavalry squadrons had Kiowa Warriors – in other words, scout helicopters.

"Those Kiowas have been retired because they were at the end of their life. They were old and outdated. The intent all along was to put whatever was developed for FARA into those air cavalry squadrons – but because of the timeline the US Army put Apaches into that role."

Put simply, FARA was never intended as an Apache replacement program.

Speaking of the distinctive Longbow radar – the disk on top of the rotor mast – Mr Jamison said it does a 5-10 second scan of the battlefield out to 16km. Its position means that the helicopter can hide behind a structure or piece of terrain so that the radar can be used while the helicopter is masked from detection. This means that the radar could complete a scan and then also disappear from sight, processing information for over 220 targets.

The radar scans 360 degrees and as well as an air-to-ground mode also can be used in an air-to-air role. This means it can also detect and target a variety of airborne threats, including quite small drones – a major contributor to situational awareness.

"FARA was never about replacing Apache. You have to remember that an Aviation Brigade in a US Army Division has an attack battalion and an air cavalry squadron. Prior to 2013, those air cavalry squadrons had Kiowa Warriors – in other words, scout helicopters.

Underneath the radar is a passive sensor able to detect enemy emissions, particularly from air defence systems and match those to a threat library. If a threat is detected, it is automatically and immediately moved to the top of the priority list and highlights it, so the pilot is aware of the situation. Because it is tied to the radar it allows the helicopter to assign a weapon and immediately fire at the threat.

The threat data can also be transmitted via the Longbow network or Link 16 to other friendly platforms in the area. Those platforms – including other Apaches – don't need radars of their own but can use the incoming targeting information.

The threat data can also be transmitted via the Longbow network or Link 16 to other friendly platforms in the area. Those platforms – including other Apaches – don't need radars of their own but can use the incoming targeting information.

The threat could then be eliminated by multiple missiles coming from different directions thanks to numerous non-line of sight capabilities.

AH-64E is also equipped with the latest iteration of Link 16 – that is much easier to use than previous versions. This means that the helicopter is also a command and control platform, making it – as the US says – the quarterback of the battlefield. Additionally, the version Australia will receive has folding blades and comes with marinization kits similar to UK Apaches, which are deployed on amphibious support ships similar to the RAN's Canberra class.

Another capability is MUM-T (manned-unmanned teaming), which is the new thing for combat helicopter operations. While the concept has been around for a while, experience in current conflicts such as the Russian invasion of Ukraine shows that the future will be made up of a large variety of uninhabited systems combined with conventional crewed ones. The future of warfare is a hybrid one – and Apache is designed to work in that sort of complex environment.

A final area that Mr Jamison chose to highlight are two sensors on the nose of the aircraft. The first is the Modernised Target Acquisition Designation System (MTADS); the second is the Pilot Night Vision System (PINVis). These are independent sensors and generally the pilot uses PINVis and the Gunner uses MTADS. However, they are interchangeable, and aircrew can swap access if they wish.

Both sensors can be used for targeting and also flying the aircraft. If the pilot sees a target he can, with the push of a button, slew the MTADS – or the gunner can take over the PINVis and vice versa. Mr Jamison explained that this is a very flexible combination that has been used extensively in theatres such as Iraq and Afghanistan.

He concluded with comments about how robust and survivable Apaches are, describing combat damage that left him amazed that crews were able to walk away. He said a combination of built-in attenuating features from the landing gear all the way up to the pilot's seat – combined with armour around the crew and critical mechanical components – made the helicopters exceptionally robust.

After the discussion we went to the flight line in the blazing Singapore heat to meet the long-suffering US Army crew, who provided the author with the chance to walk around the aircraft and sit at the controls. Apart from their obvious general enthusiasm for the Apache, they were very positive about its reliability and its sensor mix, indicating that they thought Australia had made a good choice.

(Disclaimer: APDR would like to thank the US Army Apache crew for their helpful, knowledgeable and friendly tour of their helicopter)

MUM-T makes gradual gains in Asia-Pacific

Gordon Arthur // ***Christchurch***

Manned-unmanned teaming (MUM-T), although a relatively new acronym, is a concept that has been cherished for quite some time. The US Army defines MUM-T as "the synchronised employment of soldier, manned and unmanned air and ground vehicles, robotics and sensors to achieve enhanced situational understanding, greater lethality and improved survivability". With such advantages to be gained, who would not want to employ MUM-T as a facet of their military?

By 2028, KAI hopes to have achieved a technology demonstration whereby an FA-50 testbed will control up to four unmanned Adaptable Aerial Platforms. (Gordon Arthur)

Unmanned systems have long been touted as the ideal solution to remove human beings from dangerous tasks, e.g. pilots flying over hostile territory. In one sense, a unmanned aerial vehicle (UAV) operator on the ground is performing MUM-T. However, the scope of the concept goes far beyond that, for militaries want to glean data from and pass data to their unmanned systems, for them to possess a certain degree of autonomy so they can overcome tactical challenges, to speed up the decision-making process, to achieve greater synergy and achieve a force-multiplying effect. This requires advanced technologies for navigation, data sharing, communication, artificial intelligence (AI) and networking of multiple platforms.

The most obvious use of MUM-T is coupling manned aircraft with UAVs. A scale of five interoperability levels permit an operator in a manned platform to do the following: verbally communicate with the UAV operator (level 1); view UAV sensor imagery in real time (level 2); control UAV sensor payload orientation (level 3); control UAV position via waypoint navigation (level 4); and assume complete UAV control, e.g. take-off and landing (level 5). The AH-64E Apache was the world's first fielded aircraft to provide crewmembers with level 3 and 4 interoperability.

MUM-T comes with challenges, however. Crews already busy flying their own craft are susceptible to task saturation and excessive workload when asked to control others too. Operators therefore need technologies as a pilot-vehicle interfaces and sensor management aids to manage multiple UAVs.

Because MUM-T evolved as something that could be useful to warfighters, rather than being developed specifically to solve a problem, its employment has been rather drawn out. Technological capabilities are advancing, but formalisation of tactical doctrine lags behind, with most militaries yet to prescribe proper tactics, techniques and procedures for MUM-T. Most current efforts apply to the aerial realm, and this is where the greatest advances have been made to date. This article therefore examines some examples of aviation-related MUM-T in the Asia-Pacific region.

South Korea

Asia-Pacific Defence Reporter spoke to a Korea Aerospace Industries (KAI) executive about the firm's MUM-T ambitions. Indeed, manned-unmanned teaming is a centrepiece of KAI's marketing strategy: "For the FA-50 and KF-21, we are not selling the current capability of the aircraft. We are at the same time trying to sell the value of this aircraft to do something else, something greater in the future, by giving them an idea of the MUM-T concept and a fifth-gen combat system; in other words, a system of systems. There is high value once they purchase the FA-50. With the capability, gradually year by year, they can operate this aircraft to be perfectly prepared for the future battlefield. That's the great, great story we can sell to our customers."

KAI showcased a twin-seat KF-21 Boramae fighter at Seoul ADEX 2023. This twin-seat type

is critical to South Korean MUM-T plans, as the back-seat pilot could control unmanned aircraft. However, this capability will only reach fruition in the future KF-21 Block III variant. The official told APDR: "We have a very ambitious plan to create a system of systems for the future, and this is a combination of manned aircraft like the KF-21 and FA-50, together with unmanned combat vehicles as unmanned fighters, and also small-sized UAVs."

KAI has a four-phase roadmap to develop what it calls the Next-Generation Air & Space Combat System. Although it would appreciate foreign partners to help compress development time, KAI recognises that it has to move now. "...We have to act to get in front utilising the technology we have accumulated for the last 30 years. We have very strong confidence that we can create, design and manufacture any other platforms. There's no doubt."

Phase one commenced last year, which KAI and the Republic of Korea Air Force (ROKAF) should complete in 2025. They are collaborating to develop requisite MUM-T technologies and produce the Adaptable Aerial Platform (AAP). The latter is a recoverable and cost-effective UAV that might act as decoy; perform electronic warfare; conduct intelligence, surveillance and reconnaissance; or carry a small warhead for strike missions. These AAPs could even be launched from cargo aircraft like KAI's conceptual MC-X.

China's MUM-T plans doubtlessly involve its most advanced fighter, the fifth-generation J-20, which could act as a mothership for loyal wingmen. (Gordon Arthur)

Phase 2, continuing till 2028, will culminate in a technology demonstration where an FA-50 testbed will control up to four AAPs. Once successfully demonstrated, the MUM-T capability will transition onto a twin-seat KF-21 as a third phase. This stage, lasting till about 2037, will also see KAI advancing MUM-T capabilities to reach an engineering and manufacturing design stage for an additional kind of unmanned fighter that is more advanced than the AAP, i.e. a loyal wingman.

KAI is also exploring the use and control of air-launched effects from its Light Armed Helicopter. This combination was displayed at Seoul ADEX 2023. (Gordon Arthur)

KAI's goal is that one KF-21 fighter could control four loyal wingmen, each of which controls four AAPs. After processing the mathematics, the results are astounding! A single manned KF-21 would be controlling four loyal wingmen and 16 AAPs – in other words, the combat power of one KF-21 has mushroomed into 21 individual aircraft. One can see that a squadron could possess an inordinate amount of combat power.

The fourth and final phase will see KAI achieving mastery of MUM-T after 2038, a point where a true system of systems is attained. The hyperlinked Next-Generation Air & Space Combat System would feature multiple sensors and platforms such as satellites, airborne early warning aircraft, fighters and UAVs interoperating seamlessly.

This plan is truly ambitious, but one challenge is incrementally developing the necessary AI for such complex networks. "Within a very short time, they have to exchange a huge amount of data, so secure communications and software... are necessary for this future battlefield," the representative explained to APDR. "Eventually, AI command – in other words AI pilots in the aircraft, maybe in the backseat, we don't know – will replace some parts of the air combat centre.

India's current MUM-T research and development efforts will use HAL's Tejas Light Combat Aircraft as a mothership. (Gordon Arthur)

With these very special capabilities and features of the future system, the AI can make a decision within a very short timeframe, indeed in the blink of an eye. This short procedure will give us a huge advantage, considering our enemy is not well prepared for this future battlefield." This was a reference to North Korea, which cannot hope to compete technologically with its southern nemesis.

KAI is also exploring MUM-T on rotary-winged aircraft like the Light Armed Helicopter (LAH). It has signed collaborative agreements with overseas entities in order to close technology gaps, one example being Israel Aerospace Industries (IAI). KAI has released promotional videos showing the LAH releasing air-launched effects – four loitering munitions from canisters mounted on stub wings – as well as Surion helicopters launching a swarm of quadcopters. KAI is also developing AI-enabled software so an LAH co-pilot can operate unmanned systems without need of a third operator in the rear cabin.

Incidentally, Korean Air Aerospace Division (KAL-ASD) was selected in August 2022 as preferred bidder to develop the 10.6m-long KUS-LW loyal wingman for the ROKAF as part of national MUM-T efforts. Korean Air stated, "The squadron of UAVs will not only support and escort a manned aircraft, but will also be able to perform its own missions including surveillance, electronic interference tactics and precise shooting."

After demonstrating with an FA-50 testbed, the twin-seat KF-21 fighter from KAI will form the core of the ROKAF's MUM-T capability. (Gordon Arthur)

Elsewhere in Asia

Japan, for all its technological expertise, has been rather slow in adopting military unmanned systems. Nonetheless, it is attempting to make up for lost time as it partners with Italy and the UK in the Global Combat Air Program (GCAP) sixth-generation fighter programme. As part of this future capability, Japan is cooperating with the USA on AI for GCAP loyal wingmen. Washington DC and Tokyo signed an agreement on 22 December 2023 to initiate joint research into the behaviour of unmanned aircraft operating alongside manned fighters. The USAF is calling the programme Overwhelming Response through Collaborative Autonomy, its purpose being to merge "state-of-the-art artificial intelligence and machine learning with advanced unmanned air vehicles".

China remains extremely secretive, but MUM-T is certainly part of its goal as demonstrated in promotional material and specific platforms that emerge into the public sphere. Douglas Barrie, Senior Fellow for Military Aerospace at the International Institute of Strategic Studies, told APDR, "Considering the breadth of general defence aerospace R&D, I'd be surprised if they weren't doing this, because they seem to be doing absolutely everything else!"

Chinese manufacturers have showcased loyal wingmen such as the twin-jet FH-97 that has a stealthy fuselage and sizeable internal weapons bay. Another clue comes from the world's first twin-seat stealth fighter, a J-20 variant destined for the People's Liberation Army Air Force. A prototype performed its maiden flight in late 2021, and the second crewman could potentially handle the tremendous flows of networked information that modern fighters can generate and receive, including controlling loyal wingmen. One also wonders whether China is developing a "bomber buddy" for its mysterious H-20 stealth bomber, which nobody has yet seen. It is known the USAF is working on an "interoperable" aircraft that accompanies the new B-21 Raider bomber, so China might be doing the same.

Indian MUM-T ambitions are far less vigorous, but the Aeronautical Development Agency is working with Hindustan Aeronautics Limited (HAL) to integrate MUM-T into the Tejas fighter. Early trials are to occur on the LCA-Navy variant for maritime strike and beyond-visual-range aerial combat missions, but the technology might eventually find its way onto a twin-seat Tejas Mk1A. HAL commenced development

of its own family of loyal wingmen – Combat Air Teaming System (CATS) Warrior – in 2018. However, rapid progress is not anticipated since India is struggling even to develop a viable indigenous medium-altitude long-endurance UAV. It was recently announced that the Rustom-2/TAPAS UAV program had fizzled out in favour of a consolidated effort on the Archer-NG – so MUM-T represents a long and arduous road for India.

Australian MUM-T efforts have great potential. The RAAF is forging ahead with the semi-attritable MQ-28A Ghost Bat being developed by Boeing Defence Australia, while the RAAF can synergise MUM-T technologies when coupling the P-8A Poseidon and MQ-4C Triton for maritime patrol tasks. Also, when the Australian Army begins receiving AH-64E Apaches, this will boost the potential for MUM-T cooperation.

AH-64E Apache attack helicopters can be fitted with either the Longbow radar (as here) or an MUM-T antenna, but not both at the same time. (Gordon Arthur)

Implications

Countries like South Korea are eager to leverage MUM-T, because they face manpower crises with too few conscripts amidst ageing populations. Similarly, MUM-T makes economic sense for waging war, since it balances the tensions between cost and the need to generate combat power. Unmanned systems, whether reusable or disposable, are always cheaper than manned ones. Economic factors come increasingly to the fore in attritional battles like those where Ukraine is battling the Russian invader.

Barrie told APDR: "It's that ability to generate combat mass, at an affordable price potentially, and in a way that you can accept a loss and attrition rate that you never could with a crewed combat aircraft." Indeed, the option to maintain exquisite, manned aircraft at a more survivable stand-off position is valuable from both a cost and human life perspective. Adjunct aircraft with varying levels of sophistication appearing in the sky gives opponents more targets to deal with too.

Furthermore, there is probably not an air force that would willingly give up its manned fighters in order to obtain adjunct aircraft. Of course, bean-counting politicians might impose this, but it would be like robbing Peter to pay Paul. The capability of the MUM-T concept is immense, but is still a long way from being fully tapped.

Indeed, technical challenges need to be overcome, such as the vulnerability of data links in high-end environments where the radio frequency spectrum is contested. If operators rely upon data links to control aircraft, this will be problematic. Widespread MUM-T adoption requires a mix of software reliability, software predictability, public acceptance and legal issues. Indeed, public acceptance of "killer robots" – of truly autonomous systems – raises all sorts of ethical questions. An AI-enabled network may result in an extremely swift kill chain, but militaries are reticent to allow machines to decide when to perform kinetic strikes without humans in the loop.

MUM-T will be implemented gradually, first in low-hanging fruit, before the technology climbs farther up the tree. Fighters might start dispensing small UAVs, but top-end deployment of loyal wingmen and the like will take longer. The technology does look promising, and Asia-Pacific is gradually crossing the valley from experimentation towards operational fielding.

Boeing Defence Australia is working with the RAAF on the MQ-28A Ghost Bat, which presently forms a central pillar in Australian MUM-T efforts. (Gordon Arthur)

Out of the ashes: NZ Army regeneration will see new levels of New Zealand-Australian cooperation

Tim Fish // ***Auckland***

As the NZ Army embarks on an effort to rebuild capability after Covid-19 there is an opportunity to establish a much deeper partnership with the Australian Army. Levels of collaboration could match those of the NATO alliance in the Euro-Atlantic and even be the first in the world to achieve real interchangeability between forces.

New Zealand LAVs during Talisman Sabre 2023 (NZDF photo)

The New Zealand Army is in dire straits. During the Covid-19 pandemic the Army's priority was Operation Protect – a complete focus on the government's Managed Isolation and Quarantine (MIQ) facilities. Whilst the other New Zealand Defence Force (NZDF) arms the Royal New Zealand Navy (RNZN) and Royal New Zealand Air Force (RNZAF) were also required to contribute, most of the manpower resources came from the Army.

Operation Protect was a disaster for the NZDF. Working round the clock on punishing shift patterns, including night shifts and dealing with disgruntled civilians in MIQ was not what most NZDF personnel had signed up for. This included logistical support such as catering, laundry, facilities management, water provisions and waste removal. This was in addition to decontamination, medical support and security. For the duration of the pandemic most training exercises and deployments were cancelled. Only essential military outputs were sustained.

About 6,500 NZDF personnel were involved in Operation Protect out of a total force of about 8,500, of which half are NZ Army possessing just over 4,000 regulars. The NZDF undertook their mission admirably and New Zealand's largely successful Covid-19 response would not have been possible without them, but since the end of the pandemic personnel have been leaving in droves. The loss of staff in increased numbers are not being replaced by new recruits – the process known as attrition – has significantly impacted military capabilities.

The NZDF Workforce Plan, released in May 2023 stated that the force has lost 31.25% of its full-time, uniformed and trained personnel in the 21 months up to April 2023. The Plan aims to reduce the overall workforce deficit from 12% to 9.7% by December 2024.

For the NZ Army, attrition rates rose from historic lows of around 9% in 2021 to 17.7% from September 2022 to July 2023, well above the 10% that is regarded as 'healthy'. With such a large loss of experienced and skilled personnel there is a disastrous gap between its current capability and what it is supposed to offer to government. This is referred to as a 'hollowness' in the force.

Considering how bad the situation is, the decision was made to take advantage of the opportunity to completely rebuild the NZ Army with a new structure, doctrine and capability. Although this is referred to as a regeneration the result will be a completely different NZ Army to what existing before the pandemic.

In April 2023, the NZ Army signed Plan ANZAC with the Australian Army. The Australian Army will help NZ regenerate its skills but also as a result become much more closely integrated. The Bilateral Service Cooperation Plan (BSCP) agreed between the two services serves as the framework for the delivery of the outcomes under Plan ANZAC.

A spokesperson from the NZDF told APDR: "Plan ANZAC reflects a broader defence relationship, one that is open, based on mutual respect and is enduring. It reflects the value of land power to both nations, and the value which interoperability between the Australian and NZ Army brings to combined joint operations. The agreement makes sure both armies can work as efficiently as possible, complementing each other's capabilities and capacity."

The spokesperson added: "We are able to better share lessons across capability development, doctrine, training, and many other areas related to the generation, and in the NZ Army's current case, the regeneration of land combat capability."

There are two main outcomes, the first is for the NZ Army to be capable of contributing "a Motorised Infantry Battle Group in an Australian-led Brigade within an integrated ABCANZ [American, British,

Canadian, Australian, New Zealand] Division".

New Zealand's Defence Policy and Strategic Statement (DPSS) released in August 2023 outlined plans for a more forward deployed posture for the NZDF with more regional engagement in the Pacific. This brigade would focus on operations in the Pacific region and go a large way to delivering on this policy agenda.

The second is to advance beyond interoperability towards interchangeability between the NZ Army and Australian Army. The BSCP defines interchangeability as "The ability to substitute one item for another of different composition or origin without loss in effectiveness, accuracy, and safety of performance."

This means that at a tactical level at least to use one another's equipment and follow the same or similar procedures so that joint operations can be conducted as if it was a single national unit. However it must be stressed that there is no plan to create joint forces, but when units work together on operations they can do so much more closely.

The first outcome, the ability to create a Motorised Infantry Battle Group, will be limited as the NZ Army does not have the manpower. A MOT Inf BG is formed from two regular Motorised Infantry Companies and a reserve Light Infantry Company, which are understaffed. According to data released under New Zealand's Official Information Act in October 2023, the NZ Army can train up to 420 personnel each financial year.

In the meantime, NZ and Australian Army units with similar capabilities and capacity will conduct exercises together to familiarise themselves with each other.

"Since the signing of Plan ANZAC the Army has undertaken two significant activities focused on interoperability with the Australian Army," the NZDF spokesperson said. "Talisman Sabre 23, held in July-August last year focused on a squadron of NZLAVs [8x8 armoured vehicles], supported by logistics and command support personnel, operating within a multi-domain warfighting battlespace as part of an Australian Motorised Battle Group within a coalition Division."

Talisman Sabre gave an early insight into the level of interoperability between the NZ and Australian armies and the progress in NZ Army regeneration. The NZDF commitment to Talisman Sabre included two NZ Army infantry platoons with 20 NZLAVs and nine Medium Heavy Operation Vehicles. The RNZAF sent a rotary wing detachment with three NH90 helicopters, RNZN supplied hydrographers, along with augmentee staff.

NZDF Land Component Commander Brigadier Matthew Weston said of the exercise: "This is our first major combined arms deployment with our ally in more than two years, made possible by our concentrated capability regeneration effort." He added that it would "act as a key determinant of the future direction of the NZ Army" and the ability to deploy a combat force when required.

This was followed by Project Convergence in February-March 2024 and is the US Army's

New Zealand soldiers patrolling during Talisman Sabre 2023 (NZDF photo)

premier experimentation campaign that seeks to learn how the US Army and its ABCANZ partners will fight in a future multi-domain battlespace.

"This confirmed that recently introduced Network Enabled Army (NEA) capabilities could operate successfully within a coalition environment," the NZDF spokesperson explained. The NEA project delivers a series of communications, C2, uncrewed and electronic warfare capabilities to bring the NZ Army up to modern standards.

As well as a MOT Inf BG the BSCP also calls for a NZ Special Operations Task Group (SOTG) to operate "alongside or within" an Australian Special Operations Task Force (SOTF). The SOTG comprises a single Special Operations Task Unit.

Speaking on NZ SF operations, the NZDF spokesperson said: "New Zealand and Australian Special Forces have regular engagements in various locations. This includes some common capabilities, training and qualifications that enable our special forces to be interoperable at various levels," however, the spokesperson added, "No major changes or new structures are planned in the short to medium term."

The creation of fully staffed NZ Army formations to operate with the Australian Army will rely to a large extent to the ability of the NZ Army to fill its ranks with new recruits and meet its manning targets for its units.

"The NZ Army is progressing well with regeneration. In the last 12-18 months our troops have performed to a good standard across a range of significant training events," the NZDF spokesperson said.

In the NZDF's Army News from February 2024, the NZ Army highlighted its efforts during 2023 to regenerate Land Component capabilities. Among some of its activities the NZ Army said it deployed a Humanitarian and Disaster Relief (HADR) Task Group as part of the New Zealand response to Cyclone Gabriel that "assured the standard of the Light Infantry Company Group" during Exercise Valkyrie Rising and "practised our war fighting skills at sub unit level with our partners" on Exercise Talisman Sabre and that year's Joint Pacific Multinational Readiness Center (JPMRC) rotation.

The NZ Army also said it had developed the capability to conduct Battle Group operations via Exercise Black Bayonet and Suman Warrior. It has a range of exercises and training planned for 2024 to continue this process.

"In 2024, there is a particular focus on further developing our command, control and communications. This links directly to the introduction into service of new capabilities, particularly the NEA programme and the Bushmaster protected mobility vehicle," the spokesperson explained, but added, "Attrition has lowered significantly, however, the loss of experienced personal is continuing to prove a challenge."

Meanwhile, the second outcome, achieving interchangeability is far more complex. The BSCP called for synchronisation to be delivered across four Lines of Operation (LOO). These include strategic engagement, capability cooperation, training integration, and personnel readiness. Each LOO as a working group to push forward its agenda.

To support strategic engagement there is a need to ensure that the NZ and Australian armies de-conflict their engagements in areas of operation like the Pacific, work to agreed objectives and develop a routine set of exercises among Pacific forces. In future this will be done by default.

Royal New Zealand Air Force NH90 helicopter from No.3 Squadron preparing for takeoff during Exercise Talisman Sabre 2023 at RAAF Base Townsville. (DoD photo / Ryan Howell)

The crux of interchangeability will be in capability cooperation whereby the NZ Army will look at force design, its capabilities, logistics and C4 to support interoperability at the very least. The NZ Army is taking steps to learn about Australian Army doctrine, concepts and requirements that will support equipment procurement and ability to share data.

Following a 2+2 ANZMIN meeting in February, NZ defence minister Judith Collins said that discussions took place regarding potential joint procurement with both countries working on lockstep on future defence acquisitions. The NZ Army has already bought 43 Bushmaster protected mobility vehicles that are in use by the Australian Army.

These have been delivered to Trentham Military Base where the NZ Army is completing training. A new communications system for the vehicles is also to be procured that will provide the ability to communicate with Australian counterparts in the same vehicles and share information.

An ANZAC Protected Mobility Working Group and a Land C4 capability pathway programme has been set up to facilitate this and the NZDF is engaged with Australia in the development of a Protected Mobility Concept of Employment (CONEMP) for the Bushmaster.

It means that the development of integrated training systems becomes hugely important. If the NZ Army is to adopt doctrine, concepts and be included in Australian-led formations with the same equipment then the way it trains needs to change too. This was a priority during 2023 and for 2024 where the BSCP states that there will a "realignment" in the NZ Army to adopting the Australian Army Training Instruction and the Training Management Framework.

"The newly formed NZ Army Training Branch (G7) has commenced working with the Australian Army's Headquarters Forces Command towards the goal of greater alignment of the NZ Army training system with the Australian Army training system," the NZDF spokesperson said.

The work of G7 training branch is focussed on two areas: alignment of doctrine and coursing at the individual training level; and the alignment of evaluation procedures for collective training outputs.

In terms of aligning doctrine the NZDF spokesperson explained: "NZ Army corps and all corps schools are currently selecting doctrine applicable to our Motorised Infantry Battle Group construct. Concurrently, they are identifying courses which can or cannot be adopted, based on common capability and legislative requirements. The NZ Army is already significantly aligned to Australian doctrine and coursing, and this process will simply ensure we build on this great foundation."

On the alignment of evaluation procedures, the NZDF spokesperson said: "This is a concurrent piece of work, focused on assessing the command and control capability for the Motorised Infantry Battle Group, as well as a system for evaluating the specialist capabilities within the battle group. The Training Branch, supported by the NZ Army Land Component, is working with the Australian Army Collective Training Centre and Headquarters Forces Command to achieve this alignment."

Enabling this work are two Liaison Officers stationed in Canberra and permanent members on the Australian Army Training Board. The Liaison Officers are focussed on Plan ANZAC outputs: one allocated to training and the other on capability and readiness. Another officer is embedded in Headquarters Forces Command in Sydney to help bring these efforts together.

"This gives NZ Army an avenue to raise training matters, challenges and opportunities directly with the Australian Army G7. Australia has been invited to attend the NZ Army equivalent governance forum which has been accepted," the spokesperson said.

Integration and Interchangeability will not just mean more streamlined operations with Australia, but also its Five Eyes partners and Pacific countries too.

The people and readiness LOO will focus directly on the need for personal relationships between the forces to enable all the other LOO. The BSCP wants exchanges of staff to ensure that initiatives from either Army be they on recruitment and retention through to analysis and readiness are understood by the other.

Whilst there are already personnel exchanges at the junior ranks level there will be more attention on senior ranks with interaction in each of the LOO areas. A review will be conducted of current long-term exchange posts between the armies to ensure they support Plan ANZAC and that they are operationally focussed.

Enhancing the relationship between New Zealand and Australian forces across different levels will enable a smoother transition for the NZ Army as it regenerates its capabilities. The introduction of common training methods and adopting similar doctrine will mean that the NZ Army will have a sound footing to become more interoperable with the Australian Army as more exercises are conducted and joint training is completed.

However, this work will be for nothing unless the NZ Army can stop the rate of attrition and achieve the right manpower levels it needs to sustain its formations and deliver the capabilities demanded of it. If the units are not fully manned and ready for deployment then the NZ Army will not be able to contribute to joint operations and will be seen as a weight to be carried by the Australian Army rather than as a force multiplier.

The success of Plan ANZAC is dependent on this.

Maintenance men assigned to a brigade under the PLA 73rd Group Army perform power-on inspections on WZ-10 attack helicopters prior to a flight training exercise in early March, 2024. (eng.chinamil.com.cn/Photo by Li Shilong)

How To Get China Wrong

Luiza Carter // *Washington, DC*

Historical examples of inaccurate military and political predictions by defense advisors, news commentators and the intelligence community are endless: (1979) 'Strikes and mass demonstrations without concerted military action, would never bring down the Shah of Iran.'

Or, 'If the Afghan Army is adequately trained and equipped, they'll easily overpower the ragtag Taliban' (2015). Then, (early 2022) 'The massive military force built up on Ukraine's border doesn't necessarily mean they'll invade another country in the 21st century, as it would be bad strategy. If they do, their highly effective forces and naval dominance in the Black Sea will most certainly result in a quick seizure of Kyiv as Ukraine's own divisions will prevent an effectively unified resistance.'

And most recently; 'Israel's security agencies' invincibility built on sophisticated surveillance and technology would deter any Hamas provocations.' Wrong, wrong, very wrong, and horrifyingly wrong.

Each of these historical predictions was based on wrong assumptions. Primarily because these assumptions of military outcomes depended on divining intentions through a cultural and historical prism. In the case of Israel, intelligence failure stemmed not from its ability to gather information, but from inaccurate human analysis and interpretation and subsequent

decision making.

The Western predisposition to believe its technological prowess trumps those less advanced, or that a country's leader is a rational counterpart, deterred from impulsive and self-destructive behavior by sheer logic, or that his self-preservation trumps honor and image, is overconfidence that breeds neglect. And if a regime is deemed irrational (or inferior), their capabilities become a disregarded sidenote.

In the West, our values of independent thought, democracy, and human rights, prompt us to believe that given the opportunity, a populace would rebel against censorship or gender oppression.

Subsequently, the reckless and crazy leader (or terrorist group) is also underestimated.

In the West, our values of independent thought, democracy, and human rights, prompt us to believe that given the opportunity, a populace would rebel against censorship or gender oppression. And yet no one forecasted a fruit vendor engulfed in flames would topple regimes throughout the Arab world because poverty and economic hardship were not assumed to resonate more than freedom at the ballot box.

Today, perceptions and assumptions are the intangible weapons and landmines shaping the China threat narrative. The wrong assumption can be militarily detrimental - such as assuming the Taiwanese would resist a Chinese invasion as much as we expected the Afghan Army to resist a Taliban takeover in 2021. Or would they emulate the Ukrainian spirit of defiance and resistance as their leader embarks on a global crusade of condemning the attacker and garnering military support?

Using advanced Intelligence, Surveillance and Reconnaissance (ISR) systems, data collected today is of the highest calibre. But quality of analysis remains innately human and wrong assessments at the highest echelons of the White House and Pentagon regarding managing relations with China or Chairman Xi's aspirations may also lead to catastrophic outcomes. What follows are a few common assumption traps Western analysts often fall into.

Assumption 1: China is a great rising power

China has been on the economic decline for years due to demographic constraints and a shrinking labor force, high impacts of Covid, Xi's policy of favoring and strengthening state-owned firms over private companies (in order to maintain population control) and high levels of debt shared between those institutions. Socially, there's been internal dissent based on a failure to meet rising expectations and standards of living. Xi's governance credibility has been diminishing and looming on the horizon is an impeding succession crisis, a growth model founded on substantial hidden domestic debt,

A fighter jet attached to a brigade under the PLA Air Force Xi'an Flying College fires rockets at mock ground targets during a live-fire flight training exercise on March 22, 2024. (eng.chinamil.com.cn/ Photo by Cui Baoliang)

a plummeting investment-driven growth model, and impeding debt collection from problematic and unsustainable Belt and Road Initiative (BRI) projects. Problematically, its social contract is based on providing its population with more wealth in return for unquestionable and absolute power for the CCP.

Attributing rising status to a declining power steeped in Soviet-type inefficiency overestimates China's perception of options and level of desperation. A natural escalation from 'wolf warrior diplomacy' and perception of the U.S.'s strategic geographic encirclement, a PRC invasion of Taiwan may be less of a war of choice versus a war of necessity in order to quench internal dissent and domestic challenges. In such a case, international negotiations would be a futile effort when domestic factors induce decisions. The question now is whether President Xi is anxious or confident about his country's current strategic opportunity in light of current great power competition in the international environment and the global turmoil in Ukraine and Israel.

Assumption 2: Your allies will remain unwaveringly by your side in conflict

The decision of whether (and how) Taiwan would be aided in the event of an invasion will be made by the U.S. President at the time of its occurrence. Factors such as foreign base access for executing logistics in a contested environment may be critical. Western perceptions assume our allies and partners will stand by us. Because freedom and peace are our shared values and that's what we would do.

Australia and the United States have shared years of close economic, military and political ties, but the same cannot be said for its neighbors. The Asia Pacific region is fraught with decades (if not centuries) of mistrust and animosity. And while the United States offers the best security option available to regional allies, they won't be going to war WITH the United States. They'll be going to war AGAINST China. They will be weighing China's coercive power through economic coercion versus US commitment to their protection. They will support as far as their interests align - and Taiwan's security may not be their primary interest. Intraregional economic integration is.

Finding themselves in a weak position, 'bandwagon theory' states that countries tend to bandwagon with a stronger adversary (even if it's their aggressor) to avoid a hopeless war. It occurs when they determine the cost of opposing China by assisting the US will outweigh the benefits. Pacifist Japan will be at the frontlines of this challenging decision. Followed by South Korea, whose primary security concern is North Korea, with China as its largest trading partner. And while domestic politics in Europe and the U.S. fluctuate, foreign policies generally remain largely constant.

This has not been the case in East Asia. Take for example the Philippines, a critical geostrategic node in the First Island Chain. In only two years, the country has gone from (former) President Duterte's termination of a two-decade old Visiting Forces Agreement, to recently (under President Marcos) announcing the hosting of four additional Enhanced Defense Cooperation Agreement sites. The sites bolster the alliance by allowing for extended rotations

of U.S. military forces, enabling them to respond quicker in a potential regional conflict and now total nine throughout the strategically important country.

Beyond allies, Singapore is one of the US's closest regional security partners, but it's disinclined to choose sides believing containing China is counterproductive. Indonesia is increasing involved in South China Sea tensions, and it recently hosted off its North Natuna Sea ASEAN's first-ever joint military exercise (the ASEX 2023) not involving any external party.

Significantly, ASEAN is not a military alliance and so the exercise strongly conveyed the organization's stake in regional security considering China's ongoing maritime violations and increasing assertiveness throughout contested regional waters. Unfortunately, Indonesia's strategic mistrust of China is outweighed by its deep economic interdependence which may inevitably prevent it from 'choosing sides'.

The astute analyst will also consider impacts of those seeking neutrality or 'on the fence' partners like Vietnam with an omnidirectional foreign policy. The White House hailed a "historic new phase of bilateral cooperation and friendship" when President Biden and Vietnam's Nguyen Phu Trong held talks in early September. But as this occurred, reports surfaced of an internal Vietnamese document outlining clandestine plans to purchase a U.S.-sanctioned weapons arsenal from its largest military supplier - Russia.

Time will tell if commercial, political and diplomatic relations are evidence of reconciliation between bitter enemies to strategic partners, or if fifty years later, a legacy of war trauma and mistrust remain. Too apprehensive to aid the US, countries may search for a sustainable equilibrium and continue playing both sides as they've done for decades. Many will understandably question reliability of U.S. resolve considering polarized domestic politics impeding predictable multi-year military budgets, lack of a strong bipartisan policy on Taiwan and continued support from the next administration.

In Europe, Russia's invasion of Ukraine prompted alarms throughout Europe. Fearing they'd be 'next' drew swift military support from Poland and NATO membership by Finland. It should not be assumed Asia Pacific states would have the same level of cohesiveness as they

The guided-missile destroyer Nanchang (Hull 101) and the comprehensive supply ship Hulunhu (Hull 901) attached to a combat support ship flotilla with the navy under the PLA Northern Theater Command conduct alongside replenishment-at-sea during a maritime training exercise in early March, 2024. (eng.chinamil.com.cn/Photo by Wang Xiaoqi and Xu Taotao)

may rationalize that just as Russia's territorial expansion would cease with its historic claims to Ukraine, so would China's with Taiwan.

Assumption 3: War in Taiwan will be just like war in Ukraine

Determined to regain historical territory, a nuclear hegemon with superpower aspirations, ruled by an authoritarian regime attacks a smaller autonomous territory it believes was always part of it. Global outrage ensues. That's where the similarities end. Post an exhaustive Ukraine campaign and aid to Israel during its war with Hamas, coalitions supplying armaments will be scarce.

Concern has been increasingly rising about a strained defense industrial base. Taiwan's military differs in experience (fortunately, as does China's in comparison to Russia's). As various think tanks predict, any invasion is presumed to be an amphibious assault amplified by an isolating blockade. In Ukraine, a ground attack left ample room for resupply from friendly neighbors.

What may possibly be similar is the invasion buildup. While Russia tested the waters by invading Crimea, China can dispatch non-uniformed military (akin to Russia's 'little green men') onto the Kinmen islands (a favorite tourist destination), to test global response and gain strategic advantage. Or it may be as simple as an aerial intercept gone tragically wrong and utilised as a PRC provocation.

But as exhibited through China's predisposition to gray zone warfare, a likelier scenario is a 'strangulation' of Taiwan economically and through severing all communications. As the West's war fatigue, limited global support for Taiwanese legitimacy and domestic politics consume valuable decision-making space, China could capitalize on the tyranny of distance and attempt to swiftly invade before the West says "sanctions." An air and maritime focused invasion is more difficult than ground theatre, but learning where Russia failed (and studying Western response closely), the PRC understands a victory could only be achieved when execution is immediate.

While the People's Liberation Army (PLA) has substantially less battlefield experience than the Soviets attained from Chechnya, Syria and Georgia, its technological superiority and amassing the largest military buildup since WWII is far more powerful than a country sending WWII tanks into battle today. Also, the Taiwanese army is not the Ukrainian Army. There is also no Pacific NATO-type regional alliance backing a resistance movement and demonstrating unity.

U.S. Special Operations Forces did at least develop the Resistance Operating Concept following the Russia-Georgia war in 2013, which served as a doctrine for effective resistance of a stronger invader by a joint military-civilian effort. The method known as 'resistance warfare' has clearly been successful in Ukraine and we can only hope it would be in Taiwan as well. Asymmetric warfare will matter greatly and the culturally collectivist civilian resistance mounted may be nowhere near that of the individualistic Eastern Bloc, as values and domestic politics drastically differ.

As the West's war fatigue, limited global support for Taiwanese legitimacy and domestic politics consume valuable decision-making space, China could capitalize on the tyranny of distance and attempt to swiftly invade before the West says "sanctions."

Assumption 4: China and Russia are allies

They are strategic competitors, not strategic partners. The perceptions of these peer competitors' behavior leads many to believe the China-Russia relationship as having "no limits" as they jointly declared in early 2022. But indeed, it does. A relationship based on arms sales and arms cooperation is also inherently a competition. And for weapons market competitors, Russia's preoccupation with Ukraine provides market opportunity for China to exploit and may even cause antagonism.

One can venture as far as to say that the war was in China's interest. Dominance is easier when another major power bleeds to death while pursuing its own grand conquests. By potentially privately encouraging the invasion and guaranteeing limited support, Xi eliminated his greatest weapons market competitor and tested out international reaction. And with a Ukraine war absorbing all Western powers, defending Taiwan against an invasion would be substantially more expensive post an exhaustive Ukraine campaign.

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Aptly so, for months, everyone from Congress members to defense officials to think tanks have been sounding alarms about adequate munitions and the defense industrial base. In a 2023 report spotlighting U.S. military aid to Ukraine, the Centre for Strategic and International Studies reported that while U.S. military aid to Ukraine helped prevent a Russian victory, "but that assistance has depleted Pentagon stockpiles and shown that the American defense industry cannot surge for a major war."

While Putin may have been a guest of honor at Xi's October celebrations commemorating ten years of the Belt and Road Initiative, China may be gradually concerned about a flourishing Russia-North Korea relationship as common interests and global views have brought them closer together. Mutual benefits have resulted in increasing cooperation as North Korea is desperate for help overcoming technological hurdles with its nuclear, missile and space programs, while Russia is desperate for North Korea's extensive ammunition surplus conveniently based on Soviet weapons systems). Not having fought a war for seventy years, it possesses more than enough to spare in exchange for the regional relevance provided through close alignment with Russia.

Assumption 5: Deterrence is achieved through power projection

For deterrence to be effective, an adversary's perceptions are more critical than credible evidence. While the PRC has doubts about 1) successfully and swiftly invading Taiwan without getting bogged in an extended resistance 2) if the US would respond militarily 3) if regional allies such as Japan and/or South Korea would assist in a military response and 4) if immediate execution of devastating economic and financial sanctions; then deterrence has succeeded. As such, maintaining the status quo in the region through the doctrine of strategic ambiguity (versus clarity) has its advantages.

Tel Aviv maintains a policy of never officially denying or admitting to possessing nuclear weapons. And through this, the country has long avoided further nuclear escalation in the Middle East and intensifying tensions between the US and former Soviet Union, while continuing a relationship with Washington. Through ambiguity, a projection of lethal power without accountability is achieved.

It keeps everyone guessing – and prevents possible miscalculations. The concept of deterrence through deliberate ambiguity has also long been used by the Israeli government and nuclear strategy. Understanding it could only accelerate nuclear proliferation regionally, Tel Aviv maintains a policy of never officially denying or admitting to possessing nuclear weapons. And through this, the country has long avoided further nuclear escalation in the Middle East and intensifying tensions between the US and former Soviet Union, while continuing a relationship with Washington. Through ambiguity, a projection of lethal power without accountability is achieved.

As former U.S. National Security Advisor H.R. McMaster states in his book, Battlegrounds, "US policy towards China suffered from strategic narcissism since the American Revolution based on hopes rather than realities. That economic, political and cultural engagement would lead to change and cooperation." It hasn't and it can't, as condemnation of its human rights abuses, international law violations and maritime encroachments to neighboring countries, is only seen by the PRC as antagonizing.

Strategic narcissism is defined as the predisposition to view geopolitics as conditional on the United States and that others have similar perceptions of foreign affairs. The most detrimental Western assumption of all is that a strategy of restraint and diplomatic discourse will evoke harmony. As the last year has shown, Soviet empire nostalgia will not disappear. Hamas's terrorist campaign will not disappear.

China's aspirations of a 'Great Rejuvenation' by 2049 and reclaiming contested territories, will not disappear. As such, preparedness will hinge on overestimating an adversary's capabilities, intentions and timelines and underestimating the loyalty of allies and partners.

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The views and opinions expressed in this article are those of the author and do not necessarily reflect the official policy or position of any agency of the U.S. government.

News from across the Tasman

Geoff Slocombe // *New Zealand*

NZ DEFENCE TO RECEIVE REMOTE GROUND SENSORS AND UNCREWED AIRCRAFT SYSTEMS

Defence has contracted three companies to supply Uncrewed Aircraft Systems (UAS) and Remote Ground Sensor systems for New Zealand Army use from 2024.

EPE New Zealand Limited will supply a number of quadcopter Micro UAS, which are backpack portable and can be operational in less than 75 seconds. The company will also supply Remote Ground Sensor systems, which combine seismic, acoustic and infrared sensors to detect and identify moving objects. Both systems will be used by 2/1 Royal New Zealand Infantry Regiment.

United States based Quantum-Systems Inc. will deliver a number of Small UAS for 16 Field Regiment, which are backpack portable, have a wingspan of three metres when assembled, and can be operational within three minutes.

Australian company Criterion Solutions PTY will deliver a number of Nano UAS, which can be operational in less than 20 seconds and will be used by 2/1 Royal New Zealand Infantry Regiment. These UAS have a single rotor air frame and fit into a pouch.

The systems will reduce risk to personnel by providing timely and accurate information for operations planning, as well as risk assessment activities.

Sarah Minson, Ministry of Defence Deputy Secretary Capability Delivery, says the systems will be deployed by New Zealand Army during humanitarian assistance and disaster relief, combat, and search and rescue operations.

"The systems will improve the ability of the New Zealand Army to undertake reconnaissance and surveillance operations, in areas that may otherwise be inaccessible, such as cyclone damaged regions or combat zones."

These new systems will not be armed as their primary purpose is to extend situational awareness beyond-line-of-sight.

FRIGATE SYSTEMS UPGRADE PROJECT COMPLETES OPERATIONAL TESTING

The new Sea Ceptor Local Area Air Defence System on HMNZS Te Mana has been successfully tested off the coast of Australia. This is the final test for the capability release of the Anzac Frigate Systems Upgrade project.

"The success of the two missile firings is a major milestone for the project. It means both HMNZS Te Mana and HMNZS Te Kaha will achieve full capability release and the frigates move from a solely 'defend self' position to a 'defend others' capability which allows for the localised missile defence of other platforms the frigates are operating with," Jon Finderup, Director Maritime Domain at the New Zealand Ministry of Defence said.

The tests took place in the Eastern Australian Exercise Area and involved the identification, evaluation, tracking and destruction of an inbound target simulating a missile, which took the form of a two-metre-long aerial drone.

All other aspects of the ANZAC frigate surveillance, counter measures, self-defence capability and Combat Management System have successfully completed testing.

AUKUS PILLAR II BRIEFING TAKES PLACE IN WELLINGTON

Australian officials recently visited Wellington to brief NZ counterparts on Pillar II of AUKUS, as agreed during a recent meeting between Australian and New Zealand Defence ministers.

"This was a background briefing for information only and not intended to address the issue of NZ joining Pillar II," said Anton Youngman, Deputy Secretary, Ministry of Defence.

AUKUS partners have not yet put a timeframe on when Pillar II might be opened to other countries.

"Officials will continue regular engagement with the AUKUS partners, as we build our understanding of Pillar II."

New Zealand is committed to working with key security partners on the common objective of ensuring a secure, stable and resilient region, and an effective rules-based international system.

NZDF TESTS SPACE HARDWARE AFTER SUCCESSFUL SATELLITE LAUNCH

The New Zealand Defence Force (NZDF) has successfully launched an experimental satellite payload into orbit on a United States satellite, which will allow defence scientists to conduct space communications research.

The "Korimako" payload was attached to a research satellite developed by the US Naval Postgraduate School, which was launched on a Rocket Lab Electron rocket mission from Wallops Flight Facility, Virginia, in the eastern United States on 21 March NZT.

A team of scientists from the NZDF's Defence Science & Technology (DST) will monitor and interact with Korimako via New Zealand's Whangaparaoa Ground Station, north of Auckland. Initial tests indicate that Korimako survived the launch and is operating as expected.

This is the first time the NZDF has had a payload put into space and represents an exciting milestone for both the NZDF and the wider New Zealand space enterprise," said DST Director David Galligan.

Whilst Korimako is not an operational platform, it will provide the NZDF with practical experience and is developing local expertise in space science and technology, and conducting space operations.

"Our research aims to build practical experience in space science and technology, test processes for New Zealand Government space operations, and generate knowledge to enable future NZDF and wider government space development," Dr Galligan said "The launch of this payload is significant for the NZDF and was made possible with the support of our international partners."

The US satellite hosting the Korimako payload is about the size of a briefcase and is orbiting the earth every 90 minutes about 515 km above the ground, which means it cannot be seen with the naked eye.

CHIEF OF AIR FORCE WELCOMES FIRST FLIGHTS OF C-130J

The Chief of Air Force, Air Vice-Marshal Darryn Webb, has welcomed news of the debut flights of NZ7011, the first of our five C-130J-30 Super Hercules fleet.

Three test flights have taken place over Georgia and Alabama in early April, with the first, flying from Dobbins Air Reserve Base in Marietta, Georgia, in the air for over three hours and covering nearly 1000 kilometres.

AVM Webb said that the new fleet will take the Air Force's air mobility capability to the next level:

"The iconic C-130H has been a fantastic aircraft for us for a very long time, across a huge range of tasks and environments. The C-130J will deliver everything that its predecessor does, and more – it has greater range, speed and capacity."

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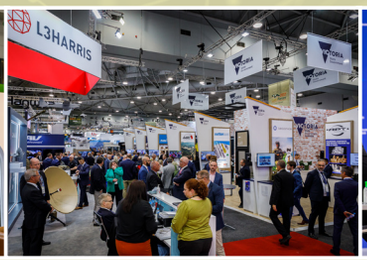


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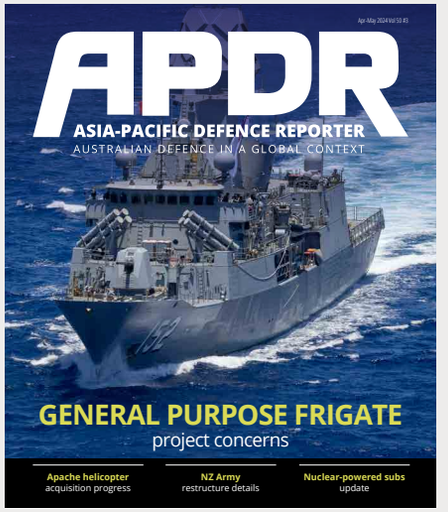

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