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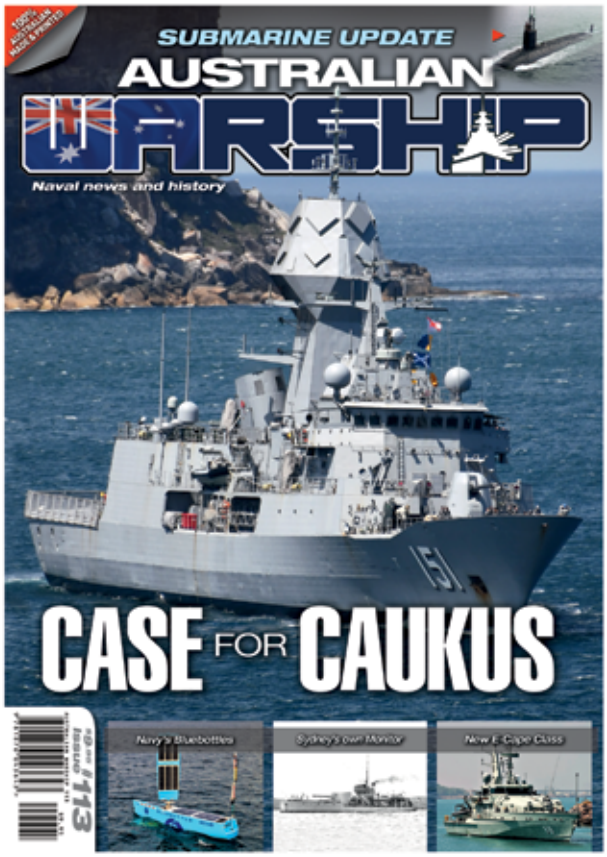

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Naval news and history
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ON THE COVER:
September 2022 photograph of the Anzac class helicopter frigate (FFH), HMAS Perth, taken during Exercise Kakadu 2022.
Chris Sattler.

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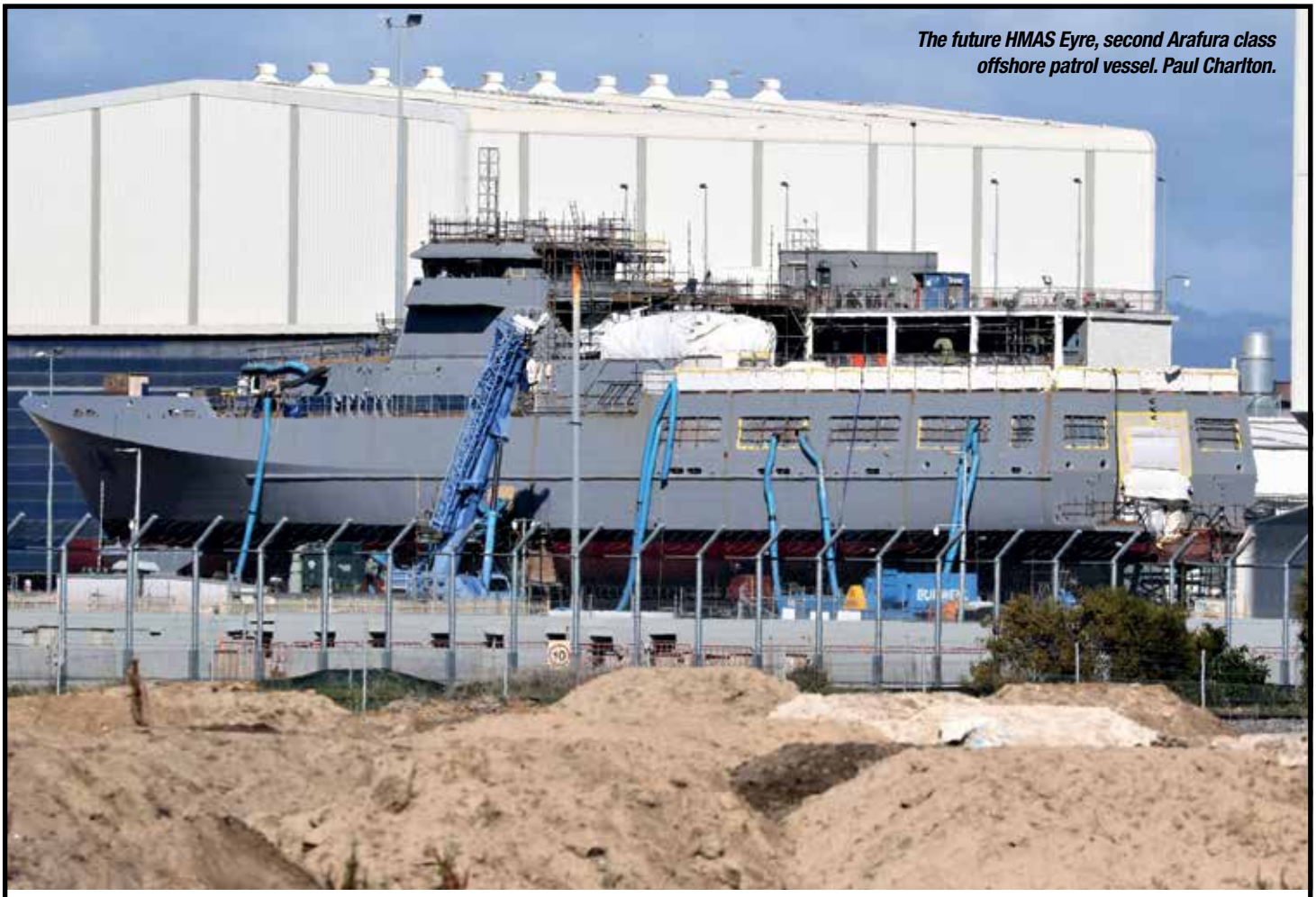


The future HMAS Eyre, second Arafura class offshore patrol vessel. Paul Charlton.

Opinion

Much of the naval news in recent times continues to be centred upon the plan to acquire the class of either British or American nuclear-powered submarines. An announcement advising the winning design is expected in March 2023, around the same time as the new Defence Strategic Review. However, the Government has shown little willingness to provide any hint of what design will win the competition.

The building schedules for both designs are at the end or very close to the conclusion of their respective programmes, the British much more than the Americans. In fact, both nations have ongoing plans for their next generation boats. So how much these new designs will affect the Australian decision is of major importance. These new British and American designs will without doubt be more expensive than the current designs. The question is whether Australia can afford a new generation design, likely to be larger, require extra crew numbers and be fitted with new generation systems and improved torpedoes and anti-surface missiles.

At the present time the UK's design has only torpedo tubes for its torpedoes and missiles, with the USN boats also featuring a vertical launch system for the sub-surface to surface missile system.

Meanwhile progress continues with the Arafura class OPVs with the lead unit undertaking her sea trials from Port Adelaide in November (see separate article on page 16).

Progress with the Hunter class is continuing, albeit through no official news release. Instead, the Spanish shipbuilder Navantia has been promoting its plan to build another three Hobart class guided missile destroyers to allow for delays with the new frigate class. If such a plan was approved, a total of nine Hunter class would still be built, and so ensure a growth in overall fleet numbers by the 2040s. The RAN will need to expand to counter increasing maritime threats, and this Navantia plan may provide the easiest possible way. A very un-government way of doing things!

Family of sea boats

Defence has issued a Request for Tender (RfT), closing in January 2023, for Air Droppable Sea Boats for Army and sea boats of up to approximately 8.5-metres for the RAN. The RfT forms the initial element of what Defence terms the ADF Family of Sea Boats Acquisition, to procure the first two types in one consistent acquisition program rather than the previous ad hoc procurement approach. The concept is based on maximising the commonality between sea boat variants to increase interoperability, training and support efficiency, the RfT states.

A longer-term goal, not included in the RfT, is to transition ADF sea boat support into a single sustainment program aligned with Navy's Plan Galileo, the network of Regional Maintenance Centres and the maintenance network of Joint Logistics Command, the RfT explains.

The first stage in establishing the ADF Family of Sea Boats is to acquire nine air droppable sea boats for Army, with the first three to be operational by 2027, to replace the current Army air droppable rigid hull inflatable boats which will be withdrawn from service in 2028. For its part, the RAN requires 23 Navy Sea Boats to outfit the maritime mine counter measures and military survey vessels (Modified Arafura class) to be acquired under Project Sea 1905, and the nine Hunter class guided missile frigates, the first of which will be delivered in 2031.

Main: HMAS Glenelg's first and last visit to Sydney, September 2022. Chris Sattler.
Below: Commissioning of HMAS Glenelg at Glenelg, South Australia 22 February 2008. Paul Charlton.

HMAS Glenelg

On 6 October 2022 the RAN decommissioned the Armidale class patrol boat (ACPB) HMAS Glenelg after 14-years of service, the ceremony was held at HMAS Coonawarra in Darwin. Since commissioning in 2008, Glenelg had worked alongside Border Force, Australian Fisheries and the Australian Federal Police as part of border protection operations. She served in Operations AUGURY (Philippines,) SOLANIA (south-west Pacific) and APEC ASSIST (PNG).

Glenelg was named after the Adelaide suburb of Glenelg in South Australia and is the fourth ACPB to be decommissioned. She was originally commissioned at Glenelg.

HMAS Ballarat and HMAS Stuart (with new mast) at BAE Henderson, August 2022. Chris Gee.

HMAS Stuart

In early August BAE Systems announced that HMAS Stuart had her new mast fitted as part of the Anzac class frigate's mid-life capability upgrade (AMCAP). The mast incorporates technologies designed to provide improved detection, classification and identification of air contacts with a greater level of overall management, support and reliability. The replacement mast is taller and wider than the old mast so that it can accommodate the new CEA L-Band radar system, while retaining the Anti-Ship Missile Defence radar capability. Weighing 31 tonnes, the mast was lifted by a team of crane operators, riggers, fitters, superintendents, and a mechanical supervisor, with the operation taking less than a day to complete. It will now take around a month to complete the installation. Stuart entered BAE Systems Henderson facility in April 2021 for her upgrade.

Submarine rescue gear vessel Stoker approaches HMAS Waterhen in Sydney on 10 October 2022. Chris Sattler.

Fleet activities - August to November 2022

In early November HMAS Choules appeared on Sydney Harbour with her self defence enhanced via the addition of a single 20-mm CIWS gun forward of the bridge. HMA Ships Adelaide, Hobart, Anzac, Arunta and Stalwart participated n the exercise. The DMS operated submarine rescue gear vessel Stoker (based at HMAS Stirling), visited HMAS Waterhen in Sydney between 28 September and 2 October.

On 28 September HMAS Stalwart began her first visit to a foreign port while deployed in support of Indo-Pacific Endeavour 2022 (IPE22). The ship arrived at Dili in Timor-Leste following the September signing of the new Defence Cooperation Agreement. The keel for the future HMAS Illawarra, the fifth new Arafura class offshore patrol vessel, was laid at Henderson, Western Australia, on 27 September 2022. On 24 September HMAS Sydney returned to her home port of Fleet Base East, Sydney after participating in a Regional Presence Deployment with HMAS Warramunga. On 21 September Warramunga returned to Fleet Base West. Earlier the frigate departed Melbourne on 17 September after a short visit.

On 15 September Australian Army vehicles from the 2nd/14th Light Armoured Regiment boarded the amphibious ship HMAS Adelaide at the start of Exercise Sea Raider 2022 in Townsville, Queensland. Between 15-19 September the patrol boat HMAS Glenelg visited Sydney, for the first time, as part of her decommissioning voyage to various Australian ports. The boat was paid off at HMAS Coonawarra on 6 October 2022.

Exercise Kakadu 2022 (KA22) was conducted in Darwin and the Northern Australian Exercise area (NAXA) between 12-24 September 2022. Participating units included HMA Ships Hobart, Perth, Collins, Stalwart, Armidale, Broome, Childers, Launceston, Maryborough, Wollongong and Melville, Australian Border Force units Cape Leveque, Cape Wessel, Storm Bay, Thaiyak and Arnhem Coast, Australian Army landing craft AB 1062, HMS Spey (United Kingdom), FNS Savenaca (Fiji), FS Vendémiaire (France), INS Satpura (India), KRI Raden Eddy Martadinata (Indonesia), JS Kirisame (Japan), KD Lekiu (Malaysia), RSS Steadfast (Singapore), HTMS Bhumibol Adulyadej (Thailand) and USS Charleston (USA).

HMA Ships Canberra and Supply returned to their home port of Fleet Base East in Sydney on 4 September at the successful completion of Regional Presence Deployment 22. On 25 August HMAS Brisbane arrived in Hobart in support of the Australian Antarctic Festival. On 4 August Austal Australia delivered the second of eight new Evolved Cape class patrol boats (ECCPBs) to the RAN. ADV Cape Peron, was officially accepted by the Commonwealth of Australia. She departed on the 11th for HMAS Stirling. The first of the class, ADV Cape Otway, was delivered in March 2022, following an 18-month construction.

Pacific Support Vessel ADV Reliant began her work-up in Sydney's Middle Harbour on 3 August including lifting trials with the ship's 150-tonne crane and working with LHD landing craft and Navy RHIBs. She departed for Brisbane on the 22nd. Later, on the 30th, a flag raising ceremony for the Australian White Ensign was conducted alongside the International Cruise Terminal on the Brisbane River. Then, on 3 October, Reliant, began her first deployment to Timor-Leste and the south-west Pacific Region.

Patrol boat autonomy trial

Austal Australia has taken possession of the former HMAS Maitland, from the Commonwealth of Australia, and will soon start planning, modification, and test and evaluate autonomous and remotely operated systems aboard the ACPB.

The Patrol Boat Autonomy Trial (PBAT) is a collaboration between Austal, Trusted Autonomous Systems Defence Cooperative Research Centre and the RAN Warfare Innovation Navy (WIN) Branch. The trial will establish robotic, automated and autonomous elements on a patrol boat, providing a proof-of-concept demonstrator, for optionally crewed or autonomous operations for the RAN into the future. The trial will also explore the legal, regulatory pathways and requirements of operating an autonomous vessel at sea.

Following the arrival of the vessel in Henderson, Western Australia, the re-named Sentinel then entered the trial's 'modification phase'; which includes the fitting of a variety of monitoring and control systems and technologies that enables autonomous and remote operations. From July 2023 the vessel is expected to be registered under Australian Maritime Safety Authority (AMSA) jurisdiction as a domestic commercial vessel to enable sea trials to begin in October 2023.

'Sentinel', the former HMAS Maitland at Austal Australia's Henderson shipyard 27 September 2022, for the 'modification phase' of the Patrol Boat Autonomy Trial. Chris Gee.

In parallel, the Royal Australian Navy (RAN) released the Robotics and Autonomous Systems-Artificial Intelligence (RAS-AI) 2040 Strategy outlining its vision for "a fighting and thinking Navy" that embraces RAS-AI, to transform and improve its ability to fight and win at sea.

HMAS Stalwart arrives in Timor-Leste for the first time, 28 September 2022. RAN.

End for Otama

In September 2022 the decision was made to scrap the old Oxley class submarine HMAS Otama. Parks Victoria would remove the vessel despite the previous efforts to preserve the vessel and its heritage value. Specialists began preparing the boat to be taken away to be scrapped. This was against the wishes of the owners who had been trying to preserve the vessel as a historical artifact, "with the overall cost of scrapping her far exceeding the cost of relocating the vessel to land where she could be preserved."

The successful tenderer for the towage of the decommissioned boat from Victorian waters to Fremantle was the Fremantle-based towage and salvage company, Southern Ocean Maritime. This company's former oil rig tender Southern Salvor was assigned the task. The tug and tow arrived in Western Port Bay on 29 September 2020. Following the successful tow, by early October Otama had been placed ashore at Henderson in Western Australia for the scrapping process to begin.

The RAN's sixth and last Oxley class submarine, the former HMAS Otama ashore at AMC Henderson on 1 October 2022. Chis Gee.

FUTURE UNDERWATER FLEET

Where to next?

It's now been over six months since the election of the new Federal Government. In early August, the Minister for Defence, the Hon Richard Marles MP announced the conditions for a new Defence Strategic Review, including the Terms of Reference and the independent leads who would conduct this Review for the government. In 2020, the previous Defence Strategic Update identified that changes in Australia's strategic environment were accelerating more rapidly than predicted in the earlier 2012 Force Posture Review.

To meet these new and changing challenges in the South Pacific and South-East Asia regions, the Review will examine the overall ADF force structure, force posture and preparedness, and investment prioritisation, to ensure Defence has the right capabilities to meet the nation's growing strategic needs. To lead the Review former Minister for Defence, Professor the Hon Stephen Smith and former Chief of the Defence Force, Air Chief Marshal Sir Angus Houston AK AFC (Ret'd) were appointed to deliver the Report in March 2023.

Opinions

Prior to the May 2022 election many official announcements were made concerning new and planned contracts to equip the ADF, with most of the naval plans described in various editions of Australian Warship magazine. These included:

- a new batch of thirteen MH-60R Seahawk Romeo helicopters (to replace the six retiring MRH-90 Taipans and one lost Romeo) in the utility role,
- eight additional offshore patrol boats (OPVs) to be modified for service as mine-warfare and hydrographic survey vessels to follow the 12-unit Arafura class,
- two large amphibious/supply ships to replace HMAS Choules in the late 2020s,
- two additional Evolved Cape class patrol boats to join the three under construction and three in service,
- a Pacific Support Vessel, Reliant, to assist Australia's allies in the region,
- the previously announced eight new nuclear-powered submarines (SSNs) and nine Hunter class guided missile frigates (FFGs), and
- small batches of unmanned systems to undertake mine warfare, aerial reconnaissance, surface and underwater tasks. ▶

Above: ***HMAS Collins arrives in Sydney Harbour. Chris Sattler.*** *Below:* ***HMS Anson. Royal Navy.***

Some of the above plans are already underway, some have only contracts signed, with several still awaiting a choice of type or class to be selected for purchase. The Strategic Defence Review, now being prepared, will examine these plans, together with those of the Army and Air Force, with some tough decisions to be made, including how much and how many new defence assets can the nation afford, especially in such difficult economic times.

Many commentators see the future of the ADF based around Navy and Air Force, as the principal counter to foreign threats or intimidation. These same people argue that money spent on land -based equipment such as new or upgraded Abrams tanks and other military vehicles could be better utilised in the acquisition of a new generation of long-range bombers (to replace the retired F-111 fleet), up-arming the Arafura class OPVs to operate as true corvettes and placing an order for three additional Hobart class destroyers, offered by Navantia, to offset delays in the Hunter class FFG programme.

Collins LOTE?

Another major consideration to be covered within the Strategic Defence Review will be the future of the Collins class submarines. Some of these options may include:

* continuing with the planned Life-of-Type-Extension (LOTE) to extend the careers of the six Collins class boats,
* acquiring a stop-gap conventional submarine that would allow the nuclear-powered submarine programme to continue with no building pressures, or
* selecting a new conventional submarine, thereby admitting that the nuclear programme cannot be achieved, mainly due to the existing pressures on the American and British construction schedules.

In late-2022 this writer believes that most Australians are well and truly over the arguments to buy a nuclear submarine force, due to the extraordinary time delays and large cost factors. Do we really need to operate in the waters around the Philippines, but instead should we concentrate our efforts south of that region, to be supported by the new generation of Orca extra-large unmanned underwater vehicles (XLUUVs), with three of these craft already on order from Anduril Industries (see AW 115). Many navies are now heading into this unmanned area of operations to provide a cost-effective solution and one which needs only a handful of personnel to operate in a safe environment.

The Collins LOTE is scheduled to begin in 2026, with one or two boats to be out of service for up to a decade, reducing the availability of the active boats and reducing the Fleet's ability to carry out the required missions. The LOTE is likely to be a technically risky and expensive programme and is expected to add only a decade of service for each boat. The LOTE schedule calls for each submarine to be out of service for two-years, with each hull to be cut open for several major machinery items to be replaced, including the main diesel engines and electric motors. This process may take much longer than is currently planned - especially for the lead unit, which could be out of the water for three or more years, which in turn will delay the whole LOTE schedule. HMAS Farncomb will be the first Collins boat to undertake LOTE, with HMAS Rankin, the final boat to be upgraded. The former will now be retired in 2038, and Rankin, in 2048.

Tomahawk

The RAN is also looking at outfitting its Collins class submarines with Tomahawk land attack cruise missiles as part of the forthcoming LOTE. During a briefing at INDO PACIFIC 2022, Rear Admiral Peter Quinn, head of Navy Capability said that the RAN is "doing the work" to see if arming the Collins class boats with Tomahawk is a feasible option.

If Tomahawk is selected as part of LOTE, the necessary hardware and software modifications to accommodate the advanced weapons will be undertaken during that period. However, as the Collins class lacks a Vertical Launch System (VLS) an integration of Tomahawk would require the procurement of torpedo tube-launched variants, like those employed by the Royal Navy (RN). Equipping the class with Tomahawks will eventually provide the RAN with a 'first night' strike capability which could be used in both tactical and strategic scenarios.

Value

The cost of the proposed LOTE is more than likely to be several billion dollars spread across the six boats. One recent estimate of the total cost is AU$4.3 - 6.4 billion. Will such a programme offer value for money or are new construction boats more cost-effective? The recent proposal from DSME is based upon the retirement of the Collins class as originally planned and instead fast track the company's new class to provide the RAN and Australia with a modern/innovative conventional submarine capability by the early 2030s.

Approving LOTE needs to be compared to a new generation conventional submarine, like DSME's 3,750-tonne KSS-III Batch II Dosan An Chang-ho ocean going design from South Korea. DSME normally takes seven years from contract signature to delivery of the

submarines, which means that the RAN could commission the first boat in 2030. Dosan An Chang-ho was commissioned into service on 13 August 2022 and is the lead Batch 1 boat of the planned fleet of nine 3,000 tonne KSS-III-class SSKs that will enter the RoKN fleet by 2029. Construction of the boats will be conducted in three tranches. Each tranche will comprise three boats, with subsequent submarines incorporating more advanced technologies. Each Batch 1 series KSS-III submarine will feature a six-cell vertical launch system (VLS) that can deploy a variety of missiles. The principal characteristics of the Batch II boat include:

Displacement - 3,705 tonnes
Length - 83.5 metres
Power - MTU-4000 diesel engines; MTU generator; AC Permanent Magnet Motor; Air Independent Propulsion (AIP); Li-ion batteries
Speed - 20-knots
Endurance - 10,000-nm
Masts - Attack optronic mast (non-penetrating), search optronic mast (non-penetrating), radar, electronic support measures, communications and snorkel
Crew - 50
Armament - Six 533-mm bow torpedo tubes, one Vertical Launch Missile System
Expected life span - 30 years

Strategic Defence Review

Let's hope that the members of the current Review consider the best options for the RAN and Australia. Can we rely on a smaller force of Collins class during the extended LOTE programme and will the wait to acquire nuclear submarines be value for money. The early 2040s is a long time to wait for the arrival of the lead SSN and much can happen in the intervening years. Any possible adversary will add many warships to their fleet while Australia awaits the arrival of its first SSN. Like the previous Collins class refits and the even earlier Oxley class updates, dismantling submarines is both complex and fraught with risk. When the boat is pulled apart, only then does the true scope of what needs to be undertaken can be properly confirmed.

The wait

If Australia persists with the nuclear programme, there will be a 20-year wait until these warships can be delivered via AUKUS agreement. As highlighted above, a deteriorating strategic environment would make it unwise to depend on the Collins LOTE completed on schedule. And, if successful it would delivery to the RAN an inadequate/still ageing fleet of just six platforms until the early 2040s. The South Korean solution could resolve several major problems simultaneously for less cost and across a much shorter period. However, the one main negative with such a plan would require the RAN to operate three classes of submarines for a short period.

In the meantime!

Australian submariners will soon train on HMS Anson, a British nuclear-powered Astute class submarine. Deputy Prime Minister and Minister for Defence Richard Marles was hosted on 31 August by the former Prime Minister Boris Johnson and Secretary of State for Defence Ben Wallace at the commissioning of HMS Anson at BAE Systems, Barrow. As part of the AUKUS partnership it was announced the training of Australian submariners aboard the newly commissioned submarine.

"Having RAN submariners train alongside Royal Navy crews, is an important step, taken with our partners in the United Kingdom to further strengthen our defence ties," Minister Marles said in a statement. "Our nation is embarking on the next generation of submarines and in doing so, ensuring we have Australian personnel training with our partners under the AUKUS partnership."

Top left: ***First of her class, ROKS Dosan An Chang-ho, was recently commissioned by South Korea. ROKN.***
Below: ***HMAS Collins at Exercise Kakadu 2022, at anchor in Darwin Harbour on 22 September. Chris Sattler.***

FIRST-EVER INDIGENOUS AMPHIBIOUS SHIP

New Taiwanese landing platform dock enters service

Above: Taiwan's naval shipbuilder, the China Shipbuilding Corporation (CSBC), began the new ship's official sea trials in mid-year. Designed as the country's first ever indigenous landing platform dock (LPD), Yu Shan was named after the tallest mountain of the island nation. Carrying hull number 1401 she was launched on 12 April 2021, with CSBC able to begin her sea trials after only a year of additional dockyard work. The 10,600-ton full-load amphibious vessel was commissioned into the Republic of China Navy (ROCN) on 30 September 2022. Speaking at the commissioning ceremony, President Tsai said the new vessel reflected Taiwan's path to "national defence autonomy". She also: "thanked everyone who had helped us overcome all obstacles, erase all doubts and begin domestic production. We're more determined than ever to continue developing our self-defence industries and safeguard our sovereignty and democracy." ROCN.

Below: According to a statement from CSBC, the new LPD is part of the government's policy of "national ship-building." The keel-laying ceremony for the vessel, built under a TWD4.635 billion (USD162.7 million) contract awarded to CSBC in April 2018, was held in June 2020. CSBC Chairman Cheng Wen-lung said at the time of the launch: "as well as serving as an amphibious warfare vessel, with space for landing craft and helicopters, she will be used for transporting to Taiwan's possessions in the disputed South China Sea and offshore Taiwanese islands which lie close to the Chinese coast, long considered easy targets for China in the event of war." ROCN.

Left: Yu Shan has an overall length of 153-metres, with a beam of 23-metres and a hull draught of six-metres. To achieve her many assignments the new ship will operate veteran AAV-7 amphibious vehicles. These tasks include amphibious operations, working in conjunction with the island's marine forces. This will involve landing troops and bolstering supply lines to vulnerable islands offshore China and in the South China Sea. As the main unit in an amphibious task force, Yu Shan will perform amphibious combat missions or undertake recovery operations on Taiwan's outer (offshore) islands and serve as a maritime mobile field hospital. Facebook.

Newport class tank landing ship, ROCS Chung Ping, 7 February 2019. Designed to supplement this ageing ship, the new LPD's secondary tasks will include disaster relief, with the ship serving as a temporary field hospital, as well as humanitarian and disaster relief efforts. To achieve her many roles Yu Shan will operate AAV-7 amphibious assault vehicles, larger landing craft, Hummer vehicles and carry a military force up to 673 soldiers. Five new landing craft mechanised (LCM), to operate from the new ship, were handed over to the ROCN at the time of Yu Shan's commissioning. Chris Sattler.

Left: For a ship of this role Yu Shan will be well-armed with an armament comprising one 76mm gun, and two Phalanx CIWS, the TC-2N medium-range air defence system, two Sea Sword self-defence modular missile launchers, each for 16 Hai Chien surface-to-air missiles. As well, up to seven fast artillery pieces, a Square Array Rapid artillery and various smaller calibre guns for close-in protection are fitted. The LPD's design also includes radar signature reducing features based upon an electromagnetic pulse protection system. ROCN. ▶

Left: Current plans of the Taiwanese Government call for CSBC to construct a total of these four LPDs for the ROC Navy to provide a huge capability increase. Upon entering service full service, Yu Shan will replace the fleet's sole active amphibious transport dock, ROCS Hsu Hai, the former ex-USS Pensacola, transferred to Taiwan in 1999. However, other reports have indicated that the first of the new class will fill the void left by the 2012 retirement of ROCS Chung Cheng (ex-USS Comstock), while the planned second unit will replace Hsu Hai. The other two units, will its seems, replace the two outdated USN Newport class LSTs, ROCS Chung Ho and ROCS Chung Ping, in service since 1970, and now in their 52nd year of service across two navies. USN.

Left middle: 32-cansiter TC-2N medium-range SAM launchers aboard ROCS Yu Shan, 30 September 2022. Part of the Sky Sword family of anti-aircraft missiles, the TC-2N has a range of up to 62-miles and uses active radar guidance. Potentially, these same missile cells fitted to Yushan could also be arranged to provide a mix of both anti-ship and surface-to-air missiles. However, recent reports have indicated that the plan to fit eight Hsiung Feng II anti-ship missiles has now been dropped. ROCN.

Below: Yu Shan will have a maximum operating speed of 21-knots and a range of 7,000-nm. The ship also boasts a large flight deck aft, supported by two hangars able to accommodate Sikorsky UH-60 Black Hawk or the Sikorsky SH-60 Seahawk naval helicopters. ROCN.

Army water transport during better days; a port quarter view of the medium landing ship (LSM) Harry Chauvel in 1968. Facebook.

THREE EASY STEPS

Delivering a new marine force

The Australian Army has been involved in water transport since the early days of the Second World War. It operated hundreds of requisitioned craft from early in the conflict, and as the war progressed added dozens of purpose-built designs, everything from dinghies to large landing craft. Army continues with its small but effective group of similar craft up to 2022, however the age of these vessels is now the primary concern.

To find suitable replacements for its existing batches of LCM-8 landing craft and LARC-V amphibious vehicles Army called for tenders to identify suitable replacements for both 1960's-era craft. A multi-phase acquisition program is now in place to facilitate the selection of new and effective designs that will transform the force's ability to operate in the littoral environments of both the northern Australia and the larger Pacific regions. These new craft will also need to operate with the Royal Australian Navy (RAN), as well as undertake their own regional missions, including humanitarian aid and disaster relief (HADR) tasks, which need equipment to be transported on water over longer distances.

Multi-tasks

In the complete range of humanitarian assistance and international engagements, as well as high-end operations and high-threat environments, there will be the need for the new water transport units to be active on the water. This includes transiting to or loitering off the location or supporting from. The two Canberra class LHDs, and the smaller HMAS Choules, will continue as the principal ships of future large amphibious operations, supported by their own ship-to-shore capability with the LLC (LCM-1E) landing craft. Army has identified the need for another level, to operate after the larger ships depart from the location.

As part of the multi-phase Land 8710, the ADF is investigating the acquisition of a new suite of capabilities, including:

- from 2026 begin to replace the long-serving LCM-8 force with the new $800m plan for a total of 18 Littoral Manoeuvre Vessels - Medium (LMV-M) craft; and
- in the same timeframe, introduce the new Littoral Manoeuvre Vessel - Amphibious (LMV-A) to replace the LARC-V fleet.

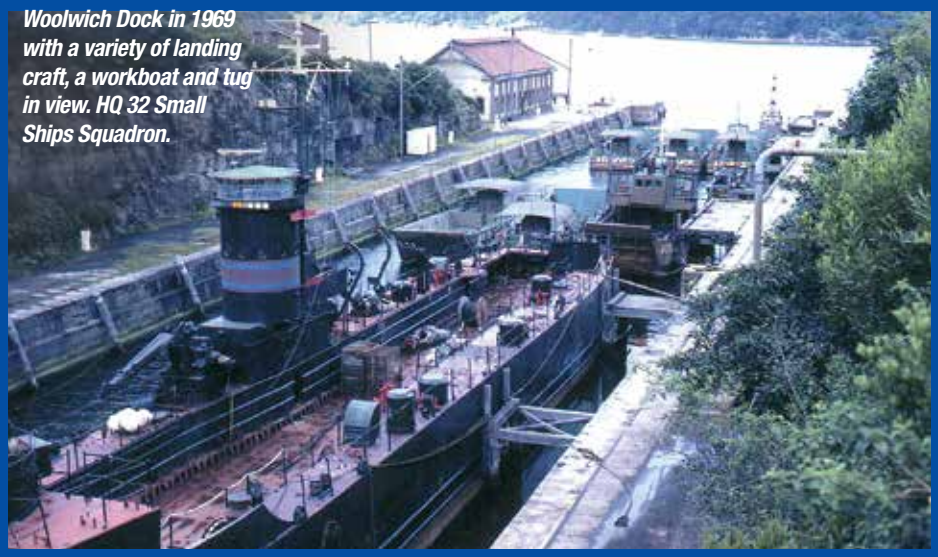
Tenders for the new LMV-M are expected from Australia's Birdon Group, the Australian Maritime Alliance (Serco and Civmec); the Austal, BMT and Raytheon Australia team: and Landing Craft Australia (comprising Navantia Australia and UGL). The new steel-hulled LMV-M is expected to be 20% larger than the current 59-ton LCM-8s and will boast a longer range (1000-1200-nm) than the older craft. This will allow the new landing craft to operate further into the region and accommodate the growing size and weight of the new armoured vehicles now being introduced into military service.

The new LMV-A force, to be acquired as part of Land 8710 Phase 1, is expected to be a development of the older LARC-V and not a greatly new or radical design. Phase 2 of the same Land 8710 program seeks to acquire a small number of heavy landing craft (LCH) with a displacement of 3000- 4000-tons. This second part is one of the most interesting, seen by many as an opportunity to operate true sea-going vessels again. The Army's lone Balikpapan class vessel operated for only a brief time during 1972-73 before transferring to the RAN, along with the remaining five craft commissioning directly into the 'senior service'.

If the new LCH class is approved, the larger vessels will be capable of embarking several tanks or infantry fighting vehicles across longer distances, a return to such Army operations that ceased almost 50-years ago.

Final phase

One additional phase in the program also envisages a small fleet of Littoral Manoeuvre - Riverine (LM-R) vessels designed to operate in the same coastal waterways of northern Australia and the Pacific islands in support of the LMV-M and LMV-A activities. The combination of these various new craft will see the 'new-look' Water Transport units operating sets of overlapping and cascading assets able to work in the all-important shore-to-shore environments, but also able to project into the region either independently or as part of a larger amphibious task group.



Woolwich Dock in 1969 with a variety of landing craft, a workboat and tug in view. HQ 32 Small Ships Squadron.

MORE OFFSHORE PATROL VESSELS?

Another German design to boost firepower reports Michael Wilson

The future of the Royal Australian Navy's (RAN's) patrol boat force appears to be open to change again. Initially, the existing Armidale class patrol boats (ACPBs) were to be upgraded to remedy faults in the class of 13 vessels. Then the decision was made to reduce the number to be refitted to six boats, and instead the Fleet would acquire six, later increased to eight, Enhanced Cape class patrol boats (ECCPBs). In 2017, the Federal Government also approved the $3.6B plan to acquire twelve new Arafura class offshore patrol vessels (OPVs), these much larger units being direct replacements for the ACPB force.

Over time the plan to operate a patrol boat force was slightly modified. Initially, the eight ECCPBs would be Navy crewed, then the former Government announced that these boats would be transferred to the Australian Border Force (ABF) upon the commissioning of the new Arafura class OPVs.

Then in mid-October 2022, the new Federal Government appears to have 'leaked' part of the forthcoming Defence Review (to be released in March 2023). In a number of press and television reports it was reported that the high-level Defence Strategic Review (DSR) was looking into the acquisition of another 'new fleet of small but powerful missile armed warships' to provide the RAN with a rapid firepower boost in response to growing strategic threats.

To allow for this new force to enter service, and to provide crews for these units, the Arafura class would then transfer to the ABF, one would assume, with the eight earlier announced ECCPBs. This would allow the ABF to retire of all its original Cape class cutters and two remaining Bay class cutters.

The new plan

The DSR is said to be considering a class ten to twelve corvette-size warships, armed from the outset with a variety of anti-air and anti-ship guided missiles, medium and small calibre guns, plus anti-submarine torpedoes. The design of the German built Braunschweig K130 class warship also provides space aft for a helicopter or UAS platform, but no hangar. The envisaged total cost for the force is said to be $5bn-$6bn or $500m per ship.

'Leaking' of this plan came about due to the growing awareness that the RAN's new Arafura class are too lightly armed to counter any current or future operations of the PLA-Navy and its maritime militia. The subject of insufficient guns and total lack of missiles on the new Arafura class has been discussed in these pages several times by a variety of naval commentators.

Above: FGS Ludwigshafenam Rhein. Note the two RAM anti-air launchers, one forward and one aft. Michael Nitz.
Below left: FGS Ludwigshafenam Rhein. The forward 76-mm gun is supported by two smaller guns located amidships. Michael Nitz.

The current DSR, chaired by former defence minister Stephen Smith and former Chief of Defence Force Sir Angus Houston, was said to be examining the merits of the new corvette option to ensure the RAN can operate in greater mass on another level to protect the nation's sea lanes and keep the south-west Pacific free of undesirable maritime activities. DSR was said to examining two designs from Luerssen - the K130 operated by the German Navy, and the slightly larger C90 type. Both designs are longer than the 80-metre Arafura class.

Comparing designs

As highlighted previously in Australian Warship the Arafura class OPVs could be upgraded into properly armed corvettes, but the strategic situation of 2017, when the offshore patrol boats were selected, is now much different from the strategic situation of the early 2020s. As a result, the DSR is expected to consider the alternate options to get the improved capability faster into naval service. Compared to the OPVs the suggested K130 warship is a much better armed corvette, based on a longer and heavier platform, a real surface combatant, and not a constabulary vessel.

The German Navy's K130 is armed with:

* One OTO Melara 76-mm gun and two single Mauser BK-27 autocannons,
* four RBS-15 Mk.3 anti-ship missiles and

two RAM Close-In Weapon System Block II launchers with 21 missiles each, and

* two mine racks for 34 naval mines, with a helicopter pad for two UAVs.

The mid October media reports also suggested that the lead K130 class corvette could be completed by 2028, with the follow-on sister ships rolling off the Western Australian based production line every ten months or so. To further facilitate progress these vessels could be a hybrid construction project, with work shared between Luerssen's shipyards in Germany and Australia.

In summary

Up gunning the Arafura class OPV would remain the fastest and most cost-effective way to get a powerful missile corvette to sea, to provide a real maritime capability boost years before the first Hunter class guided missile frigate is handed over. Both the proposed K130 corvette force or upgraded Arafura class OPV would complement the $45B plan to construct nine of the very large Hunter class frigates, the first of which is expected to enter service in the early-2030s.

Rather than incorporating yet another design into Navy's stable with the Braunschweig class, the RAN should consider the Bulgarian Navy's C90 - a larger 90-metre version of the Luerssen OPV that the Arafura is derived from, but with a much-improved weapon load. If the nation can build 80-metre OPVs in Henderson, it would not be a huge challenge to build the longer version. Then Navy could transfer the Arafura class already under construction and the eight new ECCPBs class to the ABF, to allow the Australian Fleet to focus on warfighting and not border protection and constabulary duties.

Other progress

Meanwhile, on 10 October, Austal Australia launched the RAN's fourth ECCPB, the future ADV Cape Capricorn. The vessel, Austal Hull 814, was launched at the Henderson, Western Australia shipyard following twelve months of construction and just three months after the launch of the third ECCPB, in June 2022. Then, on 3 November, the third unit, ADV Cape Naturaliste, was handed over to the RAN. And in Port Adelaide, the future HMAS Arafura was expected to begin sea trials in November 2022.

Above: RBS-15 anti-ship missile launchers aboard FGS Ludwigshafenam Rhein. Michael Nitz.
Below: Launch day for the future ADV Cape Capricorn, 10 October 2022. Austal.

DRONE UPDATE

RAN, RNZN and USN developments

Australian Mine Warfare Team 16 (AUSMWT16) continue to exercise and trial new levels of cutting-edge autonomous underwater systems, including an expendable mine neutralisation capability. Last March, Team 16 carried out a variety of tests in the Jervis Bay area, controlled from the team's recently delivered mine countermeasures support boat (MCSB). Meanwhile, across the Tasman, the Royal New Zealand Navy (RNZN) is about to employ new REMUS 300 drones, unmanned underwater vehicles (UUV) intended for clearance diving tasks.

The Royal Australian Navy (RAN) is making great strides in the conduct of its mine warfare operations, shifting the former personnel-intensive and high-risk mechanical methods that have placed persons directly into the hostile minefield. For several years now, Exercise Autonomous Warrior 22, which spanned 16-27 May this year, has provided a regular opportunity to further develop these new drone skills.

Safety first

By employing the recently delivered autonomous mine warfare systems, the RAN has quickly secured a much safer and more efficient method of search, classification and neutralisation of underwater threats. As part of this development, the team carries

out operational testing and evaluation with the Maritime Warfare Centre on three new systems: the MCMSB; the SeaFox expendable mine neutralisation system (see below); and the Bluefin-12 autonomous underwater vehicle, a larger variant of the Bluefin-9 that the team has operated since 2021.

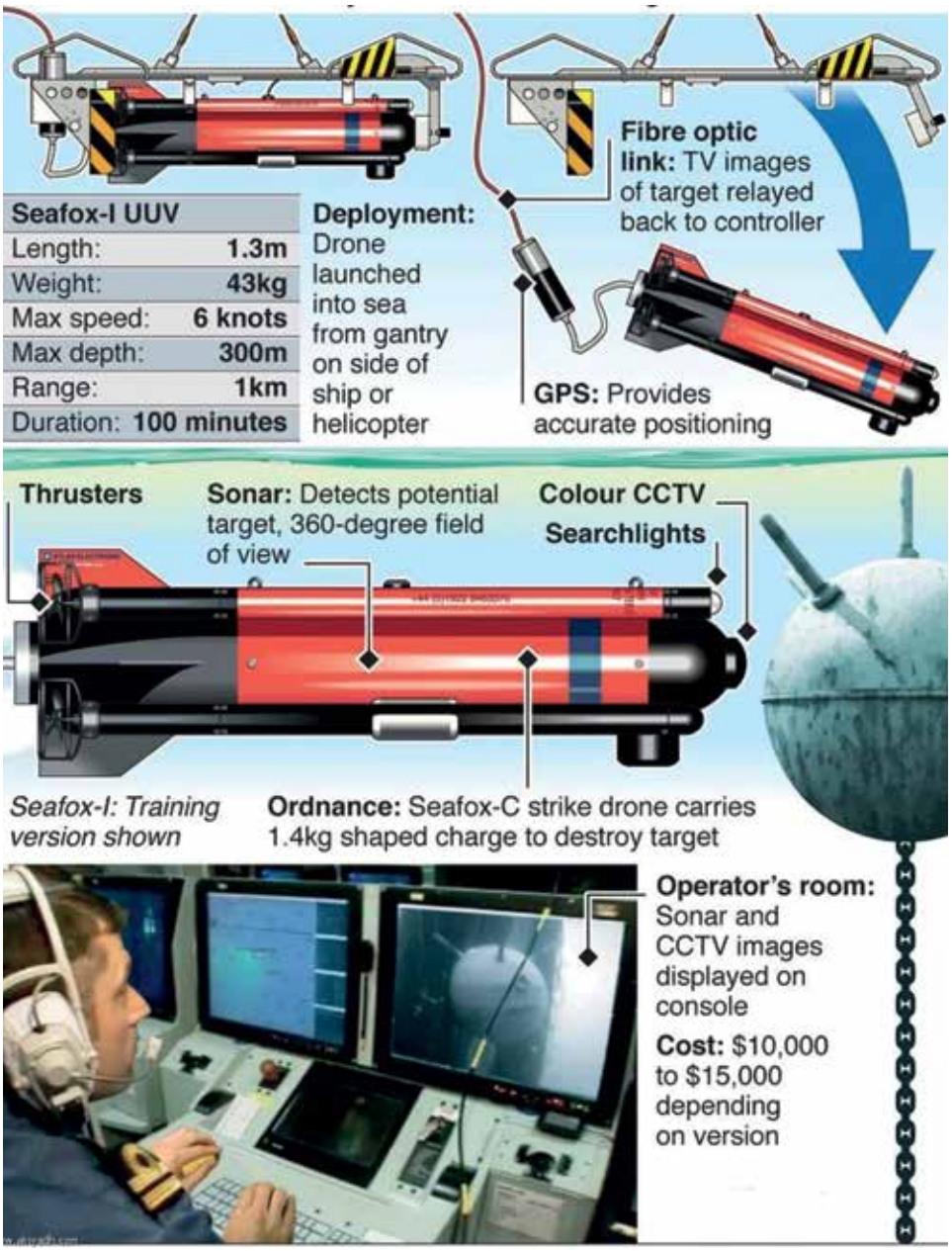
The new MCMSB, first introduced in 2020, is crewed entirely by sailors, and now provides a customised platform for the operation of the various SEA1778 autonomous underwater systems mentioned above. Mine warfare members, petty officers and leading seamen now undertake the roles as MCMSB master and mission controllers for the execution of full-scale deployable mine countermeasures. This level of training has continued throughout 2022 with the plan to establish the tactical development and operational effects that these systems will provide to the RAN.

During late 2022 AUSMWT16 will also transition into the Maritime Deployable Robotic and Autonomous Systems Experimentation Unit, with the unit itself to progress to full operational ability by the end of the current year.

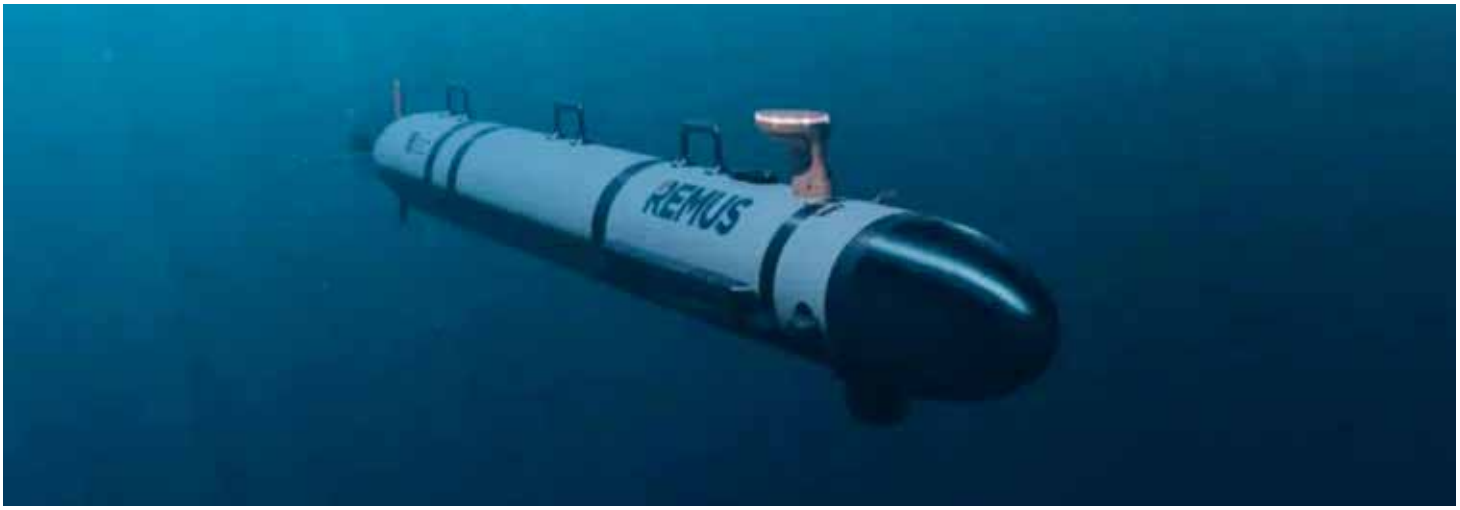
SeaFox

The SeaFox system is a new mine disposal system employing the Expendable Mine Disposal Vehicle (EMDV) principle. It is a fibre-optic guided, one shot mine disposal vehicle used for semi-autonomous disposal of naval mines and other ordnance found at sea. The system is highlighted by being able to automatically relocate previously acquired positions of underwater objects within minutes with the integrated homing sonar. After such relocation, the objects are identified using the onboard CCTV camera and destroyed using a built-in, large calibre shaped charge. The one-way concept significantly reduces the disposal time and extends the operational envelope.

The SeaFox system mainly comprises a console, a launcher and the SeaFox vehicles. The system can be delivered as a stand-alone or a fully integrated version. In case of stand-alone the console contains all electronics, software, displays and operating elements to guide the vehicle automatically or manually towards the target and to relocate, identify and destroy it. In the fully integrated version, a Multi-Function Console or any existing console can be used.



Top left: ***The Australian-made Bluebottle unmanned surface vessel (USV) Bob, during exercises on Jervis Bay. John Mortimer.***
Bottom left: ***The three MCMSBs together at HMAS Waterhen. From left: Kianga, Nambucca and Tambar. Chris Sattler.***
Above: ***Seafox. Facebook.***
Below: ***Remus 300. USN.***



The two different vehicles ensure quick disposal of mines during operation with the combat vehicle (SeaFox C) as well as cost-saving identification with the reusable identification version (SeaFox I).

New Zealand

The RNZN will soon introduce its first REMUS 300 unmanned underwater vehicle (UUV), with four HII-built drones to join the growing suite of unmanned systems in service with the Navy and larger New Zealand Defence Force. For the recent RIMPAC 2022, the RNZN deployed four of its smaller REMUS 100 UUVs, operating as part of Combined Task Force 177 (CTF-177). Personnel from the littoral warfare unit HMNZS Matataua joined USS Portland (LPD-27) to conduct mine countermeasure (MCM) operations off the Californian coast, alongside the manned and other unmanned systems from Allied navies. New Zealand acquired its first two REMUS UUVs in 2006 with the fleet being expanded to six over the following years. This growing capability has also been successfully deployed to the waters of Tonga, New Zealand and throughout the Pacific, most often than not, in the wake of disasters to survey and clear waterways.

The contract for the four new HII REMUS 300 UUVs was finalised in late 2021 to upgrade the drone fleet. The RNZN was the first international customer for this improved REMUS model and will also be acquired by the U.S Navy. Compared to the earlier REMUS 100, the 300 series are larger, dive deeper (up to 300m) and can be fitted to carry out longer-endurance missions. Following delivery of the REMUS 300 units in October/November, personnel will carry out six-nine months of acceptance trials before beginning service with the littoral warfare unit.

The RNZN has also purchased a single MARTAC MANTAS T12 highly modular drone, with the equipment operating alongside an RAN counterpart during Exercise Autonomous Warrior 2022. A highly modular design, these USVs can be quickly outfitted with a distinct payload, allowing single platforms to perform multiple missions with minimal down-time. The RAN and RNZN T12s operated closely with a variety of other unmanned systems, including a larger RAN MARTAC T38 Devil Ray.

Devil Ray

The RAN's fastest surface asset, the Devil Ray T38, made a separate debut on Jervis Bay as part of Exercise Autonomous Warrior 2022. The catamaran-hulled 38-feet long USV is powered by twin 300 hp diesel outboards, offering a burst speed of more than 80-knots, a payload capability of 2,041-kg, a range of more than 500-nautical miles at a cruise speed of 25- knots. Operations can be conducted in conditions up to Sea State 7. The T38 is capable of fully autonomous, semi-autonomous and full operator control modes.

Developed and manufactured by Florida-based Maritime Tactical Systems (MARTAC), each T38 can be fitted with a wide range of sensors as well as being able to remotely launch and recover onboard USVs and unmanned underwater vehicles (UUVs) via its stern ramp and can also

operate as a tow vehicle. Five of the type operate with the Royal Navy and a number equip the US Navy's Bahrain-based Task Force 59.

The RAN's T38 was acquired for test and experimentation along with a MARTAC T12, an electric-powered virtual double of the T38, but only 12-feet long and able to 'nest' on the larger craft's stern ramp while capable of deploying the same range of sensors. The man-portable T12 offers 30-hours station-keeping time, payloads of up to 64-kgs and a range of 64- nautical miles. While primarily designed for harbour-based and near-shore operations, it remains operational in conditions exceeding Sea State 4.

Austal USA

In late August the American companies, Austal USA and Saildrone, announced that they entered into a strategic partnership to build autonomous uncrewed surface vehicles (USVs). Designed to combine Saildrone's uncrewed surface vehicle technology with Austal USA's advanced manufacturing capabilities the new enterprise is keen to provide to the US Navy and other countries a solution for maritime domain awareness, hydrographic and other missions requiring persistent wide area coverage.

Saildrone Surveyor is designed specifically for deep ocean mapping and intelligence, surveillance and reconnaissance (ISR) applications, both above and below the surface. The vessel is seven-metres-long, with a 4.8-metre-tall mast to produce wind power for propulsion. The unit houses a package of sensors powered by solar energy for building a shared picture of the surrounding seas. Austal began manufacturing the first Saildrone Surveyor vehicles for the US Navy in October 2022. Already the USN had started operating Saildrone Explorers in the Arabian Gulf, expanding the US 5th Fleet's integration of new unmanned systems.

Top left: ***RNZN hydrographic Survey Operators sling-hoist a REMUS 100 autonomous under-water vehicle (AUV) aboard a U.S. Navy MH-60S Seahawk in July 2022. RNZN.***
Left: ***A MARTAC MANTAS T12 unmanned vessel approaches the larger MARTAC Devil Ray T38. ADF.***
Above: ***USN Saildrone Explorer unmanned surface vessel (USV) 18 May 22. John Mortimer.***
Right: ***Bluebottle unmanned surface vehicle (USV) Beacon, Jervis Bay, 18 May 2022. John Mortimer.***

RFA ARGUS TO SAIL ON

Oldest RFA to assume Littoral Strike Ship role reports Ralph Edwards

Royal Fleet Auxiliary (RFA) Argus will have her career extended beyond 2030 with the confirmation she will be upgraded to perform in the Littoral Strike Ship (LSS) role. The UK Defence Secretary stated in early July that the Royal Navy (RN) was still considering its options for LSS, but on the 11th he added that: "upgrading RFA Argus and operating her alongside the three Bay class RFAs in their current configuration represented the optimum solution to support a forward-deployed Littoral Response Group (LRG). This plan will provide a sustainable air manoeuvre, surface manoeuvre and command and control capability with the ability to manage availability as platforms undergo maintenance."

Argus, the oldest vessel in the Royal Fleet Auxiliary Fleet, is to remain in service beyond 2030 instead of being retired in 2024. This was because there is no suitable replacement for her medical support role. The original long-term plan would have been to replace Argus, the landing platform dock vessels HMS Albion and HMS Bulwark, and the three Bay class landing ship dock vessels, RFA Lyme Bay, RFA Mounts Bay and RFA Cardigan Bay (RFA Largs Bay was sold to Australia in 2012 and renamed HMAS Choules) with up to six multi-role support ships. However, these new vessels will now not be available for many years as they are still in the concept/design stage.

Early life

Argus started her career as a Ro-Ro container ship, the Motor Vessel Contender Bezant, built by CNR Breda in Venice, Italy and completed in July 1981. She was

RFA Argus, June 2019. Michael Nitz. The lift to the hangar deck is visible ahead of the forward Merlin helicopter.

registered in Bermuda and taken up from trade in May 1982 by the Ministry of Defence for service in the South Atlantic for the Falklands conflict. After a conversion to operate helicopters and Harrier jets at the Royal Naval Dockyard in Devonport, UK, she arrived off the Falklands just after the Argentine surrender. She was subsequently re-converted back to her original configuration and returned to her owner.

Later, when the Ministry of Defence was considering replacing the small helicopter support ship RFA Engadine, a solution was found by converting the Contender Bezant. The ship was purchased and underwent a four-year conversion to an aviation training ship by the shipbuilder Harland and Wolff of Belfast. She was commissioned as RFA Argus (A135) on 1 June 1988. In 1991, she was fitted out as a primary casualty reception ship with two fully equipped wards and a fully functioning hospital. Displacing 18,280 tons standard and 26,421 tons full load, for her size, Argus does have any major defensive armament systems, although she is painted in traditional grey instead of the white with red crosses of a hospital ship. She currently has the facility for between 90 and 100 beds and has four operating theatres. Argus boasts a hangar capacity for four helicopters in her air training role.

As a primary casualty reception ship, she has proved to be of excellent value. These included deployments to support the first Gulf war in 1991, Bosnia in 1993, Kosovo in 1999, Sierra Leone in 2001, the second Gulf war in 2003 and Sierra Leone (to assist in controlling the Ebola outbreak) in 2014.

In 2012 she was despatched to the Caribbean to support British Overseas Territories if required for the forthcoming hurricane season and again in 2020 during the Covid-19 outbreak. However, the lack of forward planning by the British MoD will now result in this aging vessel being retained far longer than intended and increase the challenges to maintain her elderly machinery.

LSS concept

The LSS concept was initially announced in early 2019. Early indicators were that a chartered commercial vessel might be adapted for the role. Subsequently, the 2021 Integrated Review (and the later National Shipbuilding Strategy refresh) stated that £50M had been allocated to modify one of the Bay class ships to become the LSS (South) based in the Gulf and Indo-Pacific region. That concept has now been de-scoped again with Argus earmarked to assume the primary LSS role, to be occasionally relieved by an available Bay class amphibious ship.

The new Argus decision is far better option than the smaller Bay class or even a converted Bay, which had a hangar capacity for two Merlin helicopters. Her existing aircraft lift and hangar provide sufficient space to accommodate the larger aircraft group as well as protection from the elements. Some minor upgrades may need to be undertaken, including workshop facilities and space for deep maintenance of the embarked Merlin or Wildcat helicopters. The hangar also permits other military vehicle loads to be carried and ▶

***Below left:** RFA Argus at Portland, 4 September 2017. Ralph Edwards.*
***Below:** RFA Argus in June 2017. Additional weapons systems will need to be added to the ship for her new LSS role. Ralph Edwards.*

transferred between decks via the aircraft lift. Smaller landing craft can be loaded on the flight deck using the 25-tonne crane but embarking stores and people on and off can be limited to very benign weather conditions. Davits for LCVPs could be fitted aboard the ship by re-configuring the lifeboat arrangements. This would allow LCVPs with a full load of personnel to be safely launched and recovered.

Weapons

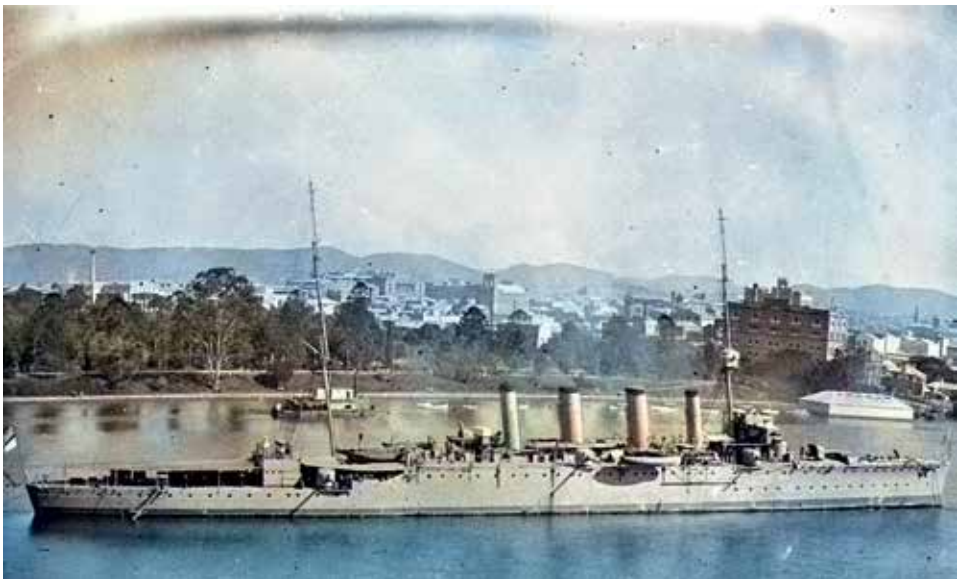
As the LSS will have to be deployed in high threat areas an improved self-defence weaponry comprising two Phalanx CIWS mounts, and two 30mm guns, supplemented with soft-kill decoys and possibly enhanced electronic warfare capabilities will need to be added. In 2022 Argus' civilian crew comprises 22 officers and 58 sailors living in relatively spacious cabins. Crew numbers for the LSS role have not been announced. As currently configured, the ship has accommodation for about 130 personnel from the air group plus up to 300 medical staff. Assuming at least 250 troops need to live on board, potentially for extended periods, they would occupy the existing medical staff accommodation areas.

Half-century

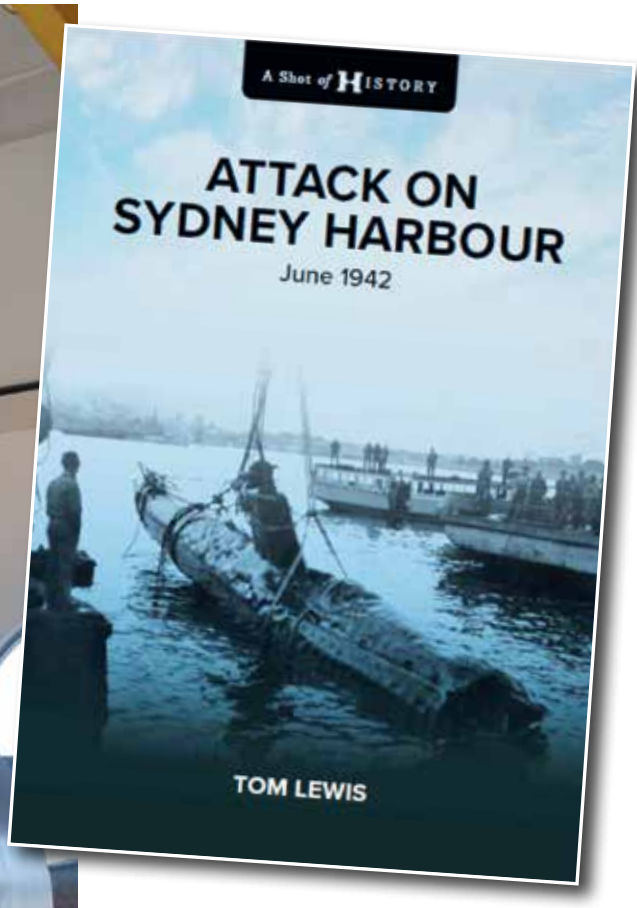
If this latest proposal for the use of Argus does proceed the ship will need to undergo a significant LIFEX refit to allow her to operate for another decade, by which time she will be more than 50-years-old.

Above: ***Fine stern view of RFA Argus in June 2019. Two Merlin helicopters sit on the flight deck. Michael Nitz.***
Below: ***RFA Argus 2019. John Mortimer.***

HMAS MELBOURNE (I)



Above: HMAS Melbourne operating close to Thursday Island, probably in 1913. Possibly taken in June or July, the light cruiser was operating with three River class torpedo boat destroyers, HMA Ships Parramatta, Yarra and Warrego. Several sham attacks were made by the destroyers at night after they left the harbour. Also in the region was the survey ship HMS (later HMAS) Fantome, and from 4 July, the gunboat HMAS Gayundah, with naval cadets embarked for their annual training afloat. Postcard.
Left: HMAS Melbourne, at anchor in the Brisbane River, 1913. In August the city hosted the Brisbane Exhibition. Image taken from Kangaroo Point Cliffs, looking towards the Botanical Gardens. Taylor family collection/University of Queensland.
Below: A very peaceful scene of HMAS Melbourne with HMAS Anzac (left rear) and an S class destroyer (right rear), in Hobart, post 1920. All three units are 'dressed ship' for the visit. RAN.



THE INCOMPETENT DEFENCE OF SYDNEY

The 1942 midget submarine raid by Tom Lewis

The story of the midget submarine raids on Sydney is one where the senior commanders at the time bungled - and got away with it. Meanwhile the commanders of the small ships that attacked and sunk two of the submarines went unrewarded.

On the Sunday night of 31 May 1942 Sydney Harbour was attacked by three midget submarines of the Imperial Japanese Navy. They had been launched by five large fleet submarines from outside the port. In the raid, the accommodation vessel HMAS Kuttabul was sunk by a torpedo impacting nearby, and 21 sailors died.

Harbour fight

In a night of, chaos, indecision, incompetence, but much bravery, the midget submarines were counter-attacked. Two, commanded respectively by Lieutenants Chuma and Matsuo, were sunk, while another - Sub-Lieutenant Ban's - was found outside the harbour in 2006. It had fired its two torpedoes but had missed its target of the cruiser USS Chicago - one however had detonated near Kuttabul.

Chuma's boat had become entangled in the protective boom net stretched partly across the harbour main channel. When attacking vessels of the Navy were encountered, it was blown up and sunk by its own crew members. Matsuo's boat was depth-charged several times by the RAN's small ships, and eventually it was cornered in Taylors Bay. The crew shot themselves.

Harbour defence

The man who allowed most of this disaster to happen on his watch was the admiral commanding Sydney: Rear Admiral Muirhead-Gould. On secondment from the Royal Navy, he was ironically well suited to manage harbour defence. In 1939, at the beginning of the war, a German submarine had penetrated the RN base of Scapa Flow, and sunk the battleship, HMS Royal Oak, with the loss of 835 lives. Muirhead-Gould was one of three naval officers appointed to investigate how this had happened, and how it might be prevented again. His next posting was Sydney.

Despite nearly two years to prepare for the Japanese offensive, and with growing signs they were getting closer - the Battle of the Coral Sea being fought off Queensland, for example - the Admiral did little. Amongst his lapses were failing to get any practise for his small ship commanders in submarine attacks; failing to ensure they were all armed - some weren't on the night; failing to stop the harbour ferries from operating once the attack started, which would have made spotting a periscope much easier, and even failing to believe that there were any submarines in the harbour at all.

When the explosion of Chuma's submarine was heard, the Admiral had cancelled his dinner, and made his way by launch down the harbour to investigate. Arriving on board the same small ships which had attacked the midget, he refused to believe there was one now sunk on the harbour floor beneath him. As he was disputing the point, the Kuttabul explosion further up toward the bridge was heard. Muirhead-Gould never apologised to the men he had doubted, and even left the name of one of them – the commander of launch Lolita, who he had argued with - off letters of commendation, the only reward the Navy men received.

Captain Bode

His partner in incompetence was the captain of the primary target: Captain Howard Bode of the cruiser USS Chicago. Bode had been dining with the Admiral. It being several hours after dinner had started one must wonder how alcohol affected both their judgements. The Captain made his way back to his command, where his subordinates had done everything right. They were preparing the ship for sea, along with her escort, the destroyer USS Perkins. They had sighted the midget submarine attacking Kuttabul and opened fire at the midget.

Far left: ***Midget sub conning tower at Garden Island.***
Above: ***Japanese torpedo ashore on Garden Island.***
Below: ***Rear Admiral Muirhead-Gould.***

Bode too refused to believe there were submarines present. He told off his officers; commanded Perkins to stand down, and ordered a signal made to Muirhead-Gould, apologising for firing in the harbour. Once the Kuttabul explosion happened, he changed his mind, and ordered Chicago to sea. On the way out of the harbour they sighted the third submarine - but failed to attack it.

Bode later committed suicide over further being the wrong man in the wrong job. A few months later he mishandled Chicago so badly in the Battle of Savo Island that he was the only commander the subsequent inquiry labelled as doing the wrong thing. When he learnt what was in the court's findings Bode shot himself.

Follow-up

Surprisingly, Muirhead-Gould was allowed to do more than just get away with presiding over the whole mess - he was lionised as a dutiful naval officer, even appearing on the front cover of the popular weekly Pix, riding a scooter to work. He wrote his own reports on the matter, and unsurprisingly emerged well.
But the federal government collaborated in the whole affair, failing to order an investigation. They had done so for the Japanese carrier raid on Darwin earlier that year, and the admirable Justice Lowe produced a comprehensive document within a few months.

Another huge lapse though was the failure to reward valour and competence on the night – in the commanders and crews of the small patrol vessels which had gone into the attack. One in particular, the patrol vessel HMAS Yandra, had put up a sterling fight at the beginning: chasing and ramming and depth-charging a submarine as it tried to enter Sydney Harbour. This was the Taylor Bay vessel, and significantly when it was found its torpedo firing levers were in the launch position: it had tried to attack but failed. With its equipment too damaged to continue the crew committed suicide. That Yandra's commander, Lieutenant James Taplin, and the small ship captains of the other vessels which had chased the submarine to its end were not decorated defies comprehension.

All of these commanders' names are known though. It is time they were rewarded.

The author's new book, Attack on Sydney Harbour, has been published by Big Sky Publishing. Dr Tom Lewis OAM is a military historian. Attack on Sydney Harbour is his 18th book.

NEW CAREER FOR FORMER HMAS TEAL

Cyprus' first floating museum ship from 2022

Cyprus, one of the most important ports for seafarers throughout every period of history, with its location in the centre of the Eastern Mediterranean, now has its own Maritime History Museum. The island's first floating ship museum is based upon the former Royal Australian Navy Ton class minesweeper HMAS Teal.

With all protocols signed between the Turkish Republic of Northern Cyprus' (TRNC) Ministry of Public Works and Transport and the Near East Organization, the almost 70-year-old former RAN minesweeper is now owned by the University of Kyrenia. The vessel participated in the formal opening of the new facility on 15 November, the local northern Cyprus Republic Day.

Naval service

Teal was built in 1955 by Phillip and Company's shipyard at Dartmouth, United Kingdom, for use as a minesweeper with the Royal Navy. She was one of 119 Ton class delivered to the British Fleet. Teal was first accepted into service on 20 July 1956 as HMS Jackton. The vessel proceeded immediately to the Agamemnon Shipyard for preservation in the Hythe Reserve Fleet, where she remained until purchased by, and then transferred to the RAN in 1961. She was commissioned on 30 August 1962. Along with HMA Ships Hawk, Gull, Snipe, Ibis and Curlew, Teal formed the 16th Mine Countermeasures (MCM) Squadron, arriving in Sydney with her sister ships on 7 December 1962.

On 4 February 1963, Teal commenced her service with the RAN, proceeding to the Broken Bay area for manoeuvres and mine countermeasures exercises with Gull and Hawk, however, Teal's participation was curtailed several times due to defects. On 20 September 1963, Teal and her sister ships sailed for their first overseas deployment as part of Operation GARDENING, a minesweeping task to clear a channel into Tonolei Harbour in Bougainville, where US aircraft had dropped many magnetic mines in 1943. This was the RAN's biggest minesweeping operation for 16 years. The Squadron returned to Sydney that December.

On 18 April 1964, Teal participated in a ceremony to commemorate the 194th anniversary of Captain James Cook's landing in Botany Bay following which she began a refit to prepare her for her forthcoming Far East deployment as part of Australia's contribution to Commonwealth support for Malaysia during the Indonesian Confrontation.

On 26 June 1972, Teal departed Australia for a four and a half month Far East deployment in company with Curlew and Snipe during which they conducted general survey duties, cleared a Second World War minefield in the vicinity of Port Moresby and participated in the SEATO exercise SEA SCORPION. The three ships

returned to Australia on 10 November and Teal saw out the year in a leave and maintenance period.

After restarting a normal training programme in 1973 along the Australian east coast Teal was decommissioned into Operational Reserve on 31 May 1973. During her 7-years and six-months in active service she had steamed 182,083 nautical miles. Teal remained in the Reserve Fleet for several years before finally being sold in October 1977.

Commercial service

Following her active days in the RAN Teal was employed on a wide variety of tasks. She was employed initially as a naval vessel in Cyprus and later as a passenger vessel and fishing boat in Tanzania and the Caribbean. Then in 1994 she was purchased by the Turkish Republic of Northern Cyprus Ministry of Public Works & Transport. For the next 27-years Teal was employed in the training of dozens of captains for both the Near East University and University of Kyrenia.

Museum duties

In 2021 Teal was converted into a floating maritime museum and berthed at the port of Kyrenia, Northern Cyprus. Now as the centrepiece of the Maritime History Museum Teal will display 5,000 maritime objects including ship models, nautical maps, paintings and photographs. On 9 September 2022 she was placed into the specific area built in Kyrenia Harbor as part of a magnificent ceremony. Creating this special area where Teal now rests involved much underwater work including the use of 3,500 cubic metres of concrete for an area measuring 56-metres long, ten-metres wide and four-metres deep.

Now located in the area between the arrivals building and the marina at the Port of Kyrenia, Teal will welcome passengers who prefer the sea route to come to arrive at the island's port. As well, Girne, one of the important port cities of the Mediterranean, will add colour to its identity with this most special regional Maritime History Museum.

Top left: ***HMAS Teal in 1970. Chris Sattler.***
Top right: ***Teal in 2022. Facebook.***
Middle right: ***Alongside the Port of Kyrenia, September 2022. Note the additional deck house aft previously employed in the training of the civilian mariners across 27-years. Facebook.***
Right: ***Teal enters her new dock facility on 9 September 2022. Much restoration work still needs to be undertaken on the 67-year-old wooden hull. Facebook.***

RAN's NAVAL STRIKE MISSILE CAPABILITY

For Hobart, Anzac and Hunter class combatants

In mid-year, Kongsberg Defence and Aerospace (KONGSBERG) signed the initial contract for the Royal Australian Navy's (RAN's) new generation anti-ship missile capability, the Naval Strike Missile (NSM). Earlier, on 5 April 2022, the Federal Government had announced the accelerated acquisition of the NSM to replace the existing Harpoon anti-ship missiles arming the Australian Fleet's eight Anzac class helicopter frigates (FFHs) and three Hobart class guided missile destroyers (DDGs).

Øyvind Kolset, Executive Vice President Missile Systems in KONGSBERG, stated "Signing this initial contract to commence the acquisition of an Australian NSM capability is an important milestone. This is a clear demonstration of our company's commitment to the accelerated delivery of NSM to the RAN to meet their requirements."

Developed in Norway, the NSM is a fifth-generation, long-range, precision strike missile designed to defeat heavily protected maritime targets in contested environments. KONGSBERG signed the initial contract with Australia, valued at A$71m for the overall NSM capabilities.

The missile

The Naval Strike Missile is a long-range, precision strike weapon that seeks out and destroys enemy ships over 100-nautical miles from the launch ship. Each NSM uses

inertia, GPS, terrain reference navigation, and imaging infrared homing (using the target database onboard the missile).

According to its manufacturer the NSM is a highly flexible system that can be launched from a variety of platforms for different sea and land targets. Due to its airframe design and high thrust-to-weight ratio, the NSM will provide the RAN with exceptional manoeuvrability. The missile itself is completely passive, demonstrating its excellent sea skimming capabilities, and with advanced terminal operations, it can withstand enemy air defences. Seeker's Autonomous Target Recognition (ATR) ensures that the correct target is detected, recognized, and hit at sea or on land.

Fifth generation

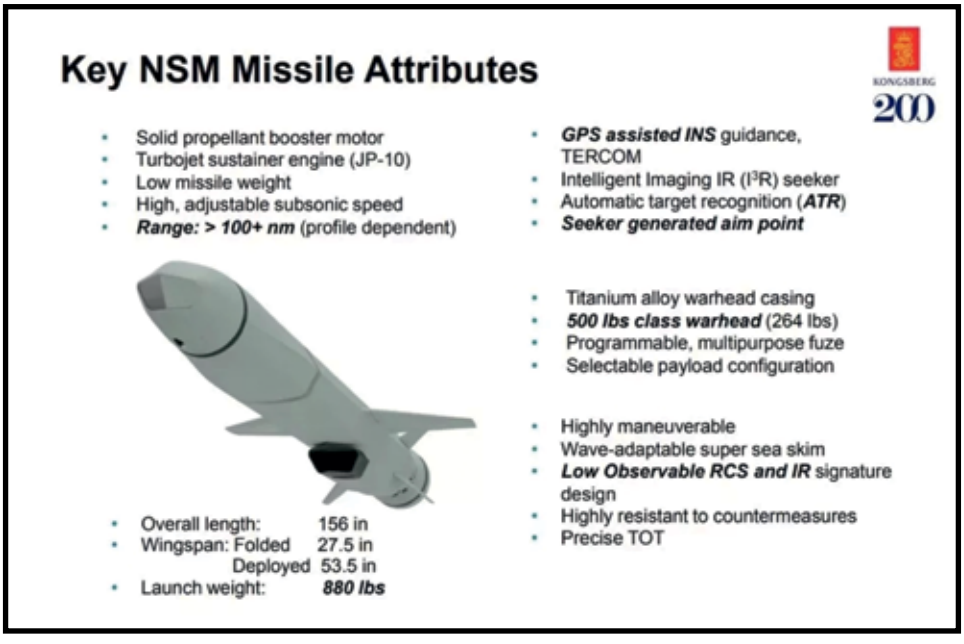
The NSM is a fifth-generation anti-ship missile manufactured by Kongsberg and managed by Raytheon in the United States of America. In 2012, NSM reached initial operational capabilities aboard the new Norwegian Navy's Fridtjof Nansen class frigates and Shell class missile fleet. The weapon is also operated by the Polish Navy's Coastal Defense Battery, and by Malaysia and Germany. In 2018 it was selected as the winner of the US Navy's Over the Horizon Weapons System (OTHWS) and by the US Maritime Corps the following year. The USN's designation is RGM-184ANSM block 1.

NSM data

Speed: 0.7 – 0.9 Mach
Weight: 407-kg
Length: 3.96-m
Multi-mission tasks: sea and land targets
Range: more than 100-nm
Response: Rapid Automated Mission Planning-Short Reaction Time

RAN missiles

The three classes of RAN combatants to be fitted with the NSM will carry varying missile loads. The Anzac class FFHs will mount their tubes forward of the bridge in a direct one-for-one replacement of the existing Harpoon anti-ship missiles, with a maximum eight of the weapons to be carried. The three Hobart class DDGs will launch their NSMs from the eight missile tubes located amidships, forward of the aft funnel. Each of the nine new Hunter class guided missile frigates (FFGs), expected to enter service from the early 2030s, will mount their NSMs aft of the funnel and at a higher deck than the Hobart class. The NSMs arming the Anzac class frigates, will more than likely, be transferred after the decommissioning of those ships and then fitted onto the newer Hunter class.



Top left: ***Littoral combat ship (LCS) USS Gabrielle Giffords launches one of her eight NSMs, mounted forward of the bridge in two quadruple launchers. USN.***
Left: ***Naval Strike Missile after launch. USN.***
Above: ***This broadside view of the Hobart (front) and Hunter class models clearly shows the location of the NSMs aboard each warship.***
Right: ***Company data sheet outlining additional NSM characteristics. KONGSBERG.***

EXERCISE KAKADU 2022

In words and photos

Top left: Commander of the Australian Fleet, Rear Admiral Jonathan Earley, said the contribution of Australia's regional friends and partners to Kakadu was a true reflection of longstanding friendships and cooperation. He said it was the most significant international engagement activity and was vital for building relationships between participating countries. In this view the Thai frigate HTMS Bhumibol Adulyadej, Malaysian frigate KD Lekiu and USS Charleston sail in line-astern formation for anti-aircraft firing serials off Darwin on 16 September 2022. LSIS Jarrayd Capper.
Above: HMAS Hobart, 15 September 2022. Exercise Kakadu 2022 came to a close on 24 September, its theme of 'partnership, leadership and friendship' woven throughout a full program of activities in the seas and skies off Northern Australia and in Darwin from 12 September. Chris Sattler.

Above: India was represented by INS Satpura, seen here with the Singaporean frigate RSS Steadfast. Chris Sattler.
Left: HMAS Hobart fires her 5-inch gun during a surface gunnery serial on 18 September 2022. This year's exercise involved 15 warships - including a submarine - and 34 aircraft from 22 nations, with more than 3000 sailors and officers. LSIS Tara Morrison.
Below: French frigate FNS Vendemiaire on 11 September. For this year's Kakadu, the participating forces steamed more than 24,500 nautical miles, conducted 13 anti-submarine warfare exercises, 15 air warfare serials and 17 gun-firing exercises, and expended more than 13,000 rounds of ammunition in high-end training scenarios. The air component flew 163 fixed-wing aircraft sorties, providing the Kakadu fleet and aviation task force with some of the best maritime air warfare training opportunities experienced in recent years. Chris Sattler.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Left: *HMA Ships Hobart and Perth in Darwin Harbour, 12 September, at the start of the exercise. The capabilities exercised by the various units ranged from humanitarian and disaster relief, seamanship and maritime law enforcement operations to high-end maritime warfighting, including anti-air and anti-submarine warfare in a combined environment. The Anzac class frigate Perth, with her five-inch (127-mm) gun, was joined by the US Navy littoral combat ship USS Charleston and Malaysian frigate KD Lekiu with their 57-mm guns, the Thai frigate HTMS Bhumibol Adulyadej and Japan Self-Defense Force ship JS Kirisame with their 76-mm guns, and the French frigate FS Vendemiaire with her 100-mm gun. Chris Sattler.*

Bottom left: *HMS Spey arriving in Darwin on 5 September, prior to joining Kakadu 2022. Paul Charlton.*

Above: *Indonesia was represented by stylish looking frigate KRI Raden Eddy Martadinata. During Kakadu, the frigates and destroyers conducted maritime warfare training, to defend themselves from threats in the air and from other ships and submarines. Chris Sattler.*

Below: *HMAS Armidale was one of eleven RAN ships involved in the exercises in northern waters. Five of her sister ships were also active. The destroyers, frigates, corvettes and littoral (near-shore) combat ships of varying capabilities sailed in two task groups to undertake training activities to teach task groups to work together. The latter half of the nine-day sea phase pitched the two task groups against each other in a tactical warfare scenario, testing the full capabilities of each ship and crew. Chris Sattler.*

Bottom: *The Australian Border Force vessels Cape Leveque, Cape Wessel, Storm Bay, Thaiyak and Arnhem Coast operated alongside the RAN Fleet units. This is Thaiyak on 17 September. Chris Sattler.* ▶

Above: ABF Arnhem Coast, 14 September. Kakadu's third task group comprising smaller patrol boats received boarding party training to prepare them for fisheries enforcement, border protection and other maritime law enforcement duties. Chris Sattler.

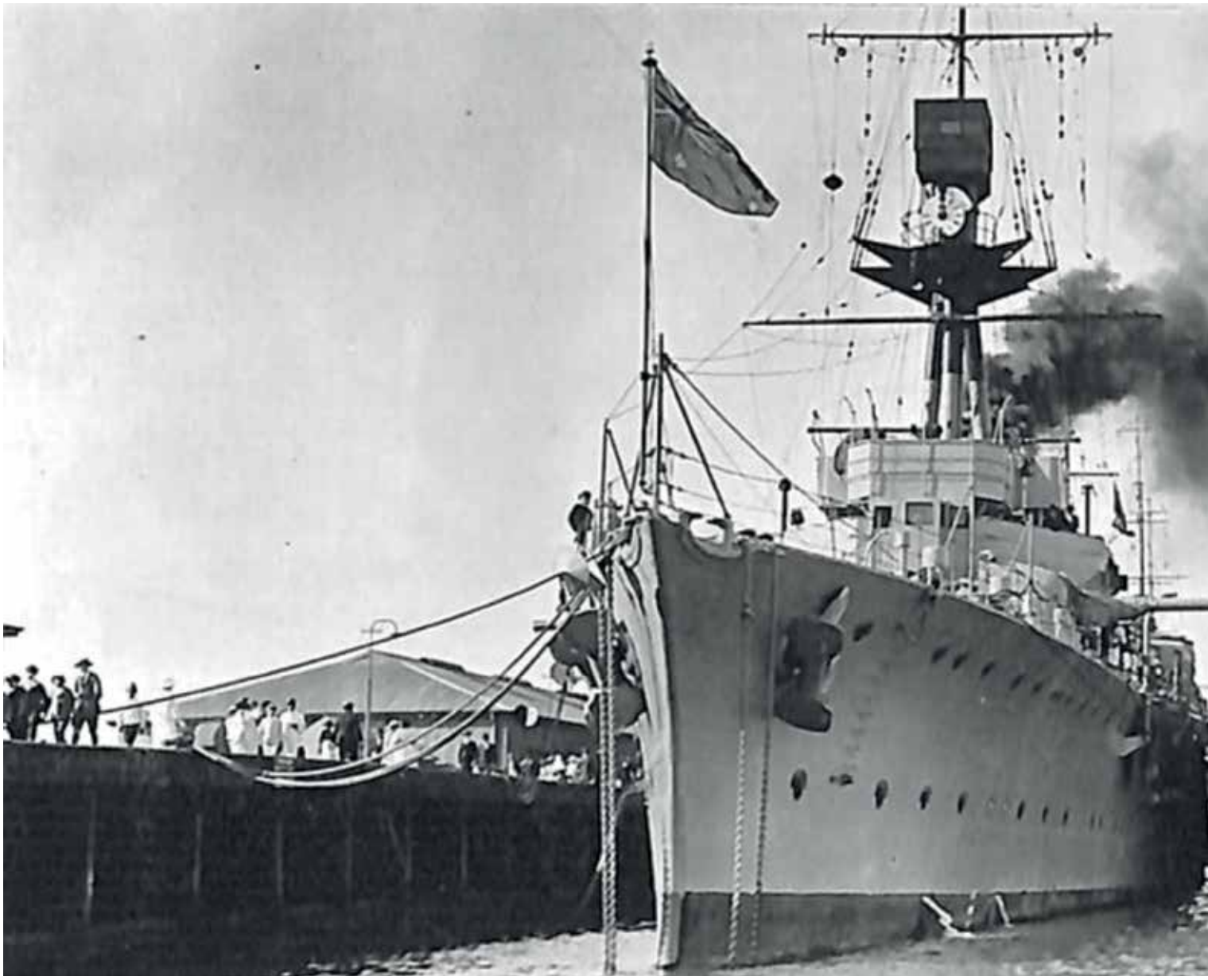
Below: HMAS Melville, 16 September. Ashore in the Exercise Control organisation, for the first time in the history of Kakadu, representatives from the international partners filled almost all key positions, supported and mentored by their Australian counterparts. Chris Sattler.

Below: The huge flight deck of the USS Charleston provided plenty of space for the ship's own Sikorsky's Romeo anti-submarine helicopter and Northrop Grumman's MQ-8 Fire Scout unmanned autonomous helicopter (drone). The next Exercise Kakadu is scheduled for 2024. Chris Sattler.

Above right: Japan's JS Kirisame on 11 September. Exercise Kakadu was being conceptualised in the early 1990s, when geopolitics and natural disasters presented complex challenges, as they continue to do today. Chris Sattler.

Above: Malaysian frigate KD Lekiu. Through cooperation and partnerships, Kakadu continues to support Australia's mutual security and alliance obligations and interests. Chris Sattler.

Below: The participation of the USN's littoral combat ship USS Charleston provided 'all-hands' with a closeup look at this much-discussed style of warship. In this port bow view the ship displays her forward 57-mm gun and eight ant-ship missiles. Chris Sattler.



HMAS ADELAIDE'S FIRST VISIT TO PORT ADELAIDE

Crew entertained at the Cheer-Up Hut 1922

As reported by the Adelaide Advertiser newspaper, on Wednesday, 22 November 1922, great interest was shown in the arrival of six ships of the Australian fleet at Port Adelaide, the previous Tuesday afternoon. For the local citizens the visit by the Royal Australian Navy (RAN) was one of the largest since the end of the Great War and provided an opportunity to inspect the first Australian warship to be named after the state's capital city. The new light cruiser HMAS Adelaide had been commissioned into the fleet, 15 weeks and three days earlier, on 5 August.

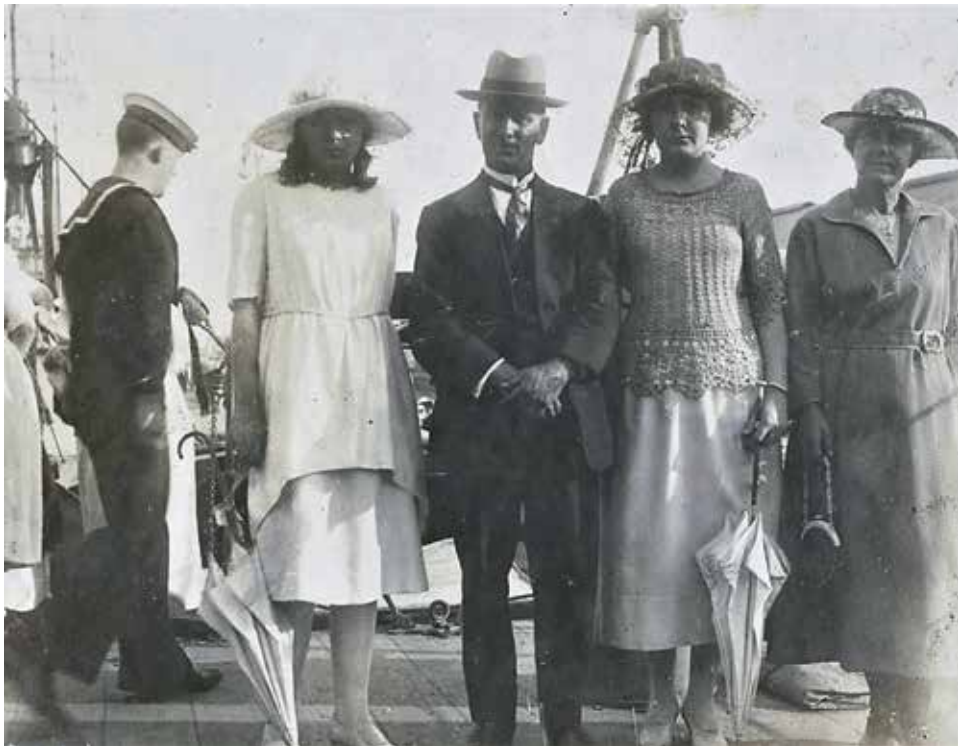
The *Advertiser* stated:

Large numbers of people gathered on both banks of the river and at Swansea and other points to see the vessels steaming up the river to the Birkenhead wharfs. Most of the crews were given shore leave. Many of them had friends waiting for them, and their leave enabled them to stay ashore overnight. From shortly after 7 o'clock there was a busy time at the Port

Adelaide railway-station. The first train after that hour was crowded with men from HMAS Melbourne. The next to arrive were from HMAS Sydney, and at 8 o'clock the crew of HMAS Adelaide and other vessels put in an appearance.

The Adelaide will naturally excite the greatest interest here, not only because she is a namesake of the city, but because

she has only just been put into commission. The cruiser Melbourne, the flagship, of the Commodore Commanding (Commodore A.



Left: The new light cruiser HMAS Adelaide during her first ever visit to Port Adelaide in South Australia. The visit spanned from 21-27 November 1922. Lying outboard of the new cruiser is the destroyer leader HMAS Anzac.
Above: Dressed for the occasion, family members visit HMAS Adelaide. Left to right, Gwen, Will, Edith, and Lillian Lashmar, on board during a visit to the Royal Australian Fleet. Written on reverse: 'Sincerest of Best Wishes from Darley and Dud. Visit of R.A. Fleet to Adelaide. November 1922. H.M.A.S. Adelaide'. The cruiser's tripod mast is visible behind the family. Facebook

P. Addison, C.M.G.) onboard, led the line, and was first to berth. After she was made fast at Darling's wharf, the District Naval Officer, Lieutenant R. Fulton, went on board in his official capacity.

The ships are berthed as follows: The Melbourne (flagship), Darling's wharf; Sydney (cruiser), No. 2 berth, Birkenhead; Adelaide (cruiser), No. 4 berth, Birkenhead. The destroyers Anzac and Stalwart are berthed outside the Adelaide and Sydney respectively. The submarine 'mothership' Platypus, which arrived shortly after the rest of the fleet, is berthed at Musgrave wharf. The tender Biloela, which was originally expected, did not arrive. She will go direct to 1 Port Lincoln in time to meet the rest of the fleet.

The principal officers are: Commodore commanding, Commodore A. P. Addison; chief staff officer, Flag-captain Henry J. Feakes, Captains John A. Stephenson, and Henry P. Cayley, Commanders of Adelaide and Sydney respectively: Lieutenant-commanders G. and H. V. Creer, from Anzac and Stalwart respectively: and Commander Maurice B. R. Blackwood, D.S.O., commanding Platypus.

In all probability the ships will remain in port until Monday next, when they will proceed to Port Lincoln.

The men entertained

The men of the fleet accepted the invitation of the Cheer-Up Society to the Cheer-Up Hut, where they came immediately upon their arrival. The building was gayly decorated with flags of Great Britain and her Allies of the Great War, and with the neatly uniformed lady helpers in attendance it breathed quite an atmosphere of the days when it meant to much to the sailors and soldiers who had responded to the call of duty. This was the fourth occasion that the Hut was officially closed that it had been reopened to receive naval men. The other occasions were those on which the New Zealand, Australia, and the Renown - the last-named conveying the Prince of Wales - visited Adelaide. This time, as when the Prince was here, the Hut will be open throughout the week for the convenience and entertainment of the 'lads in blue'. It was through

the energies of Mrs. A. Seager (secretary of the Cheer-Up Society), members of the Navy League, and a band of helpers that the funds were obtained to enable the reopening of the Hut and the entertainment of the men possible. A start with the proceedings was to have been made at 8 o'clock but owing to the delay in the arrival of the fleet the body of the men did not reach the city until about 9 o'clock. They were received with musical honours by the Returned Soldiers Band, who were accommodated on the balcony.

Mr. George McEwan (chairman of the Board of Management of the Cheer-Up Society presided, and associated with him at the head table were the Lord Mayor (Mr. L. Cohen), Sir Frank Moulden and Lady Moulden, and Captain C. J. Clare, C.M.G.

The Chairman said he desired, on behalf of the promoters of the entertainment, to extend a hearty welcome both to those who had never before been in South Australian waters, and to the lads who had previously been in Adelaide.

During the war the ladies who were now entertaining them had received no fewer than 150,000 soldiers and sailors at the Hut. They hoped the stay of the members of the fleet in Adelaide would be a very happy one, and that they would leave -with recollections of having spent an enjoyable and a profitable time.

The Lord Mayor said, as Australians, they were an integral part of the great British Empire - the greatest Empire in the civilised world - and they had to be thankful for the freedom, rights, and privileges they enjoyed in this glorious country. It was because of these privileges that they had such a sympathetic feeling for the Australian fleet. They realised the value of the splendid work done by the Australian sailors at the time when the Empire called upon every man and every woman to do their share of the tremendous work which then presented itself.

Among the ships at present in South Australian waters were two or three notable ▶

vessels. They remembered when, some years ago, in the midst of the most critical period in the history of the world, that splendid warship Sydney was conveying troops to the front, she finished off the raider Emden, which was such a menace to commerce. He did not wish to particularise with regard to the ships, for they owed a deep debt of gratitude to every man, officer, and commodore whose work had involved such an immense sacrifice at a most critical time.

To the members of the Royal Australian Fleet - a fleet identified in every particular with the majestic fleet of Great Britain - they extended a most hearty welcome.

Captain Clare, whom the chairman introduced as a man who, before the lads present were born, had commanded the South Australian naval forces, said his main reason for attending that night was not to make a speech, but just to see once again, the uniform. He had served a great many years in the Australian Navy and was always glad to meet its present members.

The Washington Conference had made it necessary for the navies of the world to be reduced. He hoped the Federal Government would not reduce the Australian Navy lower than the very highest point at which they were allowed to retain it. It was all right to talk of a League of Nations and a Washington Conference, "but when the enemy was in sight they well knew what a scrap of paper meant: and a navy could not be built up in a few months." It had always been said that it took seven years to make a good sailor.

Still, modern conditions, with their mechanical appliances, might perhaps now make it possible to train a sailor in two or three years. But, as the navy bad been reduced in numbers, it behoved every present member to do his utmost to make up the deficiency in numbers with quality.

Adelaide and the other RAN fleet units departed Port Adelaide on 27 November.

What was Cheer-Up

Soon after the outbreak of the Great War in August 1914, Mrs Alexandrine (Alexandra) Seager, a real estate and employment agent, and William Sowden, editor of the (Adelaide) Register newspaper, were shocked by the lack of public support for troops awaiting embarkation at the suburban Morphettville camp. They formed the Cheer-Up Society, whose volunteer women workers aimed to 'promote and provide for the comfort, welfare and entertainment' of soldiers and sailors. The society wished to shield personnel from alcohol and disreputable city entertainments.

At the Cheer-Up Hut, opened in 1915 west of the Adelaide City Baths on King William Road and financed by funds raised at fairs and badge days, the men could have free meals, meet friends, play billiards and enjoy concerts. Departing troops were given great farewells. Food and money were donated by the society's 10,000 members, particularly from country branches.

The hut closed on 24 December 1919 after the bulk of the servicemen had returned following the end of the war. However, it reopened as required to cater for later arrivals and provided a venue for returned soldier activities and associations.

The Cheer-Up Society was revived during the Second World War and offered hostel accommodation from 1941. Volunteers again provided thousands of meals along with concerts, dances, picture shows and 'home-comforts'. With many troops passing through in 1942 and 1943 billeting was organised and a second hut opened at the Palais Royal on North Terrace east.

After the war Hut No. 1 and the SPF Hostel were sold to the state government which converted them to the Elder Park Migrant Hostel, providing initial accommodation for newly arrived migrants from Europe. The Cheer-Up Society disbanded in 1964 and its funds and assets were distributed to welfare and service groups. A Cheer-Up Association succeeded the society but the gatherings of these former members of the society fell away in 1970 when the hostel was demolished for the construction of the Adelaide Festival Centre.

***Above:** Cheer-Up Hut in 1919. The Cheer-Up Society was a South Australian patriotic organisation whose aims were the provision of creature comforts for personnel in South Australia. Much of their activity was centred on the Cheer-Up Hut, which they built behind the Adelaide railway station, and almost entirely staffed and organised by volunteers. SLSA.*
***Left:** The Cheer-Up Hut is framed by the city's ANZAC Arch, about 1920. SLSA.*

HMAS CHOULES

Above: HMAS Choules arrives at Chowder Bay in Sydney Harbour on 3 November 2022. For much of the year the amphibious ship has been in refit at Fleet Base East including a period in the Captain Cook Graving Dock. Chris Sattler.

Below: Detailed view of the bow/forward superstructure of HMAS Choules. The most obvious addition to the ship is the fitting of a single 20-mm close-in-weapons system. Since arriving in Australia in December 2011 the ship has only carried small calibre machine guns for defence against any small/fast hostile boats. Chris Sattler.

PORTSMOUTH

Top: Italian Orizzonte class air-defence destroyer, ITS Andrea Doria, entering Portsmouth, 28 September 2022. All courtesy photographs Steve Ashton.

Above left: Type 23 frigate HMS Lancaster sailed on 15 August to undertake three years' service in the Persian Gulf. To avoid returning to the United Kingdom her crew numbers will be changed on a regular basis.

Above right: The former Royal Navy minehunter HMS Atherstone (M38) is towed from Portsmouth for the final time, 10 October 2022. Atherstone was sold by the MoD to the Belfast-based shipyard Harland and Wolff with a view to refurbishing her for non-military purposes.

Below: German frigate F218, FGS Mecklenburg-Vorpommern (F218) approaches Portsmouth on 11 October 22.

UPGRADES

HMA Ships Hobart and Brisbane depart from Sydney Harbour. The Australian Government recently signed a six-year contract with BAE Systems to take on a new, innovative sustainment role designed to optimise the capability of the three Hobart class guided missile destroyers. The new $155million approach will see a Capability Life Cycle Manager installed for the Hobart class units - the first of its kind for a major in-service asset, as part of the realisation of the Future Maritime Sustainment Model under Plan Galileo. The plan is Defence's new national, innovative approach to sustainment in support of Continuous Naval Shipbuilding. BAE Systems will steward the destroyers through life, including a significant upgrade to their combat management system in 2025. The Capability Life Cycle Manager will work with Regional Maintenance Centre East, which as part of the new approach is being established to maintain multiple asset classes. The appointment of BAE Systems follows the appointment of Raytheon as the Capability Life Cycle Manager for the new Arafura class offshore patrol vessels, earlier in December 2020. Chris Sattler.

One of the Navy's S-100 Camcopter unmanned aerial vehicles (UAVs) on display in Commonwealth Park. This year's event, the first for several years, was also supported by the Maritime Trust of Australia, the Naval Commemoration Committee of Victoria, Australian Navy Cadets from TS Voyager and Hobsons Bay Council, with several naval and recruiting displays, including the presence of an RAN Romeo helicopter from NAS Nowra.Kevin Dunn.

80 YEARS

Above left: *Dress ship for the former HMAS Castlemaine. A RAN MH-60R Seahawk helicopter flies above the veteran corvette during Navy Day 2022 at Williamstown, Victoria. Navy Day 2022 also celebrated the 80th anniversary of the commissioning of the Bathurst class minesweeper (corvette) on 17 June 1942. The Commonwealth Reserve at historic Williamstown, on the shores of Port Phillip Bay provided the site for the various events. On show were static and aerial displays by RAN and RAAF aircraft, with entertainment provided by RAN Band – Melbourne, concluding with an official reception and ceremonial sunset against the backdrop of Castlemaine. LSIS James McDougall.*

Above: *Navy Day 2022 activities attracted about six hundred to the various events. In this view an MH-60R (Romeo) helicopter is conducting an air-sea rescue above HMAS Castlemaine. A sunset ceremony was also held aboard Castlemaine. A record number of visitors (600) inspected the Second World War veteran. RAN.*

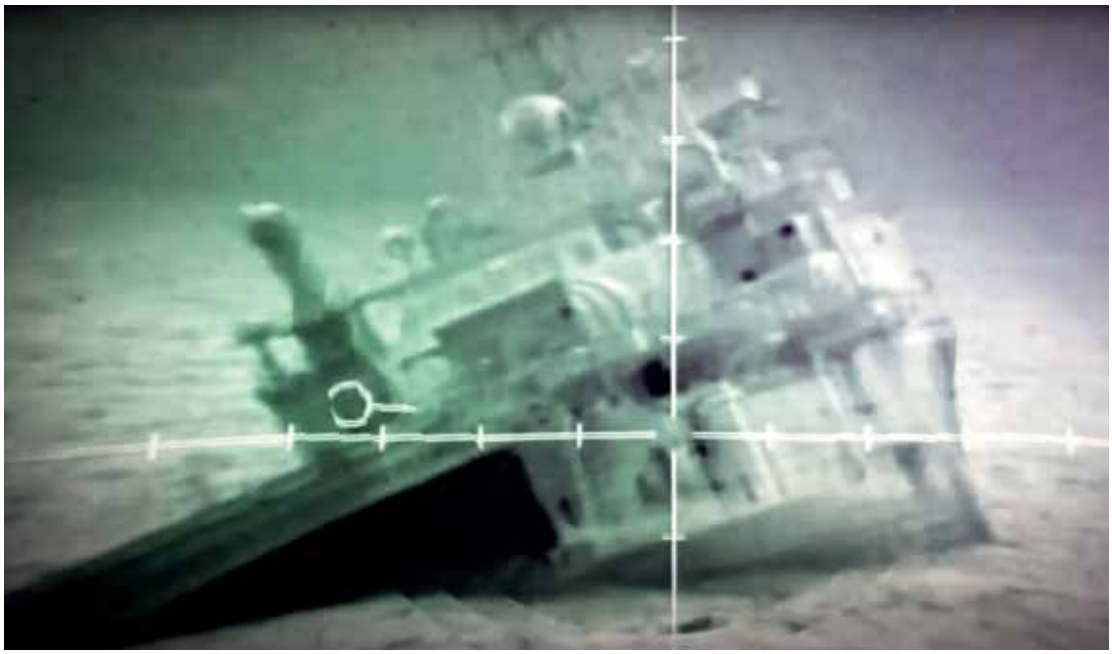
THE WEST

Left: HMAS Toowoomba approaches Fremantle for the annual Maritime Day exhibition on 28 October 2022. The ship proved the star attraction alongside being the latest AMCAP-completed Anzac class helicopter frigate. Toowoomba, which had only started trials in early-September was also open for public inspection. Chris Gee.

Middle left: HMAS Parramatta arrives at Henderson Shipyard in Western Australia to begin her Anzac Midlife Capability Assurance Program (AMCAP) on 1 November 2022. In the upper right is HMAS Perth, having returned form Darwin/ Kakadu22 on 30 September. After just a few days at FBW she proceeded to the AMC Henderson on 6 October for much work alongside. The hull of the former HMAS Sirius is visible in the back-ground. POIS Richard Cordell.

Below: HMAS Parramatta ashore at AMC on 1 November 2022, with HMAS Ballarat (left) and HMAS Stuart (right). Parramatta is the last of the class to begin AMCAP. POIS Richard Cordell.

Bottom: End of the line for the former fleet units, HMAS Sirius (left) and HMAS Otama, at AMC Henderson, on 4 October 2022. In this view, Sirius has had most of the bridge superstructure removed, while Otama rests in a forlorn position, in what is probably her final resting place near the western side breakwater within the AMC Henderson yard. Chris Gee.



USN SINKEX

Above: *The former USS Denver was sunk during a sinking exercise (SINKEX), as part of the multinational exercise Rim of the Pacific (RIMPAC) 2022, approximately 50 nautical miles northwest of Kauai, Hawaii. This photo depicts the amphibious ship arriving in Darwin in September 2013. Paul Charlton.*

Left: *A port broadside view of the 1968-vintage USS Denver with her aft deck loaded with US Marine Corps helicopters. Paul Charlton.*

Bottom left: *The retired landing platform dock (LPD-9) was hit by U.S. Navy F/A-18F Super Hornets long range anti-ship missile; United States Army AH-64 Apache helicopters shot air-to-ground Hellfire missiles, rockets, and 30 mm guns; and Marine Corps F/A-18C/D Hornets fired AGM-88 HARM missiles, followed by a Harpoon (AGM-84) missile, and JDAMs. She was also shelled by USS Chafee with her Mark 45 5-inch (130 mm) gun, Japanese Self Defence Force Type 12 Surface-to-Ship Missiles and the U.S. Army's High Mobility Artillery Rocket System, sinking her in 15,000 feet (4,600 m) of water in the Pacific Ocean. In this view she has heeled to port prior to sinking. USN.*

US MISSION

HMS Queen Elizabeth sails back into Portsmouth on 13 October 2022. After sailing on 7 September, the carrier arrived Naval Station Norfolk on the 21st for a scheduled port visit to represent the UK amongst its NATO allies. QNLZ was due to begin a four-month deployment to the Baltic and Mediterranean with embarked F-35 jets. Instead, she sailed for the east coast of the US and performed some of the defence engagement tasks planned for HMS Prince of Wales, in particular hosting the Atlantic Future Forum in New York. Prince of Wales was unable to begin her planned deployment when an external coupling that connects the outer propellor shaft to the drive shaft from the propulsion motors failed. Steve Ashton.

After a two-month long transit the Russian Navy Improved Kilo class submarine RFS Magadan (B-602) arrived in her future homeport, the Vladivostok Naval Base on 9 October, having made a transit of 9,000 nautical miles from St. Petersburg in the Baltic Sea to Vladivostok in the northern Pacific Ocean. The 12 October 2021 commissioned diesel-electric submarine was accompanied during the delivery voyage by the Russian Navy ocean tug RFS Viktor Konetskiy. Magadan is the third of six project 636.3 submarines, which have been ordered from Admiralty Shipyard in St. Petersburg to serve with the Russian Navy Pacific Fleet. It is expected that the delivery and commissioning of the remaining three project 636.3 submarines for Russia's Pacific Fleet, Ufa, Mozhaysk and Yakutsk, will occur in 2023-24. Recently Ufa successfully completed her state sea trials in the Baltic Sea and will soon be commissioned. Michael Nitz.