

THE NAVY



THE MAGAZINE OF THE NAVY LEAGUE OF AUSTRALIA

**MODERN
HEAVYWEIGHT
TORPEDOES**

**THE 'BIG E'
THE 20TH
CENTURY'S
GREATEST
WARSHIP**

**FIRST TO
FIGHT RAN
EXPEDITIONARY
FORCE 1914**

**FRENCH NAVY
IN THE PACIFIC
1941-45**



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THE NAVY LEAGUE OF AUSTRALIA

THIRD ANNUAL MARITIME AFFAIRS ESSAY COMPETITION 2009

The Navy League of Australia is holding a third maritime essay competition and invites entries on either of the following topics:

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- Australia's Commercial Maritime Industries

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A first, second and third prize will be awarded in each of two categories:

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29 August 2009

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or emailed to editorthenavy@hotmail.com.

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Front cover: The Ticonderoga class cruiser USS VELLA GULF executing a turn to port. The USN's 22 Ticonderoga class cruisers are about to undergo a full Cruiser Modernization (CG Mod) programme. The upgrade will see them continuing as the world's most powerful warships as well as being the most versatile. See *Flash Traffic* in this issue for more details. (USN)



As this issue goes to press the new White Paper on defence is expected to be released. One of the issues the Navy League, through *THE NAVY*, has been pursuing is the building of a fourth Hobart class destroyer. We have made the case many times, which has been picked up by the mainstream media and given wide dissemination. Whether it has been noticed by those in the Department and/or Government remains to be seen.

There are many common sense reasons for a fourth Hobart class destroyer. The last White Paper left the door open with its statement of "at least three air warfare destroyers will be acquired". This is quite a visionary statement as in the nine years since the last White Paper was published the world has changed. Australia now confronts uncertain threats from global terrorism, be it from independent groups or state sponsored proxies. Combating regional instability seems to require a more pro-active military approach and sophisticated warships, submarines and anti-ship missiles are proliferating not only in our region but around the world, where the RAN seems to be finding itself operating in. While state on state conflict seems extinct it will make a resurgence, for example, when economic challenges and rivalries burst the confines of national stock exchanges. Given this setting, the RAN will be called upon to operate more and more in far-flung, ambiguous situations and regions not envisaged by the 2000 White Paper, and possibly even the 2009 Paper. So "at least three" destroyers may not be enough for what lies ahead.

As an island nation the need for maritime power is vital. Our use of the sea will depend on our ability to gain and maintain Sea Control. Sea Control is defined as the condition that exists when one has complete freedom of action to use an area of sea for one's own forces and deny the use of that area to the enemy. Importantly, Sea Control includes not only the sea surface but also the air above and sea below. For the ADF to undertake most of the military operations envisioned by previous strategy papers, it will need to establish a level of Sea Control in order for those operations to succeed. The Hobart class destroyers will be the vital means by which Government achieves Sea Control.

Having a fourth Hobart class destroyer provides more flexibility and redundancy than three and thus enables the destroyer capability to be fully realised. The ADF's strategic plan for Navy is that one Hobart class destroyer can lead a medium sized multi-mission Joint Task Force. Another can lead a small single purpose Task Force (both situations involving limited to no conflict) and the third can be in refit, workups or transit to rotate one of the others off station and back to Australia. This 'bare bones plan' does not take into account any potential battle damage, accidents, extreme weather, political restrictions or any other external issue that could have a bearing on availability or freedom of action. One of those factors may be an intense maritime conflict along the lines of the 1982 Falklands conflict which could require all three at once to be deployed at great distance for six months or more. They may also have to undergo unplanned upgrades to meet emerging and unexpected threats. Having only three will make the destroyer capability, and the new LHD capability that will depend on the destroyers for protection, a partial capability only as it will be unable to sustain prolonged military operations.

The Aegis combat system, SPY-1D(V) phased array radar and SM-2 missile combination on the Hobart class destroyers provide them with the capability of impeding any airborne threat in the immediate and wider region, both now and into the foreseeable future. It is also worth considering these capabilities compared to land based air. A Hobart class destroyer on station 2,500nm from Australia can provide a sustained, survivable air defence presence 24 hours a day for months.

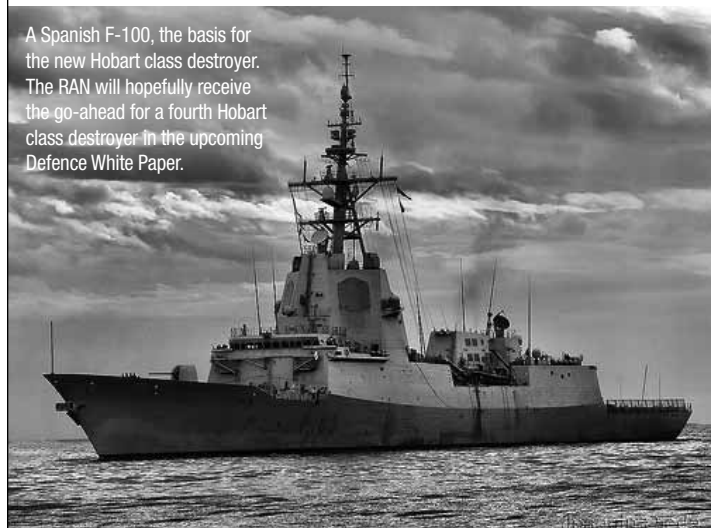
History has shown that land based fighter aircraft used in maritime settings are less sustainable and responsive to the Task Force being protected as it moves further offshore. More Hobart class destroyers will mean that the RAAF's fighter/strike aircraft can be used for more important missions such as strike and battlespace preparation for the Task Force rather than flying defensive circles above it.

One of the advantages of another Hobart class destroyer is that much of the cost has already been spent in the areas of design development; contract fees; shipyard set up; infrastructure development; testing and evaluating the design and so on - in fact over \$2 billion has already been spent before any steel has been cut. Adding another destroyer will represent a very small cost increase (approx 2/40s of the recent Rudd economic stimulus package) but would give more 'breathing space' to the Anzac replacement project and potentially provide uninterrupted work for the local naval shipbuilding industry. Given the current projected seven year gap in major warship construction from the Hobart class to the SEA 5000 Anzac replacement, the naval shipbuilding industry will have to close down until the new ship class is ordered. If that happens the infrastructure required to start again would have disappeared, and the Taxpayer will have to pay all the set up costs again that are currently being spent on building the Hobart class. Added to this, the gap will mean a loss of skills to build warships resulting in more cost and delays to re-establish those skills. Acquisition of a fourth destroyer would thus save money, which incidentally will stay in Australia, an important consideration given the world economy at the moment

Apart from the strategic, capability and logistic advantages there are significant national economic benefits from a fourth destroyer. This is one area where the Prime Minister's stimulus package has a real chance of having an effect. Directed to this segment of Defence it will support jobs and provide stability for many of Australia's 'working families'. Australia's naval shipbuilding capacity is based purely on consistency in warship building requirements from Government. An expanded SEA 4000 with SEA 5000 dove-tailing in directly behind will support that industry and in turn support the logistics and maintenance requirements of those ships for their service lives. The wealth created by this will advantage Australia. As evidence, sometime ago the Australian Senate instituted an inquiry on the economic benefits of building the Anzac class frigate in Australia. They found that the 10 ships (eight for the RAN and two for NZ) produced a measurable and positive impact on Australia's GDP.

The Navy League is hopeful its efforts over the past two years on the fourth destroyer issue come to fruition.

A Spanish F-100, the basis for the new Hobart class destroyer. The RAN will hopefully receive the go-ahead for a fourth Hobart class destroyer in the upcoming Defence White Paper.



THE WHITE PAPER AND 4TH AWD

Anywhere one turns at the present time all that matters appears to be the state of the world economy. There can be no doubt that there are many nations that have serious problems to address. Australia will not be immune from this world wide malaise, but our nation does - so far - seem to be better placed than many others to deal with what has been called the Global Financial Crisis.

What could this financial crisis mean for issues of concern to the League? Most obviously, would the Australian government see the need to cut back on defence expenditure? It is to be hoped that the Australian economy is not so stretched that such matters have to be considered. So far as Navy and future naval projects are concerned good arguments can be mounted to proceed with planned construction.

Both the present government and its predecessor saw the defence need for the Air Warfare Destroyers and the two large amphibious ships. Quite apart from the clear defence requirement the government can be comforted with the knowledge that the construction of these ships represent not only a necessary defence development, they are also of themselves quite large job creation projects.

With its car industry to some degree in question the South Australian government will, it can be assumed, be pressing hard to ensure the maintenance of the Air Warfare Destroyer programme. Similarly the Victorian government will no doubt be arguing for the amphibious ship work at Williamstown.

Prime Minister Rudd last year made more than one statement strongly asserting the importance of maritime defence. It seems unlikely that the current financial situation would alter his strategic view. At most it should only affect government opinion as to the amount with which defence can be provided during the course of the crisis, but it ought not determine longer term decisions.

One matter of particular interest to the League will be the fate of the fourth Air Warfare Destroyer. Assuming that the government does accept the need for the fourth destroyer the present Global Financial Crisis should not inhibit their decision. After all, the fourth ship will not be built till the middle of the next decade, when the world's present financial circumstances should be well behind us.

The Defence White Paper is expected to be released in April. The answer to the matter of the fourth destroyer, and much else, should be provided in this document. It is greatly to be hoped that a Paper that must necessarily have a long term perspective will not be distracted by the present Global Financial Crisis.

FLEET ENTRY

On the 13th March the Royal Australian Navy conducted a ceremonial Fleet Entry into Sydney Harbour. Up to 20 warships steamed into the harbour. They were accompanied by a Fleet Air Arm flypast. The ships anchored in the harbour between Kirribilli Point and Bradley's Head. This was the greatest number of warships assembled in Sydney Harbour since the Bicentenary in 1988.

The Fleet Entry was followed by a ceremonial inspection of the RAN ships by the Commander Australian Fleet, Rear Admiral Nigel Coates, and his senior staff.

On Saturday 14th March the Royal Australian Navy exercised its right to the Freedom of Entry to the City of Sydney. The Queens Colour was paraded as a part of this ceremony. It was the first time that it has been paraded in Sydney since it was presented by the Governor-General in 1989.

Some 5000 Navy personnel marched, together with Australian Navy Cadets from New South Wales and the ACT. This was the largest parade of Navy personnel since the World War II Victory Parade.

The Navy is to be congratulated on its initiative. A weekend such as this was a positive reminder to the people of Sydney and, via television and other media, other Australians of the value of our Navy.

There can be little doubt that the best advertisement for the Royal Australian Navy is the Navy itself.

Navy these days has many commitments but it is to be hoped that there will be future opportunities for Navy to stage similar events in other Australian cities.

BEST CADET UNIT

Each year the best Navy Cadet unit in Australia is presented with the Navy League Trophy. This year the trophy was awarded to TS TOOWOOMBA. The trophy was presented to the unit by Chief of Navy, Vice Admiral Russ Crane. The congratulations of the League go to TS TOOWOOMBA.

The Australian Navy Cadets are commencing a national recruiting drive. All units in Australia are to be involved. The aim is to be the best youth organisation in the country and to make the Australian Navy Cadets the preferred option for 12 ½ to 19 year olds. It is intended to provide young Australians with the opportunity to learn new skills, make new friends, and fill them with confidence – as well as offering the chance to look at careers in Defence.

The League strongly supports this initiative. The League has agreed to support the Cadets in their campaign and has contributed \$5000.



Part of the 14 ships that entered Sydney Harbour during the RAN's March Fleet Review. (Defence)

MODERN HEAVYWEIGHT TORPEDOES

By Dr Roger Thornhill

The heavyweight torpedo is still the most potent ship-killer of all. Missiles may cripple but torpedoes sink, a fact which explains the long history of this weapon. It was in fact the very first guided weapon, using gyroscopic stabilisation to maintain course and depth.

Most modern heavyweight submarine torpedoes can trace their ancestry to the 'steam' torpedoes used by the major combatants in World War II. The German Navy turned to electric propulsion to avoid shortages of raw materials and the need to speed up production. The G7e became the standard U-boat weapon until 1945. Although the extra weight of batteries made some loss of speed inevitable it had the incomparable advantage of reduced wake. No finer compliment can be paid than imitation; the British copy was designated Mk-11, while the American version was the Mk-18.

The design of modern torpedoes has proved extremely difficult, and the comparatively large number of cancellations and failures reflects the complexities of the task. Water is an intractable medium, and although sound travels remarkable distances through water, its paths are infinitely variable. Every small change in salinity and temperature affects the passage of sound between the torpedo, its fire control system and the target. Wire-guidance, either traditional copper or fibre-optic, has become popular for the very simple reason that it provides a simple and secure channel of command to enable target selection and potential decoy avoidance.

Other more physical factors affect the design of torpedoes. The pressure at extreme depth has an adverse effect on propulsive efficiency, so a torpedo designed to run at high speed at 700 metres

must have a big margin over that speed on the surface. The fuels which generate sufficient thermal energy are corrosive, inflammable and dangerous to handle, so elaborate safety measures must be built into the weapon.

Between the two World Wars all frontline navies experimented with influence exploders, warhead fuzing systems which detonated as the torpedo passed underneath its target. An under-keel detonation inflicts more damage, but World War II experience with influence exploders was far from happy. During the Norwegian Campaign U-boats suffered numerous torpedo failures against British surface ships. In 1941, the British torpedo-bombers attacking the battleship BISMARCK found that their torpedoes exploded on hitting the water. The second wave succeeded only when the exploders were set to 'Contact.' Even the industrial might of the United States could not conquer the technical problems, and in 1942-43 many US Navy submarines and destroyers found that the Mk VI exploder rarely worked.

The faults were caused by two quite different phenomena, one natural and the other human. It was difficult to screen the exploder from the Earth's magnetic field, a problem which was exacerbated in high latitudes. In the USA and Germany inadequate testing in peacetime conspired to prevent the weakness from being detected.

The former RN frigate LOWESTOFT being lifted out of the water by a Mk-24 Tigerfish torpedo during trials. Exploding under the keel of a ship produces a far greater impact through the use of hydro-dynamic shock. The air bubble of the explosion pushes water to enhance its blast effect through greater kinetic energy. (RN)



The most recent sinking of a warship by a heavyweight torpedo during conflict was the loss of the Argentine cruiser GENERAL BELGRANO to two old Mk-8 torpedos from the SSN HMS CONQUEROR. Although Mk-24 Tigerfish was available to the Captain its accuracy was no replacement for the much bigger warhead of the Mk-8.



The Japanese contribution to torpedo development was outstanding. On learning that the British were using an oxygen-enriched propellant they developed the 'Long Lance', a fearsome 610mm weapon for surface ships, and a 533mm variant for submarines. Both types were noted for phenomenally high speed (40 knots) and long range, a combination which gave the Japanese a distinct tactical advantage in the fighting in the South Pacific in 1942-43.

Post-war the Western countries concentrated their efforts on harnessing Japanese and German technology. Out of these programmes came the US Navy's Mk-38, a heavyweight with a range of 10,000 metres, and the RN's 'Fancy' Mk-12, an adaptation of the wartime Mk-8 'steam' torpedo using high test peroxide (HTP). The high thermal efficiency of HTP gave the Mk-12 sufficient speed (35-40 knots) to catch nuclear submarines, and had the additional virtue of being wakeless.

However, the Mk-12 was hit by disaster in the mid-1950s when HMS SIDON sank at her moorings after a Mk-12 exploded during loading. The cause was revealed to be incompatibility between HTP and the materials used in the Mk-8. As a result, the RN stopped development immediately. The most recent mishap with HTP fuel was the loss of Russian SSGN KURSK. Her underwater explosion was linked to HTP fuel igniting from a faulty torpedo.

The American solution to nuclear submarines was the Mk-45 ASTOR nuclear torpedo, intended to compensate for poor fire control solutions with a massive underwater blast. Sceptics claimed the Mk-45 was the only weapon ever made with a kill-probability of 200 percent — "him and me."

The failure of the Mk-45 in the 1950s drove the US Navy to initiate feasibility studies for a new heavyweight torpedo. Project EX-10 was later designated the Mk-48 and the operational requirement was issued in 1957, with 1960 as the target date for Initial Operational Capability (IOC). Development took much longer, and the Mk-48 did not achieve IOC for another 11 years, but it has since become the standard heavyweight in the US Navy and has been bought by Australia, Brazil, Canada and the Netherlands.

In 1978 the US Navy requested proposals from Gould Inc to update the Mk-48 to Mod 5, with a new guidance system from Hughes, deeper running down to 1,000 metres and speed increased to 55 knots. This massive jump in performance was deemed necessary to match the 42-

knot Alfa type nuclear attack submarine then joining the Soviet fleet. The Advanced Capability (ADCAP) Mk-48 entered service after 11 years of development, reflecting the complexities of torpedo-design.

The British Mk-24 Tigerfish also started development in the mid-1950s, with its progress marred by a number of system failures. Tigerfish finally entered service in 1979, well below the original specified performance. An anti-ship capability was added in Mod 1, but a further 'get well' programme was needed before the RN's submarines were satisfied.

Its successor is Spearfish, which started development in 1981. Its specification is similar to the Mk-48 ADCAP, but it uses a Sundstrand turbine running on HAP-Otto fuel rather than the HTP-fuelled swash-plate reciprocating engine which drives the Mk-48. This marks a breakaway from the battery drive adopted for Tigerfish and shows that the prejudice against thermal fuels dating back to the SIDON tragedy has been overcome,

In Germany AEG developed the Sea and Seeschlange for strike craft and submarines, and out of this programme came the SST and SUT weapons for export.

The standard Soviet submarine torpedo is still currently the 'steam' Type 53, with a diameter of 533mm. Speeds are claimed to vary from 28kts to 45kts and range from 16,000m to 32,000m. The export variant is described as Type 53-VA, and has a magnetic influence exploder for its 562kg warhead. However, the Type 53 is being replaced with the newly developed UGST.

NEW TORPEDO TECHNOLOGY

The broad parameters of torpedo design are determined by physical limitations but there are many developments in hand. For heavyweight torpedoes the consensus is that high thermal energy fuel such as HTP, Otto fuel or HAP-Otto is essential to provide high speed.

There is, it seems, nothing new. Wire-guidance and electric propulsion were developed in Germany, and now another Kriegsmarine innovation has been adopted by the Soviets. Wake-homing allows a torpedo to pass astern and then follow the wake of the target-ship. This compensates for inaccuracies in fire control, and permits torpedoes to be fired at greater distances.

Seeker technology benefits from the powerful microprocessors now available. It is possible with today's advanced weaponry to use a torpedo as an offboard sensor, transmitting passively-detected data back to the submarine's fire control room. The same microprocessors also provide a level of tactical fire and forget smart capability to make almost any heavyweight torpedo engagement a forgone conclusion.

The following is a snap shot of some of the more prolific heavyweight torpedoes in service in submarines around the world today

SPEARFISH

Spearfish is a heavyweight torpedo designed to operate totally autonomously from all RN submarines. It is equipped with an open-cycle variable speed 1,000 hp turbine thermal engine powered by an advanced Otto II/HAP fuel mixture contained in separate tanks. The maximum speed is an astonishing 70kts with a maximum range of 12.5nms at 60kts. It can also operate down to 900m. The prime mover is a ducted pump jet propulsor which reduces the need for gearing which, in turn, results in weight saving and lower self-noise signature.

The thermal propulsion system has been designed to be very quiet in operation to provide the covert operation needed to protect the firing

submarine from detection on torpedo launch and subsequent counterattack. The use of the Hydroxyl Ammonium Perchlorate (HAP) oxidant leads to greater combustion efficiency, significantly extended range as well as improved acoustic discretion as insoluble waste products which appear in the wake have been reduced to a minimum.

The torpedo's sonar and homing system enable it to operate primarily in a passive mode. However, when required to operate against a very quiet target, or in the final stages of attack, the active mode is used. The detection capabilities are further enhanced by an array offering a large search volume with frequency-agile transducers which enable salvo firing to be carried out.

Communication between submarine and torpedo is via a guide wire link. The torpedo normally operates autonomously, relaying data back to the submarine, but the command team can assume control at any time. The wire is dispensed from two reels, one in the torpedo and one in the submarine launch tube, through a tube-mounted dispenser which allows discharge at high submarine speeds as well as complete freedom of manoeuvre for the submarine after launch.

Spearfish contains a number of homing and tactical computers to control the weapon, enabling it to autonomously select search, detection and attack modes, to classify signal returns, to decide on appropriate tactics including re-attacks on the target if necessary, and to classify, track and overcome countermeasures and decoys.

Spearfish carries a large shaped charge warhead to allow both double-hulled submarines and major surface units to be effectively engaged. Against submarines, the homing system guides the torpedo to the optimum impact point on

The Collins class submarine HMAS DECHANEUX being loaded with a Mk-48 Mod 4. Under a new collaborative agreement with the USN the Collins class and all USN submarines will be fitted with the much improved Mod 7 CBASS Mk-48 torpedo.



the target's hull. Against surface targets the torpedo detonates the warhead under the hull creating a whipping effect which breaks the target's back.

The torpedo is to be upgraded with improved sonar and signal processing capabilities. Research is currently in progress on the upgrade in a collaborative venture between BAE Systems and QinetiQ referred to as the Advanced Spearfish Programme (ASP). The ASP will enable the weapon to operate effectively in shallow water against small, slow underwater targets such as AIP/diesel electric submarines equipped with complex countermeasures.

Spearfish is in service with the RN. The final weapon was handed over on 24 November 2003. It is believed that around 400 warshot weapons are held in inventory. The weapon is projected to remain in service until 2025.

SEEHECHT (DM 2 A4) / SEAHAKE MOD 4

DM 2 A4/Seahake Mod 4 has been ordered by Germany for the Type 212A submarine. The first series production torpedo was delivered to the German Navy by Atlas Elektronik on 3 December 2008. Spain has also ordered the torpedo for the S-80A submarine and Turkey for its four Gür-class Type 209/1400 submarines. In December 2008 ATLAS Elektronik disclosed that Pakistan had selected a variant of the weapon with a hydraulic push-out instead of the swim-out launch system chosen by the German Navy.

The DM 2 A4 features contra-rotating propellers with a high-speed electric motor powered by modular silver zinc oxide batteries giving it a maximum range of 25nm and a maximum speed 50kt.

The passive/active multi-frequency sonar with an extreme wide panorama angle uses fully digital signal processing, offering multiple target engagement with the ability to reject decoys, suppress jamming and conduct re-attacks. As an additional sensor the DM 2 A4 has a wake homing capability. The guidance wire is a fibre optic system. It has an impact and proximity fuze with the proximity fuze having an active magnetic system using digital signal processing which triggers on the disturbance of the active magnetic field by ferro and non-ferro metals.

The German made DM 2 A4/Seahake Mod 4. The first production model was delivered in December 2008.



UGST

The UGST entered service with the Russian Navy in 2002 and is the latest torpedo under development from Russia. It can operate at a depth of more than 300m, has a range of 27nm and can reach a maximum speed of 50kts.

The long-range UGST is a modular weapon designed for deployment from both surface ships and submarines in either autonomous or remote control mode. The weapon is fitted with digital data processing software in a hardware module that has both far and near and wake-homing capability. The weapon is armed with a combined acoustic/magnetic proximity fuze and its guidance system directs the torpedo on to the most sensitive area of the target. The torpedo incorporates a planar array homing head and uses a number of channels for detection of targets in both shallow and deep water. The weapon can be guided in one of three ways: wire guidance, wake-homing or free running. The guidance-wire reel spools out to a maximum length of 25 km. The UGST is said to incorporate extensive anti-jamming capability designed to counter anti-torpedo jamming countermeasures and natural interference. An axial piston engine that derives its energy from a mono-propellant fuel incorporating its own oxidiser driving a pump-jet propulsor, powers the weapon.

BLACK SHARK

Black Shark is an upgraded version of the A184 torpedo made for the Italian Navy. It is being integrated on the Scorpene submarines for the French Navy, and is in an advanced stage of development for the U209, U214 and U212 class of submarines.

In April 2008, France's Délégation Générale pour l'Armement (DGA) confirmed that DCNS will supply a derivative of the Black Shark to meet the French Navy's Future Torpille Lourde (FTL) next-generation heavyweight torpedo requirement. The new FTL will replace the ageing F17 Mod 2 heavyweight torpedo.

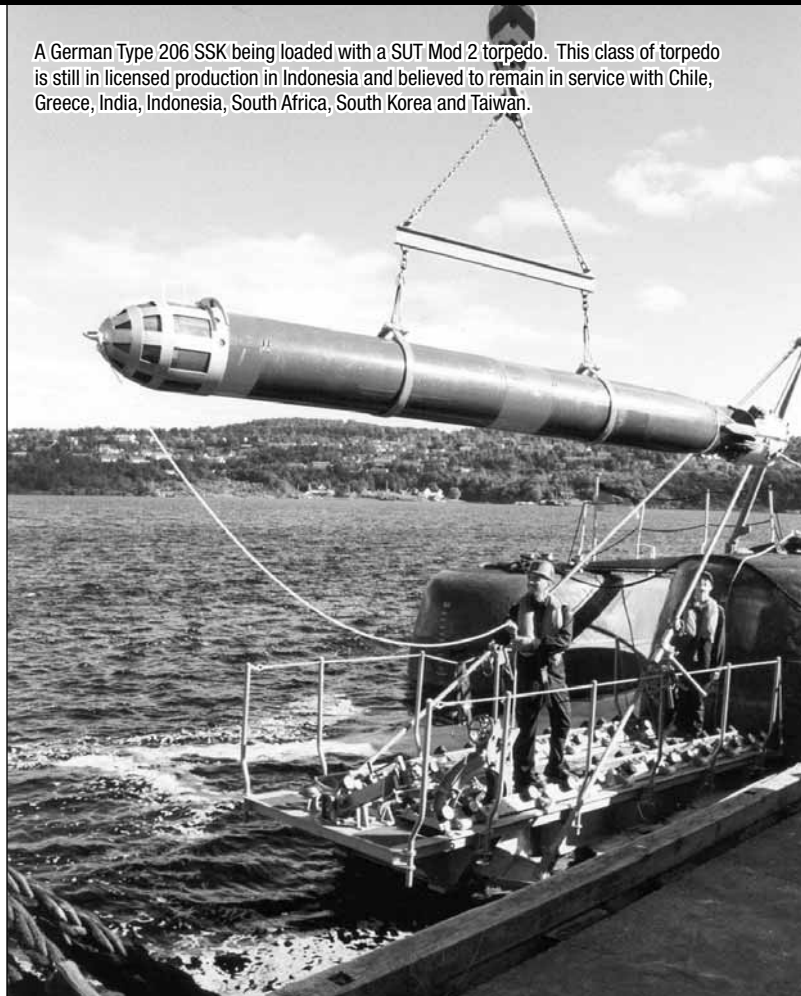
The weapon is capable of managing several targets simultaneously. Three major areas that have been upgraded from the A-184 include the homing head, the propulsion system and the control and guidance unit.

The Advanced Sonar Transmitting and Receiving Architecture (ASTRA) active and passive acoustic head features improved signal processing with real-time multiple digital processing and incorporates a new flat, steered, multibeam planar array which offers increased bandwidth in two operating frequencies - 15 kHz medium (MF) passive only and 30 kHz active and passive high frequency (HF). The HF mode provides high resolution over a short range while the MF mode provides long-range acquisition. The seeker can operate simultaneously in both frequencies in passive mode, allowing the torpedo to discriminate between signals from the real target and signals from acoustic countermeasure decoys. In active and passive mode, both frequencies are independently processed

A snow covered USS ANNAPOLIS being loaded with a Mk-48 Mod 5 torpedo.



A German Type 206 SSK being loaded with a SUT Mod 2 torpedo. This class of torpedo is still in licensed production in Indonesia and believed to remain in service with Chile, Greece, India, Indonesia, South Africa, South Korea and Taiwan.



on each lobe. Digital pulse compression techniques are used in any transmission mode. Signal and data processing algorithms include spatial and frequency filtering, constant false alarm rate processing, echo elongation analysis and echo spatial coherence and echo angular extension analysis. The seeker transducers have been carefully sited so that high-speed flow noise over the torpedo as it passes through the water does not interfere with transmission or reception of acoustic signals. Damping materials are sited around the weapon's nose to further limit self-generated noise, resulting in increased acquisition ranges in both active and passive modes. The ASTRA seeker has already been fully tested at sea and is now in production.

The guidance and control unit features a new fibre optic link to the submarine in place of the traditional wire-guidance link. The fibre optic link carries sensor data and command and guidance signals to and from the submarine. This allows the torpedo to operate as an advanced sensor for the submarine. The fibre optic cable allows a higher data exchange rate between the submarine and the weapon, giving a 100 per cent increase in normally available torpedo guidance range.

Black Shark is either in service or planned to be in service with the navies of Chile, France, Italy, Malaysia, Portugal and Singapore.

SUT/SUT MOD 2/SUT MOD 3/SUT MOD 4

Developed in 1975, the Surface and Underwater Target (SUT) torpedo is the export version of the DM1 Seeschlange and is the most versatile member of the Seal, Seeschlange and SST 4 family of torpedoes. It is a dual-purpose wire-guided torpedo for engaging both surface and submarine targets. Its electrical propulsion permits variable speed in accordance with tactical requirements, silent running and wakelessness. The acoustic homing head has acquisition ranges of 1nm in active

mode and 3nm in passive, and a wide search sector for active and passive operation. After termination of wire guidance, SUT continues operation as a homing torpedo, with internal guidance programmes for target search, target loss and so on. The large payload with combined fuze systems ensures the optimum effect of explosive power. The three-speed motor drives 5/7-bladed contra-rotating propellers.

ATLAS Elektronik is offering an Upgrade Concept for the SUT to the SUT Mod 3 and in a possible further step to SUT Mod 4. The goal is to meet the requirements of the navies under consideration of advanced operational aspects as well as reasonable procurement costs, the full use of a modern combat system and to assure reduced and predictable life-cycle costs for the next 20 to 30 years.

The two-step upgrade concept is based on technology and the modular concept of Seehecht DM 2 A3/Seahake and Seehecht DM 2 A4/Seahake Mod 4, the latest development of German heavyweight torpedoes.

The concept is a step improvement of the SUT. In the first step the upgrade to SUT Mod 3 includes the replacement of the homing head, sensors, electronics, guidance logics/programmes, guidance wire (fibre optic cable), new propellers, new casket, test equipment, recording and evaluation systems for exercise shots, as used in the DM 2 A3/Seahake and the DM 2 A4/Seahake Mod 4. The warhead and exploder as well as the propulsion system (battery and motor) from the earlier SUT are retained.

As a possible second step the upgrade to SUT Mod 4 extends the capabilities of the SUT Mod 3 in terms of increased speed and range. This is achieved by the replacement of the propulsion system.

The technology of the modules involved in the upgrade concept for SUT Mod 3 and SUT Mod 4 has well proven its capabilities and high reliability in over 1,700 sea trials, exercise and live firings. The operational performance of SUT Mod 4 is equivalent to the DM 2 A4/Seahake Mod 4 (see earlier entry).

The complete digitisation of the torpedo functions allows the incremental improvement by software upgrades in the future.

SUT Mod 3 shares similar characteristics as the DM 2 A3/Seahake. It has a range of 15nm at 23kts or 6.5nm at 35kts. It can operate down to 260m and as shallow as 2m.

SUT remains in production in both Germany and Indonesia (under licence by IPTN). It is believed to remain in service with several

navies including: Chile, Greece, India (168 weapons), Indonesia, South Africa, South Korea and Taiwan. A total of about 400 weapons have been sold for export.

MK-48 MOD 7 CBASS

The RAN is acquiring the Mk-48 Mod 7 for the Collins-class boats as a successor to the Mk-48 Mod 4 under Project Sea 1429 Phase 2. The engineering, development, manufacturing and support of the Mk-48 Mod 7 programme is being pursued in collaborative manner under a 10-year Armaments Cooperative Project (ACP) signed in 2003. Under the auspices of the ACP, the USN and the RAN share Mk-48 Mod 7 development, testing and acceptance costs. The ACP has established common requirements, interfaces, configurations and maintenance standards enabling any Australian or US submarine to load torpedoes prepared by any Australian or US torpedo maintenance facility.

Mk 48 Mod 7/CBASS (Common Broadband Advanced Sonar System) developmental and operational testing was conducted successfully in Australian waters in late 2005 with additional firings being conducted in US waters in March 2006. HMAS WALLER successfully conducted the first launch of the Mk 48 Mod 7 during the 'RIMPAC 08' exercise sinking a decommissioned US Navy destroyer off the coast of Hawaii.

The new Mod 7 CBASS incorporates guidance and endurance upgrades, provides a 'stealthier' performance and an improved warhead. The CBASS will further enhance the

weapon's performance against submarines employing advanced countermeasures. The Mod 7 is taking extensive advantage of COTS components and open-architecture computing systems for signal processing and employs advanced broadband sonar signal-processing algorithms that have been 'tuned' to the harsh shallow-water acoustic environment. It features the Radstone Technology G4DSP ruggedised Digital Signal Processor inserted into the torpedo's seeker head, helping improve the torpedo's performance by increasing processor speed and memory. The radiated noise levels will be significantly reduced because the chip has no cooling fan.

The torpedo's transducer unit is in the front of the nose and transmits and receives acoustic signals, the acquisition range being 2nm (3,600 m). The receiver in the lower half of the nose group processes acoustic data and determines the target location relative to the transducer in order to generate steering commands. The weapon can distinguish between decoys and the target as well as reject jamming. It will re-attack the target until it either hits or runs out of fuel. The warhead contains nearly 300kg of explosives and can either use a impact or proximity fuze.

The weapon can reportedly operate as deep as 800 m and searches are conducted at speeds of 40 kt. Its range however, varies with speed. 38kms at 55kts or 50km at 40kts.

The Mk-48 is used by Australia, Brazil, Canada, Netherlands and the US.

The old Spruance class destroyer ex-USS FIFE being attacked by one of two Mk-48s exploding under the bow off the US state of Washington. Wire guidance gives the submarine commander greater control on where along the ship's length his torpedoes can hit it. The second torpedo also exploded under the bow ripping it off completely from the superstructure forward. (Aug 2005, USN)



USS ENTERPRISE (CV-6) – THE ‘BIG E’

The 20th Century’s Greatest Warship

By Ian Johnson

Few warships become legends. In the 20th Century one warship had a wartime record encompassing many battles and countless enemy aircraft and ships destroyed. This ship also symbolised a new type of naval warfare; the lessons of which are in use today. The fighting spirit of this ship and crew brought comfort to her people and their allies, her name struck fear and hatred to the enemy that fought her. That ship is the American aircraft carrier USS ENTERPRISE (CV-6), also known as the ‘Big E’.

Her WW II battle honours are unmatched by any other US naval ship. Awarded 20 Battle Stars, ENTERPRISE was the first American carrier presented with a US Presidential Unit Citation, a USN Unit Commendation, and the only foreign warship ever awarded the British Admiralty Pennant. Many ENTERPRISE crewmen were honoured as heroes, with 43 USN warships being named after ‘Big E’ crewmen.

ENTERPRISE was the result of the 1921 Washington Naval Treaty and the devastated economies left by the 1929 Great Depression. Before the depression the USN’s carrier tonnage was 55,000 tons short under the Washington Naval Treaty. During the depression America began to plan for two aircraft carriers, designed with lessons from their four commissioned aircraft carriers. In 1933 new US President Franklin D. Roosevelt, with the US Congress, signed a massive public works program called the “New Deal” - designed to lift America out of the ongoing Great Depression. The “New Deal” increased American military spending. The USN received \$200+ million, which included

funds to construct two 19,800-ton carriers, the start of the three ships of the Yorktown class. The “New Deal” package saved America and her shipyards from the Great Depression with positive long-term economic and industrial capacity affects. These would come into play when the emergency 1940 Naval Appropriations-Shipbuilding Act was passed, for these same shipyards had a solid industrial base.

The second Yorktown class carrier became the seventh ship in USN history named ENTERPRISE. Construction began at Newport News shipyard 21 May 1934, lasting four years. ENTERPRISE was 827 feet long and 114 feet wide at the flight deck, with a displacement of 32,000 tons and a top speed of 33 knots. ENTERPRISE had 82 officers and 1,447 enlisted crew when commissioned 12 May 1938.

ENTERPRISE arrived at Pacific Fleet Headquarters at San Diego in April 1939, before sailing on 8 September 1939 to Pearl Harbor, Hawaii; five days after the war began in Europe. From her new



The famous USS ENTERPRISE (CV-6) of WW II in her 1944 wartime camouflage.



ENTERPRISE being launched in October 1936 at Newport News in Virginia. Aircraft carriers are still being made at the same site as ENTERPRISE.

homeport at Pearl Harbor ENTERPRISE was busy with numerous patrols of the West Coast and Hawaii, as Pacific based carriers LEXINGTON, SARATOGA and YORKTOWN were in US mainland shipyards. During this time ENTERPRISE became a movie star with the movie 'Dive Bomber' filmed aboard.

In May 1940 the American Government moved Pacific Fleet Headquarters from San Diego to Hawaii, showing America's resolve to Japan's expansionist policies in the Pacific. Japanese policies at the time threatened America, but the move made Pearl Harbor a target for the Imperial Japanese Navy (IJN). As the war in Europe continued, YORKTOWN transferred from the Pacific to the Atlantic in mid 1941.

From July 1941 ENTERPRISE and LEXINGTON exercised off Hawaii. Both carriers and their air groups conducted flight operations till the point of exhaustion. Late October 1941 saw hopes for peace between the US and Japan fading; both carriers began moving war supplies to America's Pacific outposts as war warnings were issued. 28 November saw ENTERPRISE depart on a resupply mission from Hawaii. After delivering 12 Marine fighter aircraft to Wake Island on 2 December, ENTERPRISE headed home with heavy weather delaying the scheduled 6 December Saturday afternoon arrival of 'Big E' by over 14 hours.

Sunday December 7 at sunrise, 250 miles southwest of Hawaii, ENTERPRISE launched 18 aircraft in a reconnaissance flight. Clearing the area the aircraft proceeded to Naval Air Station Ford Island, Pearl Harbor. Just after 0800hrs a signal was received by ENTERPRISE from one of

her pilots, Ensign Manuel Gonzales, as he flew into the Japanese attack over Ford Island "Don't shoot! I'm a friendly plane." Ensign Gonzales was killed during the Japanese attack.

At 0812hrs a signal from Pacific Fleet Headquarters arrived. "Air raid on Pearl Harbor.

sailing before dawn to begin patrols off Hawaii. On 10 December aircraft from ENTERPRISE attacked three Japanese submarines west of Hawaii, sinking the 1,750-ton submarine I-70.

At dawn 9 January 1942, ENTERPRISE sailed from Pearl Harbor beginning offensive operations against the IJN, inflicting maximum damage to Japan and its navy over the next three years and five months. On 11 January SARATOGA was torpedoed, limping to the US mainland for repairs, leaving ENTERPRISE, LEXINGTON, and the returned YORKTOWN in the Pacific to conduct operations against Japan.

On 1 February 1942 ENTERPRISE and YORKTOWN launched air strikes on the Japanese held Gilbert and Marshall Islands, then on 24 February ENTERPRISE aircraft attacked Wake Island. 4 March 'Big E' aircraft raided Marcus Island before returning to Pearl Harbor.

On 8 April ENTERPRISE departed Pearl Harbor, heading northwest near Midway Island. Waiting there was the last Yorktown class carrier, the newly commissioned HORNET (CV-8). With 'Big E' providing fighter cover, both carriers quietly headed west towards the Japanese mainland for a daring mission. 650 miles east of Japan on 18 April, a picket line of Japanese fishing

ENTERPRISE on her transit to Pearl Harbor and history early 1941.



This is no drill." ENTERPRISE and her task force were now at war, moving at flank speed towards Hawaii. Throughout the "Day of Infamy", ENTERPRISE searched for the Japanese fleet, but the attack was over. At dusk six ENTERPRISE fighters tried to land at Ford Island. Believing the Japanese were returning, friendly units opened fire and four aircraft were shot down, killing two pilots. ENTERPRISE patrolled off Hawaii till sunset 8 December, then sailed into Pearl Harbor while off duty crew viewed the devastated harbour from the flight deck. ENTERPRISE loaded supplies during the night,

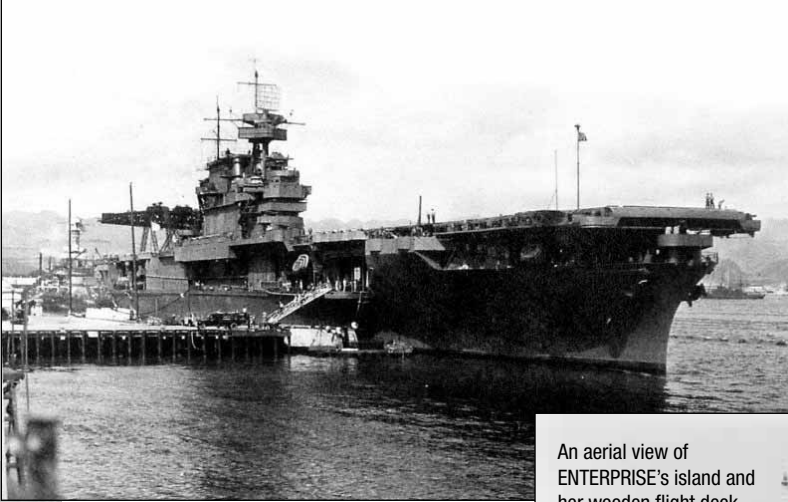
boats was spotted. Fearing discovery the fishing boats were sunk, and 16 USAAF B-25 Mitchell bombers commanded by Colonel Jimmy Dolittle, launched from HORNET to bomb the Japanese mainland. After the launch both carriers and escorts turned and headed to Hawaii at flank speed, not waiting for the Japanese response. The B-25s continued on to China after the mission.

ENTERPRISE and HORNET returned to Hawaii as LEXINGTON and YORKTOWN engaged the Japanese fleet in the first carrier vs. carrier battle in history at Coral Sea from 2-5 May

1942. The Japanese lost one carrier with another heavily damaged. The US lost LEXINGTON with YORKTOWN damaged. This was the only carrier battle ENTERPRISE would miss. 'Big E' and HORNET headed south, meeting YORKTOWN at the Solomon Islands after the Coral Sea battle. ENTERPRISE and HORNET resupplied and then headed north to Midway, followed shortly after by the quickly repaired YORKTOWN out of Pearl Harbor.

On 4 June 1942 the three sister ships YORKTOWN, ENTERPRISE, and HORNET, participated in the Battle of Midway. Alerted by US Naval Intelligence of Japanese intentions the US fleet waited for the Japanese fleet north east of Midway Island. After locating the enemy fleet ENTERPRISE, HORNET, and YORKTOWN launched their aircraft. Most

ENTERPRISE at Ford Island Hawaii early 1942.



squadrons found the Japanese fleet but poor co-ordination meant most squadrons attacked alone while the Japanese attacked Midway. Wave after wave of US torpedo bombers were shot down by the Japanese fleet. At 1023hrs, an ENTERPRISE dive-bomber aircraft successfully bombed the Japanese carriers KAGA and AKAGI, while YORKTOWN aircraft sank the carrier SORYU. Those American aircraft that survived landed at Midway or onboard ENTERPRISE and HORNET. A fourth Japanese carrier HIRYU survived untouched, launching an attack on YORKTOWN causing moderate damage. The surviving US aircraft were launched from ENTERPRISE, and HORNET to find and destroy HIRYU, which they did. After the battle the Japanese Submarine I-168 sank YORKTOWN with a devastating torpedo salvo just as damage control parties had nearly saved her from sinking and were nursing her back to Hawaii. The destruction of four Japanese carriers at Midway changed the course of the war as Japan retreated to home waters and never contested the USN for sea control.

From August 1942 through to February 1943 ENTERPRISE, HORNET and the newly arrived WASP (CV-7) assisted the Guadalcanal campaign, beginning with Marine amphibious landings from 7 August. The Battle of Eastern Solomons on 24 August saw 'Big E' damaged by four bombs.

US carrier losses kept mounting; SARATOGA was torpedoed August 31, and three submarine torpedos sank WASP on 16 September. The loss of HORNET during the Battle of Santa Cruz on 26 October left ENTERPRISE alone in the Pacific. The battle also left 'Big E' damaged for a short time fighting off Japanese reinforcements heading for Guadalcanal. 'ENTERPRISE vs. Japan' was a sign that shortly appeared on the ENTERPRISE hanger deck. On 13-15 November the Naval Battle of Guadalcanal saw 'Big E' aircraft support both the fleet and the Marines on the island. It was the last big attempt by the Japanese Navy to assist their forces on Guadalcanal.

'Big E' and her escorts fought alone until 5 December when SARATOGA arrived in the Solomons after repairs. Never again would ENTERPRISE fight without other carrier support for the rest of the war.

Covering the landing of reinforcements on Guadalcanal on 29 January 1943, ENTERPRISE aircraft began protecting the damaged heavy cruiser CHICAGO, shooting down 11 of the 12 Japanese aircraft that attacked her, however, she later sank.

ENTERPRISE remained in the Pacific until 1 May 1943. The massive shipbuilding program begun by the 1940 Naval Appropriations-Shipbuilding Act, finally delivered to the Pacific much needed ships of all types, including the new ESSEX class aircraft carriers designed and built without the Washington Naval Treaty restrictions. Finally relieved, ENTERPRISE arrived at Pearl Harbor May 8 to train Naval Aviators on carrier operations.

On 27 May 1943 ENTERPRISE was alongside Pearl Harbor as CinC Pacific Fleet, Admiral Chester Nimitz, was piped aboard. On the flight deck,

An aerial view of ENTERPRISE's island and her wooden flight deck.



ADM Nimitz presented to ENTERPRISE the first Presidential Unit Citation awarded to an aircraft carrier 'For consistently outstanding performance and distinguished achievement during repeated action against enemy Japanese forces in the Pacific war area, December 7, 1941, to November 15, 1942.'

With two Essex class carriers in the Pacific, ENTERPRISE headed stateside,

reaching Bremerton, Washington on July 20. For four months the crew took liberty as ‘Big E’ had her ‘wounds’ tended to, and upgrades to her defensive capabilities, including 90 anti-aircraft guns, new radar, and an enlarged flight deck, as well as improvements in other areas. ENTERPRISE departed Bremerton on 1 November 1943 for Hawaii. The tide of the war was turning. In the Pacific SARATOGA was waiting, as were six ESSEX class carriers as part of Task Force 50 (TF-50).

On 19 November ENTERPRISE and TF-50 covered the Gilbert Islands landings, before attacking Kwajalein Atoll on 4 December, sinking six transports and two light cruisers while inflicting damage to many other ships before returning to Hawaii in January 1944.

At sunset on 22 January 1944; Task Force 58, comprising ENTERPRISE, five Essex class carriers, and dozens of other ships, departed Hawaii. Watched by Undersecretary of the Navy James Forrestal and Fleet Admiral Nimitz, it would be 560 days before ENTERPRISE and many of TF-58 would return to Hawaii. Some never would.

Retaking the Marshall Islands began January 29, 1944, with ‘Big E’ providing air cover. 16 February ENTERPRISE and TF-58 attacked Truk Atoll, raiding Jaluit four days later. On March 20 ENTERPRISE provided cover for the invasion of Emirau Island. March 30 and 1 April

only a handful of American aircraft lost. This air battle became known as ‘The Great Marianas Turkey Shoot’ as it was so devastating for Japanese carrier aviation - their pilot losses were irreplaceable.

July-August saw ‘Big E’ at Hawaii for repairs, before returning as part of Task Force 38, raiding the Bonin Islands on August 31 and supporting the 10-17 September invasion of the Palau Islands.

10 October saw TF-38 and ENTERPRISE attacked the Ryukyus Island chain south of the Japanese home islands before raiding Formosa (Taiwan) on 12 October, then heading south to the Philippines.

The retaking of the Philippines began with TF-38 and ENTERPRISE providing air cover for the invasion of Leyte Island from 15-19 October 1944. The Imperial Japanese Navy launched a four-pronged attack against the Allied fleet on October 24. For two days the largest naval battle in history raged at Leyte Gulf, ‘Big E’ providing reconnaissance prior to the night battle of Surigao Strait and at the battle of Samar several hours later. ‘Big E’ remained around the Philippines for a month, conducting air strikes against Luzon. In late November, ENTERPRISE sailed to Hawaii, arriving 6 December 1944. Instead of liberty, the next two weeks saw ENTERPRISE and her crew conducting trials for her new designation CV(N)-6 (Night Capable),

surrounding areas.

ENTERPRISE and TF-58 supported the invasion of Iwo Jima from February 19 to March 12. ‘Big E’ set a record for constant air operations of 174 hours straight between February 23 and March 2. On March 9 ENTERPRISE headed for supplies at Ulithi.

ENTERPRISE and USS FRANKLIN (CV-13) sailed with TF-58, launching air strikes against the Japanese islands of Kyushu and Shikoku on 18 March 1945. As ‘Big E’ and FRANKLIN began flight operations on 19 March a Japanese air attack broke through with two bombs hitting FRANKLIN’s flight deck. The damage and resulting fire killed 798 men but the heavily damaged carrier was saved.

After repairs at Ulithi, ENTERPRISE rejoined TF-58 for the invasion of Okinawa on April 7. The desperation of the Japanese at this stage of the war showed with over 300 Kamikaze attacks against the US fleet. April 11 saw two Kamikaze aircraft barely missing ‘Big E’, causing hull damage and wounding 19 crewmembers, one dying shortly after. After more repairs at Ulithi, ENTERPRISE returned to Okinawa on May 6 conducting four days of attacks.

On 12 May TF-58 launched air strikes against Kyushu in an attempt to stop the Kamikaze attacks. On the morning of 14 May 1945 the task force’s radar screens showed another attack. Just before 0700hrs a single Japanese aircraft penetrated the fleet defences, smashing into ENTERPRISE’s flight deck near the forward elevator, sending the elevator soaring 400 feet in the air killing 12 men and wounding 72. The flight deck was devastated; the rest of ENTERPRISE was intact. This was the last Kamikaze attack against an aircraft carrier. Incapable of flight operations, ENTERPRISE finally retired from battle on 16 May never to fight again.

No ship before or since received the hero’s welcome ENTERPRISE got arriving at Hawaii. Sailing to the Puget Sound Navy Yard on June 7, ENTERPRISE flew a massive ‘coming home’

ENTERPRISE off Saipan in 1944.



ENTERPRISE and TF-58 raided the Caroline Islands, destroying 150 Japanese aircraft and over 100,000 tons of enemy shipping. April 21 saw ‘Big E’ cover the landings at Hollandia, New Guinea. On 29-30 April TF-58 and ENTERPRISE raided Truk Atoll, destroying 120 aircraft and vital fuel stocks.

ENTERPRISE supported the Marianas Islands operation from 11-24 June, including the Battle of the Philippine Sea on 19-20 June. ‘Big E’ with six carriers, sank three Japanese carriers and destroyed over 420 aircraft with

before returning to the Philippines.

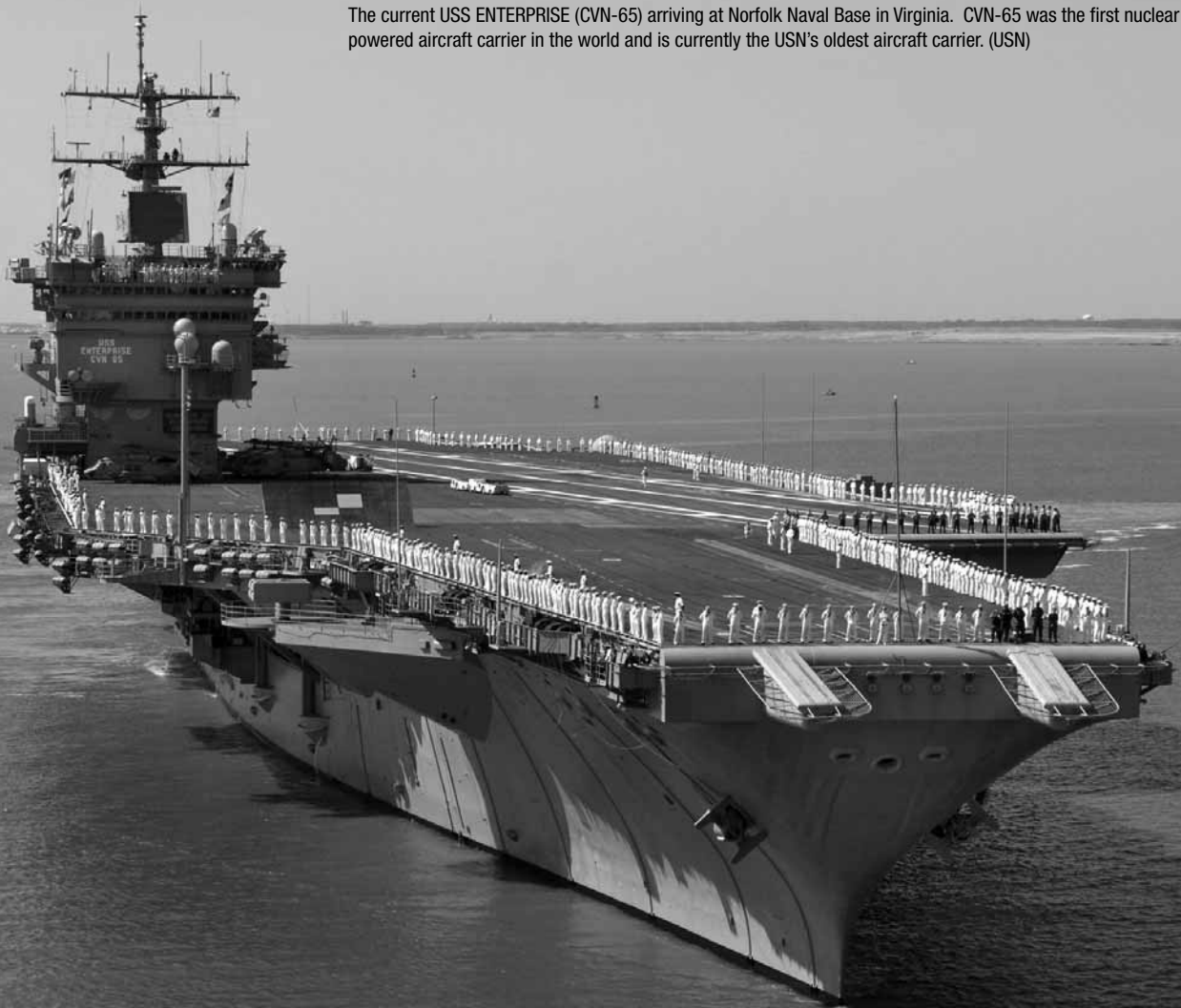
ENTERPRISE and TF-38 began 1945 supporting the invasion of Luzon in early January. Then raids against targets in China and the British Colony of Hong Kong on 16 January. TF-38 then attacked Formosa 20-23 January, before heading for the fleet anchorage at Ulithi for supplies.

‘Big E’ rejoined the fleet as part of Task Force 58, attacking Japan over a two-day air raid of Tokyo on 16-17 February, ENTERPRISE also conducted night raids on Yokosuka and

ENTERPRISE in Puget Sound after the war in 1945 about to commence her ‘Magic Carpet’ role.



The current USS ENTERPRISE (CVN-65) arriving at Norfolk Naval Base in Virginia. CVN-65 was the first nuclear powered aircraft carrier in the world and is currently the USN's oldest aircraft carrier. (USN)



pennant of 578 feet, a foot a day since 'Big E' sailed from Bremerton in November 1943. ENTERPRISE was at Puget Sound when Japan formally surrendered onboard the battleship USS MISSOURI on 2 September 1945. US Navy Secretary James Forrestal, at a press conference after Japan's formal surrender, said ENTERPRISE was "...the one ship that most nearly symbolizes the history of the Navy in this war."

Returning to Pearl Harbor, ENTERPRISE took part in Operation Magic Carpet, the return of servicemen from the war. On 23 September 'Big E', with 1,441 servicemen embarked, departed Hawaii and arrived at New York City on 17 October for Navy Day Celebrations. By now ENTERPRISE and her wartime role in the Pacific were well known. Over 250,000 people visited 'Big E' in New York before her crew lead the city's massive

WWII Victory Parade on Navy Day, 27 October, down the Avenue of the Americas.

ENTERPRISE made three more Magic Carpet voyages. On her first voyage to England in November 1945, the British Empire acknowledged ENTERPRISE's war service, awarding the carrier the Royal Navy's highest Honour, the Admiralty Pennant. 'Big E' is the only foreign ship in 400 years before or since to receive this award.

On 18 January 1946 ENTERPRISE arrived at Bayonne, New Jersey and was placed in reserve. After nine years of faithful service 'Big E' was decommissioned in 1947. The next twelve years saw several attempts to preserve 'Big E' for future generations, but all failed. Sold for scrap in 1958, the only remnants of ENTERPRISE are several flags that flew over her, the ship's bell, one of her 15-foot tall anchors that resides at Washington Naval Yard, in Washington, DC, and the ENTERPRISE Stern Plate, located in the town of River Vale, New Jersey. It was an ignominious end for this magnificent warship, yet the name continues with the world's first nuclear powered aircraft carrier. Commissioned in November 1961, USS ENTERPRISE (CVAN/CVN-65) is still in USN service today.

Historically, for one warship to transcend its era is rare. VICTORY, CONSTITUTION, MISASKA, and CONSTELLATION have. USS ENTERPRISE (CV-6) will now live forever in this iconic group of warships.





01 NEW SEA 1000 LEAD

The Minister for Defence, the Hon Joel Fitzgibbon MP, has announced the appointment of Rear Admiral (RADM) Rowan Moffitt, AO, RAN, to the new position of Head Future Submarine Programme in Defence Materiel Organisation (DMO).

"The early stages of the programme require large amounts of Government to Government and Navy to Navy interaction which makes RADM Moffitt an excellent choice to lead the programme in its early years," Mr Fitzgibbon said.

The future submarine, SEA 1000, is planned to replace the Collins class submarine commencing in 2025.

RADM Moffitt will report to the Chief Executive Officer of DMO, Dr Stephen Gumley, and will lead a combined Navy, DMO and Capability Development Group Future Submarine Project Office.

GLOBAL HAWK DOWNED BY GOVERNMENT

The Minister for Defence, the Hon. Joel Fitzgibbon MP, announced that the Government has decided not to proceed on to the next partnership phase of the USN's Broad Area Maritime Surveillance (BAMS) programme.

Under Project AIR 7000 Phase 1B, Defence aims to acquire an uninhabited aerial surveillance system based on the Global Hawk aircraft built by Northrop Grumman.

The delivery schedule for the United States Navy's BAMS programme has slipped and resulted in the earliest possible in-service date for the BAMS aircraft moving out to 2015.

"Introducing such an advanced new aircraft at this time would have caused incredible workforce pressures on the Australian Defence Force, particularly given the requirement to transition the Air Force's AP-3C Orion fleet to a new manned surveillance aircraft in the same time period," Mr Fitzgibbon said.

Defence will continue to closely monitor

the progression of BAMS and other similar unmanned aircraft programmes. These broader intelligence, surveillance and reconnaissance capabilities are expected to be fully covered in the upcoming White Paper.

FLIGHT II F-100 ON DRAWING BOARD

Navantia of Spain has revealed further details of the design modifications that will set its Flight II Alvaro de Bazán-class (F-100) frigate apart from the four Flight I ships already in service with the Spanish Navy.

The keel of the frigate - pennant number F-105 and provisionally named ROGER DE LAURIA - was laid at the company's Ferrol shipyard in northwest Spain on 20 February. Launching is scheduled for the end of 2010 with delivery in mid-2012.

Navantia told Jane's Defence Weekly on 25 February that F-105 will displace around 6,050 tons, compared with a figure of approximately 5,900 tons for the first four ships in the class, due to modifications that include the integration of the updated Aegis SPY-1D(V) air/surface search radar.

The two 4,500 kW Bravo 12 diesel engines - manufactured by Navantia under licence from Caterpillar - in the earlier ships will be replaced by two 6,000 kW Bravo 16 engines.

Other modifications include an 850 kW retractable bow thruster, improvements to the hangar for operating the Eurocopter NH90 helicopter, and the addition of two remotely operated 25 mm cannon equipped with an electro-optic/infrared sensor for defence against asymmetric threats.

The Spanish Navy has requested a second Flight II frigate but the government has not approved the necessary funding. A total of EUR817 million (USD1.03 billion) was allocated for F-105 in the country's 2007 defence budget; a follow-on ship is expected to cost around EUR700 million.

The Flight II design is also serving as the blueprint for the RAN's planned Hobart-class destroyers with many of the modifications listed above to be incorporated into them.

TERMA SKWS DECOYS FOR HOBART CLASS

The Air Warfare Destroyer (AWD) Alliance recently awarded Terma a contract worth approx. USD \$5 million for the supply of the Soft Kill Weapon System (SKWS) for the AWD's Anti Ship-Missile Defence System.

The AWD decoy launching system capability includes four deck mounted MK-137 130 mm decoy launchers; launch control computer, and launcher interface unit. The system can be operated from the dedicated control units or via the Australian Tactical Interface (ATI). The system will support both passive and active decoys.

The SKWS is a key component of the Hobart Class combat system which will make the three AWDs some of the world's most capable all-purpose warships. The first ship is scheduled to begin entering service with the RAN in 2014.

In 2003, Terma supplied SKWS decoy systems for the Royal Australian Navy's Adelaide class FFGs.

The Terma SKWS Decoy Launching System has proven highly effective through multiple tests performed by the Royal Danish Navy (RDN) for more than 15 years. The system is service in different configurations in numerous countries such as Romania, Australia, Chile, USA, Norway, The Netherlands, and Denmark.

02 USS PORT ROYAL RETURNS AFTER GROUNDING

The Ticonderoga class guided-missile cruiser USS PORT ROYAL (CG-73) has entered dry dock after being freed from shoal waters off Honolulu Airport. An investigation has begun into the cause of the grounding of the ship that occurred Feb. 5.

Pending results of the investigation, the ship's commanding officer, Capt. John Carroll, was temporarily relieved by Rear Adm. Dixon R. Smith, commander of Naval Surface Group Middle Pacific. Smith temporarily assigned Capt.

01



Rear Admiral (RADM) Rowan Moffitt, AO, RAN, has been appointed as Head Future Submarine Programme in Defence Materiel Organisation (DMO).

02

The Ticonderoga class guided-missile cruiser USS PORT ROYAL (CG-73) stuck on a shoal off Honolulu Airport. (USN)



John T. Lauer III, of Naval Surface Group Middle Pacific staff, as commanding officer.

Smith went aboard the ship the day after it grounded.

The USN undertook three major efforts to free PORT ROYAL and achieved success after removing about 600 tons of seawater, anchors and other weight.

The ship is currently dry-docked to complete the damage assessment already begun by USN divers and shipyard workers. A repair cost estimate has not yet been determined.

Sailors, contractors and Pearl Harbor Naval Shipyard workers to shore, via small boat. There were no distinguished visitors or flag officers embarked at the time of the grounding.

USS PORT ROYAL was commissioned on July 9, 1994.

VOEA NEIAFU RECEIVES LEP

Tonga's Pacific Patrol Boat, VOA NEIAFU, has arrived in Townsville to undergo a six-month life extension refit that will see the repair and refurbishment of key systems to facilitate a further 15 years of operation.

Under the Australian Defence Cooperation Programme – sponsored and funded by the Department of Defence's International Policy Division – 22 Pacific Patrol Boats (PPB) were built and gifted to 12 Pacific nations between 1987 and 1997.

The 31 metre PPBs are built to a commercial standard and are used by Pacific nations for maritime surveillance and response, in particular fisheries patrols.

The Life Extension Programme (LEP) is responsible for doubling the life expectancy of the PPBs. While they were originally designed to last for 15 years, each boat should now last 30.

The LEP refit provides the PPBs with improved design features, including a modified hull, updated electronic systems, complete engine overhauls, renovated or new fittings, structural

modifications to facilitate easier ships husbandry and advanced fresh water and air-conditioning systems.

The LEP refit process takes approximately six months. It is expected that VOA NEIAFU will be able to commence passage to return to Tonga in early September 2009.

Since 2003, 11 PPBs have successfully undertaken the Life Extension Programme refit in North Queensland, the last returning to homeport in December 2008.

Tonga received three PPBs – VOA NEIAFU, VOA SAVEA and VOA PANGAI. The remaining two will receive similar refits at a later date.

03 P-8I FOR INDIAN NAVY

India has selected The Boeing Company to provide eight P-8I long-range maritime reconnaissance and anti-submarine warfare aircraft to the Indian Navy. The P-8I is a variant of the P-8A Poseidon that Boeing is developing for the USN and RAAF.

India is the first international customer for the P-8. Boeing will deliver the first P-8I within 48 months of the contract signing, and the remaining seven by 2015.

The P-8I is a true multi-mission maritime patrol aircraft (MPA) that features greater flexibility and a broader range of capabilities than MPAs currently in service. The P-8I can operate effectively over land or water while performing anti-submarine warfare missions; search and rescue; maritime interdiction; and long-range intelligence, surveillance, target acquisition and reconnaissance.

FIRST MODERNISED TICONDEROGA COMPLETES SEA TRIALS

The first Ticonderoga-class cruiser to undergo the US Navy's full Cruiser Modernization (CG Mod) programme has completed sea trials.

USS BUNKER HILL (CG-52) received extensive upgrades to its Aegis combat system and to its hull, mechanical and electrical (HM&E) systems.

According to US Naval Sea Systems Command (NAVSEA), the trials included a full-power run to examine the performance of the HM&E upgrades, an anchor drop test and underway replenishments.

The HM&E package included removal of the SPS-49 air-search radar (to reduce main-mast weight and improve stability), structural improvements to the hull and deckhouse, corrosion-control improvements, flight deck reinforcement, the replacement of steam-powered equipment with all-electric systems, a tank-level indicator upgrade and digital control for the LM2500 gas turbines.

Sister ships USS LEYTE GULF (CG-55), USS SAN JACINTO (CG-56), USS LAKE CHAMPLAIN (CG-57), and USS PHILIPPINE SEA (CG-58) have also received HM&E upgrades, but are untested.

Work on BUNKER HILL's combat system included installation of Aegis Open Architecture and the CR-2/CR-3 computer programme, modification of the Mk-41 vertical launch system to fire ESSM (Evolved SeaSparrow Missiles), replacement of the two Mk-45 Mod 2 127mm guns with the Mod 4 variant, replacement of the SPQ-9A fire-control radar with SPQ-9B and upgrade of the Phalanx close-in weapon system to Block 1B level.

CG Mod is designed to meet emerging threats over the 35-year lifespan of the Ticonderoga-class ships. The navy intends to modify the 22 remaining vessels (the first five units were decommissioned prematurely because of funding constraints) over the next 10 years.

SUBMARINES FOR BRAZIL

In late December 2008, DCNS of France had been awarded a contract by the Brazilian Navy (BN) to form a joint venture to build the Scorpene submarine design in Brazil.

DCNS (prime contractor) with its joint venture Brazilian partner, Norberto Odebrecht Construction Company, will construct four conventionally powered submarines at the joint venture, set up by DCNS and Odebrecht.

03 A computer generated image of Boeing's P-8I for the Indian Navy. (Boeing)



04 A computer generated image of Russia's newest ballistic missile submarine YURY DOLGORUKY.





DCNS will produce key advanced technology equipment in its own plants. The submarines will be designed in cooperation with the Brazilian teams under DCNS design authority to meet the BN's specific needs. The first submarine is scheduled to enter active service in 2015.

As part of this contract, DCNS will also provide design assistance, under the BN's design authority, for the non-nuclear part of the Navy's first nuclear submarine which also will be built by the joint venture. The Brazilian nuclear submarine programme, known as SNAC -2, has been progressing at an extremely slow pace since 1979. However, in 2008, the sea service publicly announced that it was rededicating its efforts in order to get the programme moving forward. It appears that the design assistance in the non-nuclear portion of the programme may be the first step in an attempt to make headway in the stalled programme.

Additionally, DCNS will provide prime contractor assistance to Odebrecht for the construction of the naval shipyard that will build the five submarines and a naval base for the BN.

The strategic partnership between Brazil and France will result in a high degree of technology transfer, which will increase the level of national content and create jobs as well as advance the country's shipbuilding infrastructure.

With the selection of the DCNS Scorpene design in Brazil as well as in Chile in 1998, it appears that France is beginning to make significant inroads into the South American market that was once dominated by ThyssenKrupp Marine and its Type 209 design.

04 SSBN YURY DOLGORUKY TO BEGIN SEA TRIALS

Sea trials of Russia's first Borey-class strategic nuclear submarine will start in the Northern spring when navigation opens in the White Sea. The fourth-generation SSBN YURY DOLGORUKY was built at the Sevmash plant in northern Russia and was taken out of dry dock in April 2007.

It will be equipped with sea-based Bulava nuclear armed ballistic missiles, although they have not entered service and are due to undergo further testing this year.

"The ice floe conditions in the White Sea at present are still not favourable for navigation. The submarine's crew and a team of Sevmash specialists continue to ready the vessel for the trials," Russian Navy Chief Adm. Vladimir Vysotsky said.

Sevmash and Northern Fleet specialists conducted successful testing of the submarine's nuclear reactor on December 16 and since then the reactor has been working normally, the admiral said.

The YURY DOLGORUKY submarine is 170 metres (580 feet) long, has a hull diameter of 13 metres (42 feet), a crew of 107, including 55 officers, a maximum diving depth of 450 metres (about 1,500 feet) and a submerged speed of about 29 knots. It can carry up to 16 ballistic missiles.

Two other Borey-class nuclear submarines, the ALEXANDER NEVSKY and the VLADIMIR MONOMAKH, are currently under construction at the Sevmash shipyard and are expected to be completed this year and in 2011 respectively.

Under the Russian State Armaments Programme for 2007-2015, the Navy will receive several dozen surface ships and submarines, including five Project 955 Borey-class submarines, two Project 885 Yasen nuclear-powered attack submarines, and six Project 677 Lada diesel-electric submarines.

BRAZIL BUYS PENGUIN

Kongsberg Defence and Aerospace (KDA) has been awarded a USD\$20 million contract to supply Mk 2 Mod 7 Penguin helicopter-launched anti-ship missiles to the Brazilian Navy for deployment from its new S-70B Seahawk helicopters. These are the same missiles currently languishing in ADF inventory for lack of a launch platform.

Brazil is the sixth customer for the Mk 2 Mod 7

variant of Penguin, following on from Australia, Greece, Spain, Turkey and the US. It also marks the first sale for Penguin in South America.

KDA has not identified the helicopter type, saying only that Penguin will "be deployed on the Brazilian Navy's new maritime helicopters". However, Brazil signed a Letter of Offer and Acceptance (LOA) in mid-2008 with the US government covering the planned purchase of four Sikorsky S-70B Seahawk helicopters under a USD\$195 million Foreign Military Sales deal. The LOA also includes options for a further two aircraft.

Penguin has previously been integrated with S-70B variants operated by the Hellenic and Turkish navies, as well as the US Navy's SH-60. It was to have been used on the RAN's Super Seasprite helicopter but with the cancellation of that project the Penguin has no launch platform in Australia. Its fate is still unknown despite the large quantity sitting in ADF ammunition storage facilities. A plan to equip the RAN's Seahawk with the Penguin was viewed as being 'all a bit too hard'.

Capable of ranges in excess of 30 km, Penguin combines inertial mid-course guidance with an infrared homing seeker. KDA describes the latest standard missile as a fully autonomous 'third-generation' all-digital guided weapon with multiple selectable flight profiles and approach trajectories.

05 GEORGE H. W. BUSH COMPLETES BUILDER'S TRIALS

Northrop Grumman Corporation has completed builder's sea trials of the USN's newest and most advanced nuclear-powered aircraft carrier, USS GEORGE H. W. BUSH (CVN-77).

Builder's sea trials provide an opportunity to test systems, components and compartments at sea for the first time. The trials also include high-speed runs and a demonstration of the carrier's other capabilities.

"The road to get CVN-77 to this point has

04 USS GEORGE H. W. BUSH (CVN-77) on builder's trials. Named after America's 41st President, USS GEORGE H. W. BUSH is the 10th and final Nimitz-class aircraft carrier. (Northrop Grumman)



been a long journey that started in January 2001 with the detailed design and construction contract," said Scott Stabler, Northrop Grumman Shipbuilding's vice president overseeing the project. "Since then, we've worked millions of man hours, installed more than eight and a half million feet of cable, updated more than 70 percent of the design, and brought 90,000 tons of steel to life."

Following builder's trials, the ship will undergo acceptance trials, conducted by representatives of the US Navy Board of Inspection and Survey, to test and evaluate the ship's systems and performance. Upon completion of acceptance trials, the ship will return to Naval Station Norfolk in Norfolk, Va.

Named after America's 41st president, USS GEORGE H. W. BUSH is the 10th and final Nimitz-class aircraft carrier. Its keel was laid Sept. 6, 2003; it was christened Oct. 7, 2006 and commissioned Jan. 10, 2009. At 1,092 feet in length, USS GEORGE H. W. BUSH is nearly as long as the Empire State Building is tall. Upon delivery to the USN in the Northern spring, it will weigh 97,000 tons and carry more than 80 combat aircraft. Its top speed will exceed 30 knots, and powered with two nuclear reactors, it will operate for more than 20 years without refuelling.

FIRST RBS-15 MK3 MISSILE ASSEMBLED IN GERMANY

The first RBS-15 Mk3 heavy anti-ship missile was assembled and tested in December 2008 at the Maasberg premises of Diehl BGT Defence in Germany. This is the very first RBS-15 missile round which has been built outside Sweden in order to verify the production process.

An agreement between Diehl BGT Defence and Saab Bofors Dynamics on the joint development, production and marketing of RBS-15 Mk3 envisages the assembly of all missiles for worldwide demand by Diehl.

It is planned to equip all German K130 class

corvettes with this missile system in the course of 2009.

Despite its classical shape the latest Mk3 version of the Saab Bofors Dynamics-designed RBS-15 is one of the most advanced heavy surface-to-surface missiles available today, featuring a Ku-Band Radar target seeker with a unique target detection and classification capability and very high countermeasure resistance. A precise inertial navigation system supported by GPS provides land attack and near shore anti-ship capability.

The blast-fragmentation warhead is said to be able to penetrate any modern ship hull. The RBS-15 Mk3 missile has a flight range of more than 200 km, providing high tactical flexibility in mission planning.

Besides the missile's performance the user-friendly missile engagement planning system, MEPS, was the German and Polish Navy's major reason to decide for the procurement of RBS15 Mk3.

Germany, Poland and Sweden have decided to introduce RBS-15 Mk3. Currently negotiations are being conducted with additional interested countries. Independently of who is the prime contractor, the work share between the companies remains unchanged.

Taking into account additional growth potential, Diehl and Saab are offering the German Navy the weapon system.

EIGHT MORE VIRGINIA SSNS FOR USN

In late December 2008 General Dynamics Electric Boat Corporation was awarded a US\$14B fixed price incentive multi-year contract for the construction of eight Virginia class submarines.

The eight units will begin construction from 2009 through 2013 at Electric Boat in Groton and North Grumman Newport News Shipbuilding Operations in Newport News with delivery of all eight units by 2020. This contract covers units 11 through 18 of the planned class of 30.

The contract for the third (Block II) variant calls

for one unit per year in 2009 and 2010 followed by two units per year in 2011, 2012 and 2013. This schedule follows the US Navy's latest 30-year shipbuilding plan that calls for two units per year beginning in 2012. The increase to two units in 2012 is a result of the 2005 mandate by then Chief of Naval Operations (CNO) Admiral Mike Mullen and PEO Submarines Rear Admiral William Hilarides to cut up to 20% in acquisition costs by 2012 in order to begin the two per year build rate.

The initial success of cutting acquisition costs will allow the US Navy to achieve its two per year build rate in 2012. However, its sustainability through end of class at 30 units will likely be determined by future ship construction costs as well as changes that may be directed by the Obama administration.

The increase in the Virginia programme confirms that the US is currently committed to maintaining two yards that can build nuclear submarines. It appears that this capability will be maintained, and similar to the aircraft carrier, may be protected when considering future budgets regardless of the price per unit for the submarines.

06 SIX MORE TYPE 214 FOR KOREA

A contract for the delivery of six material packages to build six Type 214 class submarines for Korea was signed by Howaldtswerke-Deutsche Werft GmbH (HDW), a company of ThyssenKrupp Marine Systems AG, and MarineForce International LLP (MFI). The contract was made between the HDW/MFI consortium and the South Korean procurement authority DAPA (Defence Acquisition Programme Administration). This will provide Korea with a 2nd batch of boats in this class of submarines.

After studying the tenders produced by national Korean shipyards, DAPA selected Daewoo Shipbuilding & Marine Engineering to build the first boat of the 2nd batch. Submission of tenders for the second boat is due to take place in summer 2009.

All six boats will be equipped with an air

06 The South Korean Type 214 class submarine SON WONIL on the surface. South Korea has signed a deal for six more of these advanced submarines. And with a crew of only 27 they are a very attractive option for the RAN's new SEA 1000 Collins replacement project.





independent propulsion system based on fuel cells. The 2nd batch of Type 214 class for the Korean Navy is a further development of the already proven overall design for the first three boats. The new submarines will be almost identical to the 1st batch boats, which were ordered in 2000 and all three of which were built/are being built by Hyundai Heavy Industries. The first two boats of this class were delivered to the Korean Navy in December 2007 and 2008.

Main Characteristics of the Type 214 class:

Length:	approx. 66 m
Height:	approx. 13 m
Displacement:	approx. 1,800 t
Crew:	27

07 RN'S NEWEST DESTROYER ARRIVES HOME

DARING, the first of the Royal Navy's new Type 45 destroyers, entered and berthed in her home port of Portsmouth on 28 January for the first time, witnessed by hundreds of well-wishers.

The occasion marked a major milestone in the programme's development. The six Type 45 destroyers, of which DARING is the first of class, will form the backbone of the RN's air defence capability for the 21st Century.

It is also the first time in 30 years that a new class of destroyer has entered Portsmouth.

She can operate a number of helicopters, including the Chinook, providing greater operational flexibility than other ships of her size. She will also be able to carry a significant number of extra personnel, such as troops or evacuated personnel.

Top quality accommodation has been fitted so the crew can live and work in comfort. The ship also has her own hospital facilities, complete with operating table.

Vice Admiral Sir Trevor Soar KCB OBE, Chief of Materiel (Fleet), used the occasion to officially name the Type 45's air defence missile system as 'Sea Viper' - formerly known as the Principal

Anti-Air Missile System (PAAMS). He said: "With its Sampson Radar the system is capable of detecting and tracking several hundred targets including the supersonic, sea-skimming and high altitude targets out to 400 kilometres. It can then classify and decide how to best engage up to 10 of them simultaneously in order to ensure the highest possibility of a successful engagement.

"I have to say she is a superb looking ship. She is absolutely state-of-the-art: from the Sampson Radar and the PAAMS missile system, which provide a capability far beyond any other weapon system in the RN, right the way through to the power systems that have been designed to be as green and economical as possible."

DARING will undertake an intensive sea trials programme for the rest of the year, with a formal commissioning ceremony due to take place in the summer and a target of formally accepting her into naval service by late 2010.

SEA VIPER SUCCESS

Sea Viper, the Royal Navy's new advanced naval air defence system, was successfully test fired for a second time on 4th February from the trials barge Longbow at the French DGA's CELM (Centre d'Essais de Lancement des Missiles) test range near the Ile du Levant off the French coast.

The successful firing marks a further key step in the demonstration of the maturity of the Sea Viper system, known until recently as PAAMS (S), in the lead up to the missile system entering service onboard the RN's new Daring-class Type 45 destroyers.

The trial comprised the firing of a single Aster 15 missile launched against a Mirach target simulating a low level attack by an anti-ship missile. All aspects of the system behaved as expected with the Aster missile intercepting the target at very close range.

Nick Neale, PAAMS Project Director in the Aster Systems Programme directorate, said:

"Following on from the successful first firing in June last year, this second firing success kicks off our 2009 programme of work in the best possible way. We look forward with pride to completing the remainder of the system qualification programme and to the entry of the system into service on board the RN's new Type 45 destroyers.

All the Sea Viper system elements have been set to work on the first of class Type 45, HMS DARING. Phase One system integration activities on HMS DARING have been completed with Phase Two of the system integration programme set to start in June. The final system qualification firing trial is scheduled to take place in the Northern summer. Deliveries of Sea Viper equipment to the second and third Type 45 destroyers, HMS DAUNTLESS and HMS DIAMOND, are complete with remaining deliveries progressing in accordance with the requirements of the ship build programme.

08 S-3B VIKING RETIRES

The USN retired the last Lockheed Martin S-3 Viking from fleet service in ceremonies on 30 January, closing out the aircraft's distinguished 35-year naval career.

Development of the S-3 began in August 1969, and first flight occurred on January 21, 1972. Sea Control Squadron 41 (VS-41), the S-3 training unit known as the Shamrocks and the first operational S-3 unit, received its first aircraft in February 1974. A total of 187 S-3s were built (eight test and 179 operational aircraft) between 1971 and 1978. Over its career, the Viking served with 18 Navy squadrons and accumulated approximately 1.7 million flight hours.

"The S-3 Viking was known as the 'Swiss Army Knife of Naval Aviation' and served the US Navy well in a wide variety of roles over the course of its operational service life," said Ray Burick, Lockheed Martin vice president of P-3/S-3 programmes. "The Viking has played a critical role in carrier-based anti-submarine and anti-surface warfare, as well as overland operations, refuelling, targeting, and electronic surveillance.

07 HMS DARING berthed in her home port of Portsmouth on 28 January for the first time. (RN)



And of course Lockheed Martin is proud of the role it will continue to play in support of these critical Navy carrier-based missions, as many of these missions will eventually be carried out by the F-35C Lightning II."

The first S-3 was built at the then-Lockheed Aircraft Co. plant in Burbank, Calif., and was trucked to the company's facility in Palmdale, Calif., for first flight. Company pilots John Christiansen and Lyle Schaefer were at the controls, kicking off a 26-month test programme. Among its notable firsts, the S-3 was the first antisubmarine warfare (ASW) platform to have a computerized acoustic system.

Sea Control Squadron 29 (VS-29), known as the Dragonfires, made the first S-3 deployment aboard the USS JOHN F. KENNEDY (CVN-67) in July 1975. The S-3 fleet surpassed 100,000 flight hours less than two years after that first deployment.

Several variants of the S-3 carried out a range of missions for the USN. Seven aircraft were modified to US-3A Carrier Onboard Delivery aircraft, capable of carrying 4,250 lbs. of cargo. The ES-3A Shadow was designed for fleet electronic surveillance, replacing the EA-3B. Sixteen aircraft were modified to ES-3A configuration, and the first mission capable Shadow flew in May 1991. Development of a KS-3A tanker variant began in 1979; although the KS-3A was never produced, it did prove the concept of 'buddy tanking' (aerial refuelling using a wing-mounted pod), which most S-3s later performed. At the height of combat operations during Operation Iraqi Freedom, S-3 crews transferred nearly eight million pounds of fuel to Coalition aircraft.

The significantly improved S-3B was developed in the early 1980s to better detect quiet Soviet submarines, identify targets and carry standoff weapons. The S-3B flew for the first time in prototype form in September 1984. During Operation Iraqi Freedom, an S-3B from VS-38, the World Famous Red Griffins, carried out the first S-3 attack mission, disabling Saddam

Hussein's ocean-going yacht with a laser-guided Maverick air-to-surface missile. In 2003, an S-3B from VS-35 became the first aircraft ever to have the Navy One call sign when it carried former President George W. Bush to the USS ABRAHAM LINCOLN (CVN-72).

Under the S-3 Integrated Maintenance Programme (IMP), Lockheed Martin and Navy personnel worked side-by-side to perform scheduled depot maintenance and repairs on the S-3s to return the Vikings rapidly to the operational fleet. The programme began in 2001, primarily as a means of reducing the backlog at Naval Aviation depots. IMP increased S-3 aircraft operational availability by 53 percent and reduced maintenance tasking by 47 percent over the depot-level maintenance plan. IMP also resulted in significantly reduced costs to the Navy. A total of 149 aircraft were processed through the IMP inspections, and nearly all of the aircraft were redelivered to the Navy on or ahead of schedule. The programme concluded in 2007, as the Viking fleet was being drawn down.

"The S-3 Viking will long be remembered for its mission capability, its flexibility and its reliability," said Burick. "The aircraft has served the USN admirably for more than three decades. We salute all who have flown and supported the Viking."

The NASA Glenn Research Center near Cleveland, Ohio, currently has four S-3B Vikings, performing aircraft icing research missions. It is likely that four S-3Bs will remain in Navy service, although in a support role providing range surveillance at the Naval Air Warfare Center Weapons Division at Point Mugu, Calif. Airborne ASW for the USN is now solely in the hands of the SH-60 helicopter fleet. The latest iteration being the SH-60R with a new dipping sonar.

KEEL LAYING NEW INDIAN CARRIER

On 28 February the keel of India's long awaited Indigenous Aircraft Carrier (IAC), was laid. The

design and construction of the Indigenous Aircraft Carrier was sanctioned by the Govt. of India in Jan 2003. This is the most complex project, which the Indian Navy has taken up in-house so far. With this project, India has become the 4th nation to join the select club of 40,000 tonne plus aircraft carrier designers and builders. The Indigenous Aircraft Carrier designed by the Indian Navy's Design Organization is being built at M/s Cochin Shipyard Limited. It will be capable of operating an aircraft mix of Russian MiG-29K, Ka-31 and the Indian LCA fighter.

The ship has a length of 260 m and max breadth of 60 m. It will be propelled by two shafts, each coupled to two LM-2500 Gas Turbines developing a total power of 80 MW, sufficient to attain speeds in excess of 28 knots. The ship will have an endurance of around 8,000nm and complement of 1,600. It can carry a maximum of 30 aircraft. The carrier is designed with a very high degree of automation for machinery operation, ship navigation and survivability.

Design of aircraft carrier has been undertaken by the Directorate of Naval Design (DND) which has over 40 years experience in successfully designing 17 different classes of warships, to which around 90 ships have already been built within the country.

08

An S-3 about to launch from a Nimitz class carrier. The USN retired the last Lockheed Martin S-3 Viking on 30 January, closing out a 35-year naval career. (USN)





PIRATES OLD AND NEW

For some time past the media has been reporting acts of piracy in various parts of the globe, notably in the Malacca Strait and more recently off the coast of Somalia, the latter no doubt due to the size of the ships attacked and the value of their cargo. The seizure of the supertanker *SIRIUS STAR* in November 2008 received particular attention not only for her size (319,400 dwt) and the value of the cargo (reported to be \$US100 million), but the attack took place some 450 nautical miles off the coast, well beyond the range at which the pirates usually operated. The tanker, crew and cargo were released earlier this year after payment of a ransom said to be about \$US5 million.

Piracy is an ancient profession and is on record as being rampant in the Mediterranean during the Roman Empire. Many readers will have read tales of the corsairs - pirates - who in the 16th century roamed the seas of the coast of Barbary (ancient name for much of northern Africa, now including Morocco, Algeria, Tunisia and Libya) plundering the Spanish treasure ships and other European shipping and creating terror among mariners. Unlike their present-day counterparts the pirates were

GOTCHA. Somali pirates intercepted by the USN in their boat while cruising for likely prey. The pirates were instructed by the US Warship to drop their weapons over the side before they were taken into custody. (USN)



reputed to be brutal men who killed their captives or dispatched them to the slave markets prevalent at the time: The slave traffic continued for a further 200 years.

Modern pirates are primarily interested in the cargo of the ships they attack and the ransom they expect to receive; the crews of seized ships generally remain on board but some are accommodated ashore in the pirates home port, all hostages awaiting the outcome of often prolonged negotiations between the pirates and the owners of the ships and cargoes. While the prey might be anything from a dhow or a trawler to a large ship such as the Ukrainian freighter *FAINA* with a cargo of armaments, passenger ships are not immune from attention. In 2005 pirates attacked the cruise liner *SEABOURN SPIRIT* off Somalia but were outwitted and the liner's speed enabled her to escape (how the pirates would have coped with several hundred passengers and crew is a matter for speculation).

Piracy is an international problem, affecting as it does the shipping and trade of many nations: It is by no means confined to South-East Asia and the East African coast as areas where ships can be at risk include the Caribbean Sea and the waters off South and Central America, India, the Philippines and the South China Sea. Although the vessels used by the pirates are comparatively small they are well-equipped with navigation

aids such as GPS and with modern weapons including rocket-propelled grenades; they have been reported to use captured ships as 'mother ships' on occasion.

The pirates' activities are costly for ship-owners and shippers, governments and ultimately the Public: merchant ships may have to be re-routed involving longer voyages (more fuel and higher freight and insurance rates), anti-pirate measures installed in ships, (surveillance and alarm systems, anti-boarding devices) and lately, the burden on naval forces to calls for assistance, the last two repeating to some extent measures taken to defeat the Barbary corsairs several hundred years ago.

A common feature of old-time and present day piracy is the support provided by agents and (often corrupt) authorities in the ports and havens out of which pirates operate. In the past it took many years for European governments to reach agreement, with the rulers or governments of the pirates' home States to withdraw support and take action against pirates: This was a key element in a gradual decrease in piracy and together with naval activity led to its near-eradication at the end of -the 18th century.

Given the prevailing poverty in a number of African States it is hardly surprising that some whose lives have been disrupted have turned to lawless activities, such as piracy in the coastal areas. In Puntland, a semi-autonomous region of Somalia for instance, it seems pirates have become wealthy from ransom monies received and brought prosperity to their local community. If the past is taken as a guide, those States where pirates have well-organised land-based support, piracy will continue to be a problem unless State governments and authorities actively discourage pirates from operating in their area.

By the end of 2008 pirates were causing disruption to the extent several countries sent naval forces to East African waters. Navies however, are hampered in that, despite a ruling by the United Nations that foreign warships can take action against pirates in the coastal (12 nautical mile) and territorial seas over which sovereign States have jurisdiction (eg 200 nm EEZ or AFZ), there is some reluctance to do so pending clarification of other rules determining law-enforcement at sea. Also, the deployment of cruisers and destroyers can appear as over-reacting to a task more appropriate for a Coastguard-type force.

Fortunately piracy and terrorism do not appear to be linked at the present time. Pirates tend to operate in clan-like groups and conduct their activities separately, a situation that could change but hopefully will continue until piracy ceases to be a menace. Australia, heavily dependent on the unhindered passage of merchant ships as they ply the world seas, has every reason to contribute to a resolution of the piracy problem.

ASKING FOR TROUBLE!

Whatever the rights or wrongs of the whaling dispute between Australia and Japan, the Southern Ocean is not the place to pursue the matter. Allegations that anti-whaling activists in the *SEA SHEPHERD* and members of the Japanese whaling fleet have attempted to disable each other's ships are disturbing, such actions are an invitation to trouble - even disaster and loss of life.

The dispute is a matter for the governments concerned to resolve.



FIRST TO FIGHT!

The Australian Naval and Military Expeditionary Force and the Capture of German New Guinea 1914

By Greg Swinden

INTRODUCTION

The capture of German New Guinea and other German colonies in the South West Pacific by the Australian Naval and Military Expeditionary Force (ANMEF) and RAN during September-October 1914 is one of the least well known of the RAN's many campaigns. The raising of the ANMEF (consisting of an Infantry Battalion, six companies of Naval Reservists and support troops) was conducted at an almost unbelievably rapid pace and they were dispatched to German New Guinea within only a few weeks of war being declared. In September 1914 they quickly overwhelmed all German resistance and captured Rabaul (the capital of German New Guinea) with minimal losses. This short, sharp and successful campaign was later overshadowed by the fighting at Gallipoli, Palestine and the Western front where the fighting dragged on for years with very heavy casualties.

Shortly after war with Germany was declared, on 4 August 1914, the Australian Government received a request from the British

Government to seize the various German Colonies to Australia's north. These consisted of the north coast of New Guinea, the island of New Britain and the small island of Nauru. The New Zealand Government was allocated the responsibility of capturing German Samoa.

The ANMEF was rapidly recruited from Naval Reservists based in Queensland, New South Wales, Victoria and South Australia and the Infantry Battalion of 1000 men (with supporting machine gun, signalling and medical sections) was recruited from New South Wales. Command of the ANMEF was given to Colonel William Holmes, DSO (a veteran of the War in South Africa in 1899-1902). In a Herculean logistics and administrative effort the force was recruited, organised, clothed and equipped by the 14th of August and embarked in the troopship HMAT BERRIMA on the 18th.

View of the road leading from Kabukaul as seen from trench no.1. (RAN Seapower Centre)



THE CAMPAIGN BEGINS

BERRIMA sailed from Sydney on 19 August bound for Port Moresby. En-route she met the cruisers, HMA Ships SYDNEY and ENCOUNTER, who were to be her escorts, and the supply ship AORANGI. By 24 August BERRIMA was anchored off Palm Island (north of Townsville) where orders were received to wait until joined by the Battle Cruiser HMAS AUSTRALIA. AUSTRALIA with Rear Admiral Sir George Patey, RN in command had been directed to escort the New Zealand expeditionary force to capture Samoa. The location of the German East Asia Squadron of two armoured cruisers and three light cruisers was unknown and the AUSTRALIA (accompanied by HMAS MELBOURNE and the French cruiser MONTCALM) were needed to protect the New Zealand convoy. Samoa was captured on 31 August and a 25 man landing party from MELBOURNE captured Nauru on 9 September 1914.

While waiting for the return of AUSTRALIA the men of the ANMEF conducted various training exercises ashore on Palm Island and news was also received that the ANMEF was to be bolstered by the addition of 500 men from the North Queensland Kennedy Regiment (a Citizen Military Force unit) that had embarked in the troopship KANOWNA and was now waiting at Port Moresby.

On 2 September BERRIMA and her escorting warships departed from Palm Island and proceeded to Port Moresby where they arrived two days later. Holmes inspected the soldiers from the Kennedy Regiment and found them unsuitable for the campaign ahead (due to their youth, lack of training and poor equipment). He

recommended to his superiors in Australia that the Regiment be returned to Australia but this was rejected.

The campaign started in earnest on 7 September when the ANMEF sailed from Port Moresby (escorted by HMA Ships SYDNEY, ENCOUNTER, WARREGO, YARRA, AORANGI and the submarines AE1 and AE2). KANOWNA was also part of this convoy but her merchant navy stokers mutinied when they found out they were bound for a war zone and refused to work in the engine room. As a result the KANOWNA was ordered to return to Townsville. Another smaller convoy of two merchant ships (a collier and an oil tanker) and escorted by PARRAMATTA also departed Port Moresby that day bound for Rabaul.

AUSTRALIA and MELBOURNE arrived back in New Guinea waters and rendezvoused with the main convoy at Rossel Island on the 9th for a final planning meeting between Patey and Holmes. Rear Admiral Patey was in overall command and issued his final operation order that day for the capture of Rabaul and Herbertshohe. SYDNEY and the three destroyers (PARRAMATTA, YARRA and WARREGO) were dispatched ahead of the main convoy to search Simpson Harbour (Rabaul) for German warships - but none were found. The size of the German forces in and around Rabaul was not then known but was later estimated to number 300 men of which 50 were German and the remainder being native troops.

THE LANDING

The main convoy arrived at 0600 and, after PARRAMATTA had inspected the harbour

and found it to be free of mines, the landings commenced. The AUSTRALIA was positioned at the entrance to the harbour to prevent any attack from German warships but again none were in the area. A landing party of 25 Naval Reservists, under the command of Sub Lieutenant C. Webber, was landed at Herbertshohe to take control of the town and at 0730 they hoisted the Union Jack on the flag staff outside the District Officers residence. Lieutenant Commander J.F. Finlayson accompanied this first group carrying a letter from Admiral Patey for the German Governor requesting his surrender of Rabaul and outlying districts, but the Governor had abandoned Rabaul and moved his seat of Government inland to the village of Toma. The letter was handed to a German civilian who advised he would deliver it to the Governor; which he did.

Webber then lead his small party inland towards Toma but after sighting several groups of native troops he quickly realised his small force was outnumbered and he withdrew to Herbertshohe and waited for the arrival of four companies of infantry and a machine gun section under lieutenant Colonel W.W. Watson who landed later in the day. This force then moved eastward to link up with a second landing party.

The second landing party (also of 25 men) under the command of Lieutenant R.G. Bowen was landed further down the coast at Kabakaul. An army doctor, Captain B.C.A. Pockley and an Army Medical Corps private also landed with them. This second landing party headed inland, along the Bitapaka road, in search of the German wireless station, which was known to be somewhere in the area with orders to capture

Native troops formed up serving under the Germans. (RAN Seapower Centre)



One of the wireless station's large antenna destroyed. (RAN Seapower Centre)



it. Shortly after they landed a third landing party of 10 naval personnel under the command of Warrant Officer (Gunner) S.T.P Yeo was landed to maintain communication between the landing party and the beach. Bowen's men began to push inland following a dirt road, but keeping to the side and using the dense jungle as cover

THE FIRST SHOTS ARE FIRED

As they made their way inland two of Bowen's men became separated from the main group as they traversed the thick jungle and thus stumbled upon a large force of German native troops lead by white officers who had prepared an ambush. Petty Officer G.R. Palmer opened fire on the Germans and wounded one of them in the right hand (Sergeant Major Mauderer). The Germans returned fire and began to retreat, but Mauderer was captured. The firing alerted Lieutenant Bowen that he had almost been ambushed so he used Mauderer to call upon his comrades to surrender by stating the Australians had landed over 800 men ashore and were now advancing up the road. Two German officers were captured, but, the bulk of the native troops had scattered inland. Sergeant Major Mauderer then had his badly injured hand amputated, without aesthetic, by Captain Pockley and thus became the first Prisoner of War taken in this campaign.

Midshipman R.L. Buller (Bowen's second in command) was sent back to the beach with the three German prisoners and a request for more men to be put ashore. Commander C.L. Cumberlege, in command of YARRA, immediately had 60 men (from YARRA and WARREGO) under the command of Lieutenant

G.A. Hill put ashore to assist Bowen with his advance against what now appeared to be well organised resistance from the German forces.

Admiral Patey then had two companies of Naval Reservists landed (under the command of Lieutenant Commander C.B Elwell, RN and Lieutenant T.A. Bond respectively). Commander J.A.H. Beresford was placed in overall command of this force which also consisted of an army machine gun section and a detachment of Army Medical Corps personnel. Beresford

immediately ordered Elwell's company forward along the Bitapaka road to link up with the force under Bowen while he consolidated the position at the beach.

While this was happening, Lieutenant Bowen's landing party continued to push inland and soon came under fire again from German troops located in the jungle. The fighting became confused as the Australians attempted to outflank the various German positions, including several trenches dug across the road,

A land mine uncovered on the Kabukaul-Bitapaka road. (RAN Seapower Centre)



Trench No 2 just filled in. (RAN Seapower Centre)



and at about 0930 Able Seaman W.G.V. Williams was shot in the stomach. He was carried back along the road by one of his comrades (Stoker W. Kember) and Captain Pockley provided immediate first aid to the badly wounded sailor. Pockley then ordered Kember and another man to carry Williams back to the beach for evacuation to the BERRIMA. Pockley gave Kember his Red Cross brassard to wear and then he moved forward along the road to link up with Bowen's party. Shortly after Pockley was also badly wounded by German rifle fire. He was also evacuated to the BERRIMA but both he and Williams died later that day. Able Seaman William Williams from Northcote, Victoria thus having the dubious honour of becoming Australia's first fatal casualty during the war.

The reinforcements under Lieutenant Hill continued to push forward along the Bitapaka road to link up with Bowen's forces which they did so at about 1000. While Bowen's men held the Germans attention by firing at the dug in troops, Hill's men commenced a manoeuvre to outflank the German trench. Shortly after the attack commenced Lieutenant Bowen was shot in the head and badly wounded and Hill took command of both units while Midshipman Buller was directed to carry Bowen back to the beach and then bring back reinforcements.

Midshipman Buller located the reinforcements under Elwell and advised them of the situation ahead. As this group of men continued to advance along the Bitapaka road they too came under fire from native troops in the jungle and one man (Able Seaman J.E. Walker, who had enlisted under the surname of Courtney) was killed outright and two others wounded (Signalman R.D. Moffat and Able Seaman D. Skillen). The Australians returned fire and killed a number of native troops. Elwell's men also discovered that the road had been mined when one man discovered, by chance, wires connected to a firing mechanism at the base of a tree. The wires were cut and the advance continued. Meanwhile the badly wounded Signalman Moffat was carried back to the beach for treatment; but he subsequently died and was buried at sea.

THE FIGHTING CONTINUES

At about 1300 Elwell's force reached the front line and linked up with Hill's men who had continued the attack on the dug in German forces. Elwell took command and commenced a two pronged attack on the German

trench which consisted of Hill's men advancing on the left while Elwell decided to lead a bayonet charge on the right. Lieutenant Commander Elwell drew his sword and ordered the charge forward but was shot dead before he had covered more than a few metres, but the charge un-nerved the native troops and the German forces surrendered. Hill once again took command of the Australian forces and captured a number of native troops and the senior German Officer in the area; Lieutenant Kempf.

Kempf refused to deal with Lieutenant Hill as he did not believe he was an officer (Hill had lost his cap and shoulder badges in the advance through the jungle) and so the German officer was escorted to the rear and brought before Commander Beresford. After a lengthy discussion Kempf reluctantly agreed to surrender the wireless station and what was left of his defending forces. Beresford directed Lieutenant Bond to take his company, and the army machine gun section, forward with Kempf (and another prisoner, Sergeant Ritter, who spoke English) and advise any German troops they found that the fighting was over in order to avoid further bloodshed.

Bond and his men escorted the two Germans, who were carrying a flag of truce, along the Bitapaka road calling for the other German troops to surrender. There was occasional sniping from the jungle but no Australians were hit and several groups of German troops encountered reluctantly surrendered (not surprising noted that Bond had over 100 heavily armed men under his command and the Germans were in small groups of about 30 men each). Bonds' men had moved forward past two German trenches and were approaching a third when firing broke out.

It appears Sergeant Ritter had taken an opportunity when the Australian's were in the open to call upon his comrades in the third trench to open fire and a brief skirmish broke out. Ritter was killed, as were a number of native troops, but Bond lost one man mortally wounded (Able Seaman H.W. Street) and two wounded (Able Seaman J.H. Tonks and T. Sullivan with the later suffering several wounds to his head, chest and left arm). Bond then left his force at the second trench to secure the area and pushed on towards the wireless station accompanied only by Kempf, Captain R.J.A Travers (an army intelligence officer) and Corporal C.C. Eitel (an interpreter).

LIEUTENANT BOND WINS THE DSO

Shortly before they arrived at the wireless station Bond's small party encountered a heavily armed force of eight German officers and 20 native troops at a police barracks. Bond strode up to them and called on them to surrender but they refused, but before the Germans could react he quickly snatched the revolvers from the officer's holsters. The native troops could not fire as their officers were between them and the Australians and the Germans were so surprised by this sudden and irrational act that they were unable to act to defend themselves and subsequently surrendered. As a result of this action Bond was awarded the Distinguished Service Order (DSO) which became the first decoration won by an Australian in the First World War. The citation read:

On 11th September, 1914 during the attack upon the wireless station, Bitapaka, German New Guinea, Lieutenant Bond displayed conspicuous ability and coolness under fire in leading his men through most difficult country and enforcing the terms of surrender whilst drawing off an attack by another body of the enemy. He showed great daring, when accompanied by only one officer and one man, in suddenly disarming eight Germans in the presence of twenty German native troops drawn up under arms, all of whom were marched off and held prisoners. Later he personally captured five armed natives.

Bond kept the Germans under guard until the ubiquitous Midshipman Buller arrived with more reinforcements. At approximately 1900 the Australians arrived at the wireless station and took control of it (they found that the Germans had commenced destruction of the station and that the wireless masts had been cut through and were being prepared for demolition).

The capture of Bitapaka and the wireless station was complete and several German officers and native troops had been captured in a campaign that effectively lasted a little over 12 hours. The ANMEF had lost two officers (Elwell and Pockley) and five RAN Reserve sailors killed, or died of wounds, and at least another six men had been wounded. German losses were a German officer and 30 native troops killed and dozens wounded.

No more fighting took place although the Australian advance on Toma on 14 September was preceded by the shelling of the area by HMAS ENCOUNTER. The German Governor finally surrendered the colony to Colonel Holmes on 17 September 1914. The next few months were spent by the RAN and the ANMEF garrisoning Rabaul and sending armed parties to the outlying areas of New Britain and the north coast of New Guinea to advise the German colonists of the surrender. Ships of the RAN conducted patrols throughout the area for the remainder of the war and the ANMEF was gradually replaced by the Tropical Force (also called the ANMEF) which remained as the garrison force in New Guinea until the early 1920's.

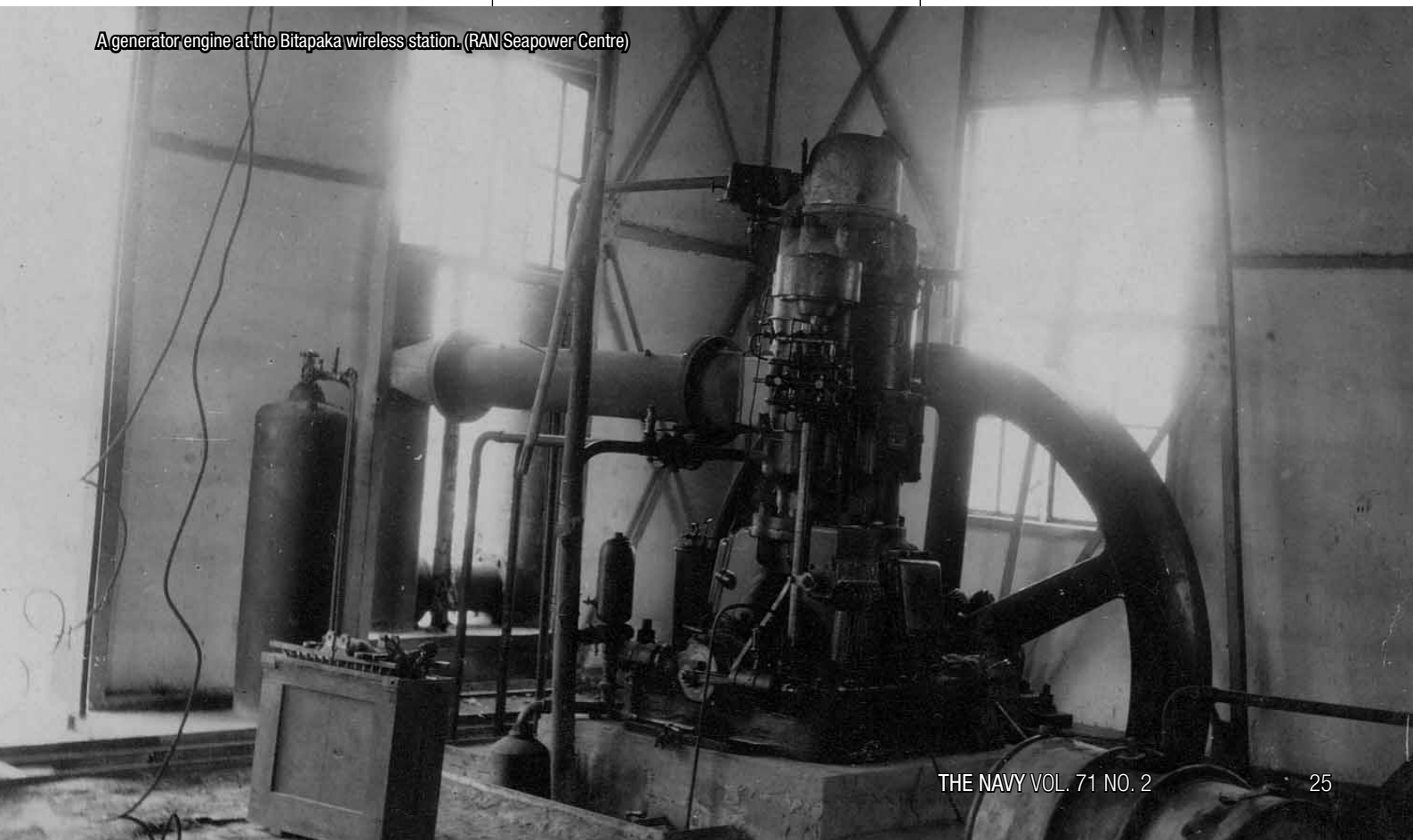
The success of the capture of the colony, effectively in a day, was overshadowed on 14 September 1914 with the loss of the submarine AE1. The submarine had been on patrol off New Britain and failed to return that evening and no trace of her and her crew of 35 was ever found. To date the cause of the loss of AE1 has not been determined.

CONCLUSION

And thus ended the campaign to capture German New Guinea. In a classic example of the flexibility of Naval forces the RAN and ANMEF had been rapidly deployed and quickly subdued a determined enemy force by the effective use of overwhelming firepower and a degree of courage, luck and bluff. A potential threat to Australia, the use of Rabaul as a base for the German East Asia Squadron to operate from, had been removed and enabled the Government and the Navy to focus on the battles to be fought further afield.

It was these battles that many believe became the defining moments in this nation's history and the campaign in German New Guinea was all but consigned to the footnotes. While the 1st AIF went on to achieve undying fame on the beaches of Gallipoli and the mud of France and Flanders it was the RAN and the ANMEF who achieved Australia's first victory in the war, suffered the first casualties and were awarded the first decorations. Largely forgotten today in this nation's Army centric view of history they were still the 'First to Fight'.

A generator engine at the Bitapaka wireless station. (RAN Seapower Centre)





FRENCH NAVAL FORCES IN THE PACIFIC 1941-45

By Peter Ingman

Shortly before the beginning of the war against Japan in December 1941, a small French naval force was deployed to the South Pacific, ostensibly on a political mission. In due course the French maintained ships in the Pacific region throughout the entire war fighting the Japanese and, at times, working closely with Australian, New Zealand and US naval forces.

After the Fall of France in mid-1940, both Australia and New Zealand used naval forces to ensure friendly de Gaullist governments were installed in New Caledonia and the Etablissements Français d'Océanie (i.e. Tahiti). From that time, the French Pacific territories were left without any naval resources, and only some imbalanced and under-equipped land forces for defence. Both Australia and New Zealand offered aid, but this was qualified on the request of the French. De Gaulle was instinctively worried lest the Free French appeared as puppets of Britain, so any initiatives had to have a French face. Both Japanese and Vichy threats loomed in 1941, so plans emerged for a Free French mission to the Pacific.

The Fall of France in June 1940 came as a massive shock to the French worldwide. It is assumed that knowledge of the subsequent events, including the emergence of General de Gaulle and his Free French movement, are well known. The Free French naval arm was the Forces Navales Françaises Libres (FNFL), and was formed using the odd assortment of French naval vessels that happened to be in the UK at the time. However, those that reached England were mainly small coastal craft active in the Channel area. Also, for reasons that cannot be addressed here, recruiting for the FNFL was slow, with only 4,700 personnel in January 1942. The FNFL was especially short of technically qualified personnel. As a result, in regard to the larger

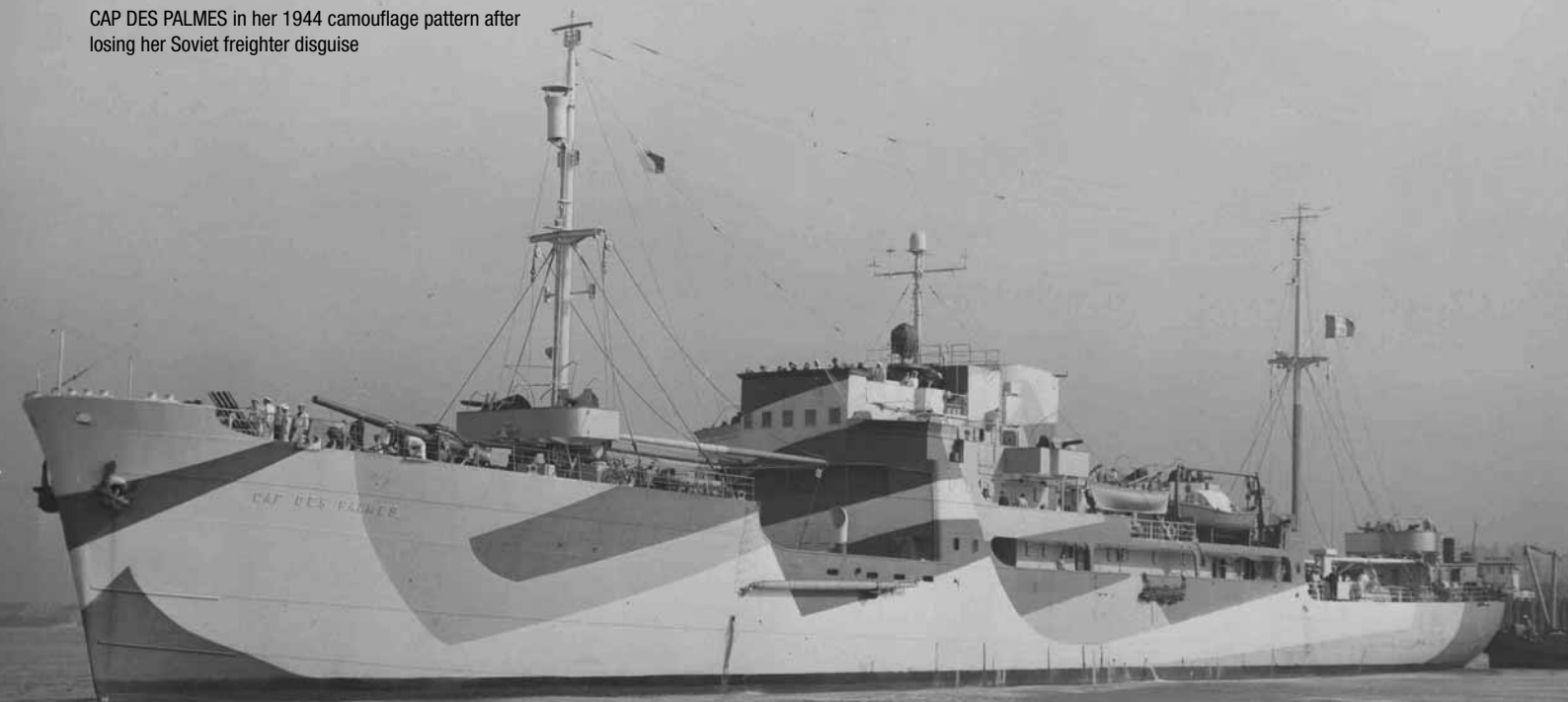
FNFL vessels in England without proper documentation, spare parts or experienced technical personnel, the commissioning process was especially slow and tedious.

FNFL IN THE PACIFIC

In mid-1941 de Gaulle ordered three FNFL warships to the Pacific, to carry material aid but also much needed expertise and clear leadership over local issues. A staff of 20 French officers was put together into this 'mission'. One of de Gaulle's closest and most trusted associates, a naval officer named Thierry d'Argenlieu, was appointed as High Commissioner for the Free French Pacific. The key public role of the mission was to organise the defence of the French Pacific colonies. However in private it was to consolidate Free French power in the region.

The 'Mission' started with a certain urgency as the contre-torpilleur (super-destroyer) LE TRIOMPHANT dashed across the Atlantic at its top cruising speed of 28 knots. Onboard were d'Argenlieu and other senior officers of the Mission. From a military point of view, the choice of LE TRIOMPHANT was unnecessary. She was a large and powerful warship that could have been used in any theatre. But the Free French movement was big on symbolism, and it was in keeping with the prestige of France for the senior members of the Mission

CAP DES PALMES in her 1944 camouflage pattern after losing her Soviet freighter disguise



The contre-torpilleur (super-destroyer) LE TRIOMPHANT. Her presence in the Pacific was unnecessary as she was too large and powerful for her small tasks. Her limited range would prove ill-suited to service in the Pacific.



to arrive in such a warship. Arguably, this symbolism worked very well as the Free French governments were never challenged. However, LE TRIOMPHANT was not at all suited to service in the Pacific.

At the Panama Canal the short legs of the contre-torpilleur was shown up, as it was unable to sail the direct route to Tahiti. Instead, it proceeded to San Diego, and then across to Honolulu. There, LE TRIOMPHANT then took on a maximum load of fuel and after seven days of ploughing through choppy seas, arrived at Papeete on the 23rd September 1941. A

crowd was gathered at the quay to give the first visiting FNFL warship an enthusiastic welcome. They of course did not know that the ship had barely 4% of its fuel remaining.

The unstable local political situation was quickly sorted out. D'Argenlieu appointed one of his incoming mission staff as Governor - this in fact being a very successful and long term appointment. After about two weeks LE TRIOMPHANT sailed for Suva, but with only low grade fuel available at Tahiti, LE TRIOMPHANT only just made it to the destination.

Meanwhile, two other French warships,



Rear Admiral Thierry d'Argenlieu. He was appointed as French High Commissioner for the Pacific with full military and civil powers.

CHEVREUIL and CAP DES PALMES, arrived at Tahiti with the bulk of the mission staff as well as defence equipment (including coast defence guns). After this had been unloaded and with the new Governor firmly in place, d'Argenlieu and his Mission embarked on CAP DES PALMES and sailed westwards. CHEVREUIL remained in Tahiti for another couple of weeks. LE TRIOMPHANT joined with CAP DES PALMES and escorted her to Suva. From there LE TRIOMPHANT continued alone for New Zealand. This gave CAP DES PALMES the privilege of being the first FNFL warship in Noumea, when it arrived on 5th November. Once again, it was enthusiastically welcomed by the locals. Here, the Mission setup office and went about arranging for the defence of the French Pacific.

DECEMBER 1941 INTENTIONS

Although LE TRIOMPHANT was referred to in Admiralty messages as a "light cruiser", the ship could only just cover the distance Papeete-Suva, and was unable to sail from Papeete to Noumea. This was largely the litmus test for the French Pacific, but also reflected the types' limitations for regular escort work. Indeed, the ship had been designed as a fast offensive raider, usually operating in a group of two or three within the more modest distances of the Mediterranean. LE TRIOMPHANT's experiences with Pacific distances during August - November ended any thoughts of long term deployment there, and it was planned for her to continue on to the Mediterranean. Accordingly, a detailed forward itinerary of stop-overs was worked out (i.e. Darwin, Batavia, Singapore etc).

The significance of LE TRIOMPHANT to the FNFL is underlined by the fact that her commanding officer, Aubonyeau, was the second highest ranking officer in the free French organisation at the time. Indeed there was some friction between Aubonyeau and d'Argenlieu. The latter supposedly controlled all FNFL forces in the Pacific, but Aubonyeau outranked him and disliked involvement in the political operations. After leaving CAP DES PALMES at Suva, LE TRIOMPHANT never had any further direct contact with d'Argenlieu or the French Pacific. She later visited Noumea, but that was under the orders of the Australian naval authorities.

The FNFL had one other large warship, the colonial sloop SAVORGNAN DE BRAZZA, that was suitable for the Pacific. SAVORGNAN DE BRAZZA had a useful range and generally modern characteristics, and had served in the Pacific in the 1930s. She would have been a valuable addition to the theatre, but at the time was heavily engaged in African operations.

The smaller 647 ton CHEVREUIL-class were designed as colonial sloop/minesweeper's, and the class emerged as balanced and well built warships. Although entering the war with

FRENCH NAVAL FORCES IN THE PACIFIC 1941-45

certain deficiencies in armament and sensors, their hulls were capable of taking on all of the cumulative wartime improvements. The 'colonial' designation ensured a healthy operating range of around 10,000 miles.

CHEVREUIL herself had only just entered service in 1939. Prior to entering service with the FNFL in late 1940, she received a modern 100mm main gun and upgraded anti-air and anti-submarine armament. The vessel emerged as suitable for most escort roles and served for the duration of the war in several different theatres. In July 1941 CHEVREUIL received instructions to proceed to Tahiti, under the orders of d'Argenlieu. CHEVREUIL was the only ship with clear orders to remain in the Pacific indefinitely. If war were to break out in the Pacific, then CHEVREUIL would be placed under the control of either the Australian or New Zealand Naval authorities.

The FNFL were well aware of their lack of longer range vessels. One category that may have suited their purposes were Armed Merchant Cruisers. These had fallen out of favour with the Admiralty, who by late 1941 were viewing them as an expensive waste of good transport vessels. At Gabon in November 1940 the Free French captured a Vichy merchant ship called CAP DES PALMES. This vessel, of 4,150 tons fully loaded, was a modern fruit carrier or 'bananier'. With its strong hull, powerful diesel engines and exceptional range, the ship had been shortlisted for AMC conversion by the French Navy in 1939.

The FNFL was certainly keen to use CAP DES PALMES as a warship, but this requirement did not match the Admiralty's priorities. So initially there was a stalemate regarding the vessel, and it was used for a few merchant voyages in the Atlantic. Then in 1941 it arrived in England for the first time, and the FNFL were able to commission it for use with the upcoming Pacific Mission. It had accommodation for a small number of passengers, plus it could take military cargo to Tahiti. It sailed with an armament of two 90mm guns dating from the 19th century.

The FNFL were quite persistent in pushing the case for the CAP DES PALMES to be armed as an AMC. In late 1941 they made enquiries with US shipyards, but nothing positive resulted. By the end of 1941 they were making a case for conversion in Sydney or Singapore. However, on arrival in Sydney no one in either port had any knowledge of the project. Perhaps the FNFL were hoping that in the 'fog of war' it would be taken up, regardless of lack of support from the Admiralty. However, in December 1941 in the north Atlantic, FNFL ships gathered and took control of the

tiny Vichy territory of the St Pierre & Miquelon Islands. The US was furious that this occurred on its doorstep without their permission, and the incident probably only further hardened the Admiralty's attitude to giving the FNFL long range warships capable of autonomous operation.

SURCOUF & EARLY 1942

The St Pierre & Miquelon Islands incident also affected the FNFL's Pacific deployment in another way. The biggest vessel present during the 'operation', was the cruiser submarine SURCOUF. Pre-war this, the biggest submarine anywhere, had been a symbol of French prestige. But during the war its shortcomings became apparent, too numerous and wide-ranging to detail here. Suffice to say the British naval authorities probably would have liked to scrap it. However, again the French symbolism played a part. This was the 'pride' of the FNFL, and had to be maintained in service at all costs.

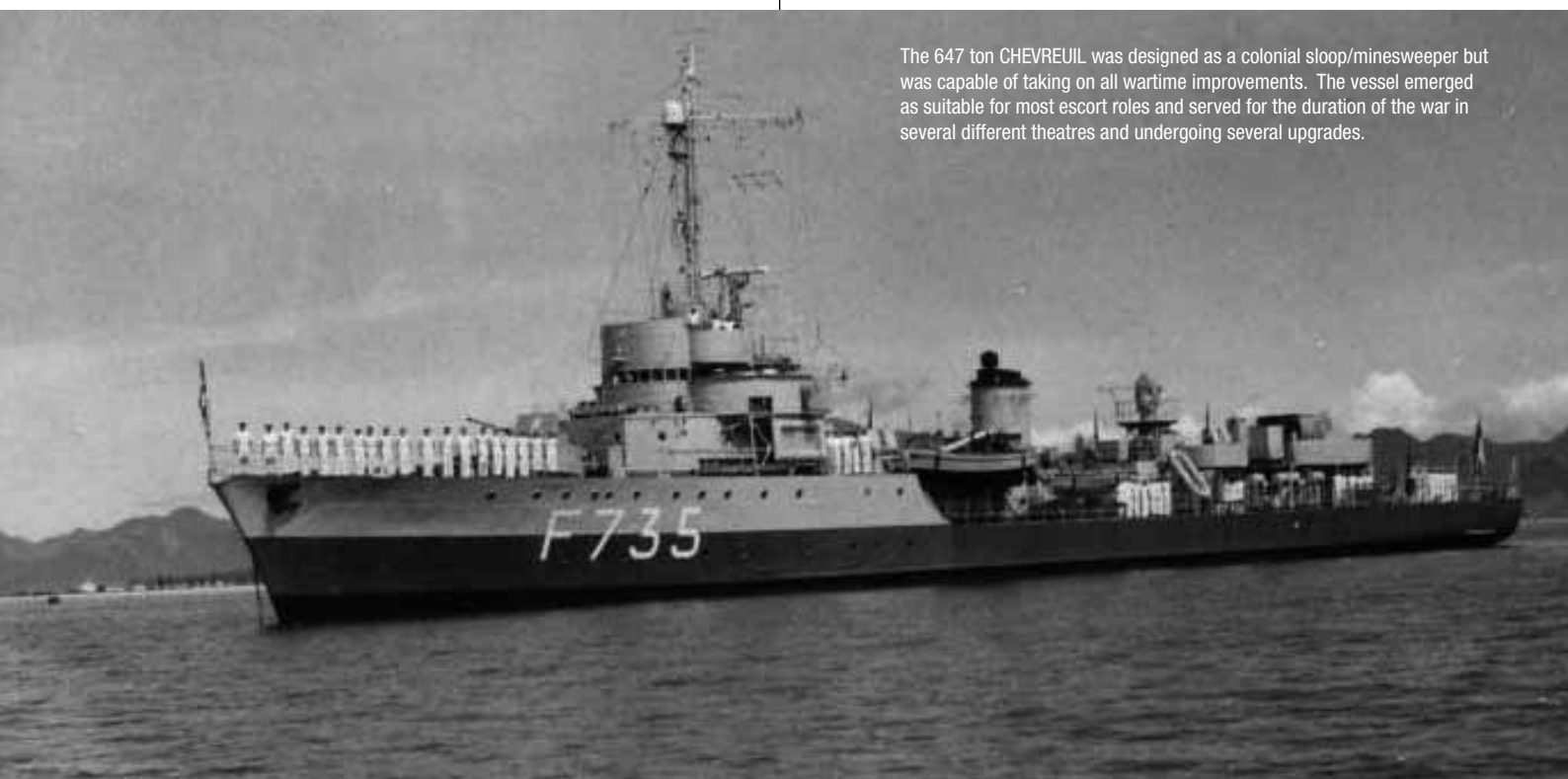
However the start of the Pacific war created a bona fide need for any warlike resources, even ones such as SURCOUF. Certainly SURCOUF did have a useful cruising range, and the idea was to send her to the Pacific and release LE TRIOMPHANT for service in the Mediterranean.

Meanwhile, LE TRIOMPHANT was used to escort a merchant ship carrying troops and construction workers to New Caledonia. Following that LE TRIOMPHANT escorted a tanker to Noumea, Suva and back to Brisbane. In February it became known that SURCOUF had been lost in an accident, so LE TRIOMPHANT was to remain under the control of the Australian naval board. Soon her high speed was put to use in a dash to Nauru and Ocean Islands, where she evacuated several hundred people from an area under Japanese control. LE TRIOMPHANT then returned to Sydney and began what was to become a long period under repair.

Meanwhile CAP DES PALMES found useful employment transporting 300 Japanese internees from Noumea to Sydney. She was then loaded with construction equipment to support the urgent airfield project in New Caledonia, and generally ensured communications between Sydney and Noumea with several return voyages during 1942. CHEVREUIL was based at Noumea in early 1942 and was busily employed setting up coastwatching stations throughout New Caledonia and the Loyalty Islands.

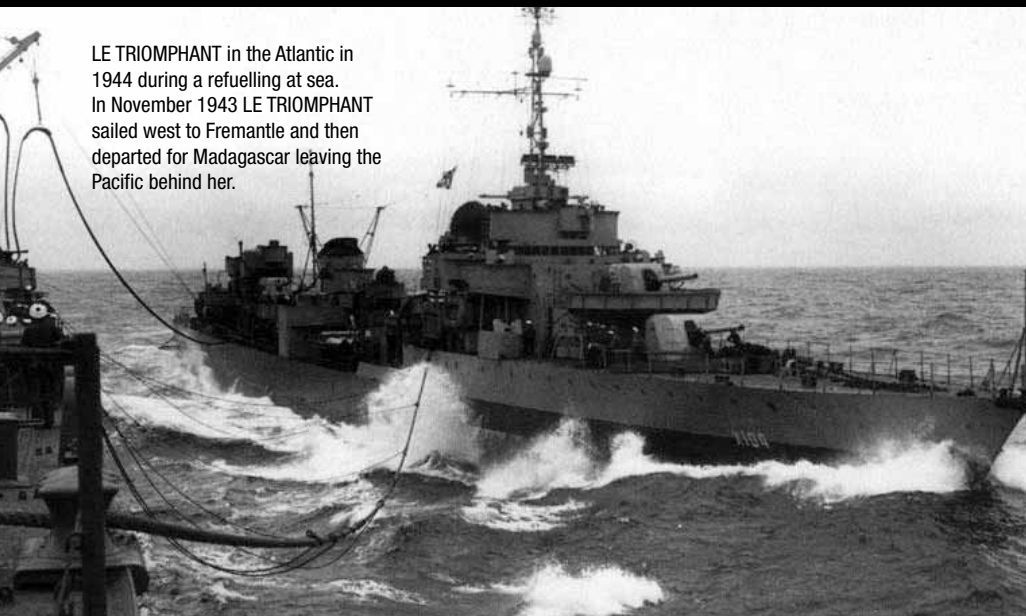
1942 REPAIRS

All three vessels, CAP DES PALMES, CHEVREUIL & LE TRIOMPHANT, were in



The 647 ton CHEVREUIL was designed as a colonial sloop/minesweeper but was capable of taking on all wartime improvements. The vessel emerged as suitable for most escort roles and served for the duration of the war in several different theatres and undergoing several upgrades.

LE TRIOMPHANT in the Atlantic in 1944 during a refuelling at sea. In November 1943 LE TRIOMPHANT sailed west to Fremantle and then departed for Madagascar leaving the Pacific behind her.



need of machinery overhauls and maintenance by the time they reached Australia. Despite an enormous backlog of work, space was allocated for each vessel in Sydney shipyards which they individually entered during February-April 1942.

The story of LE TRIOMPHANT's 'refit' is a long and drawn out saga. Among problems were a gross lack of spare parts and engineering facilities suited to her advanced propulsion systems, plus a dearth of hands-on experience on the ship itself. Although not clear at the time, during operations in Norway in 1940, a near miss from a German bomb had created vibration and alignment problems for one of the propeller shafts. This seemingly minor problem was to persistently haunt the vessel for the next couple of years. In fact, each time the vessel went in for repairs it was to deal with symptoms deriving from this. LE TRIOMPHANT spent nine months of 1942 under repair in Sydney, a time when ships of her kind were desperately needed. Her crew meanwhile began to regard Sydney as 'home' and a number found local wives during this period.

While in for repairs the other two ships received

upgrades to their armament, this included 20mm Oerlikons and new Depth Charge throwers. Eventually LE TRIOMPHANT began trials in November and December 1942, which were encouraging with the ship reaching 41.7kts. However, the recurrent propeller shaft problems re-emerged. The ship was sent to Melbourne where at Williamstown it was decided to remove one propeller while a replacement was made. Thus for the first half of 1943 LE TRIOMPHANT was operational on one propeller only. She was employed as a standing response ship at Sydney or Melbourne, as well as escorting coastal convoys. The ship was extremely busy during this period. Then from July - September 1943 LE TRIOMPHANT operated as far north as Port Moresby, escorting troop convoys to and from various Queensland ports. Eventually, the replacement propeller was installed and the ship was in good working order. In November LE TRIOMPHANT sailed west to Fremantle and then departed for Madagascar. The ship was very badly damaged in a cyclone in the mid-Indian Ocean, and came very close to sinking. However, the vessel eventually made it to safety and was duly repaired and returned to service.

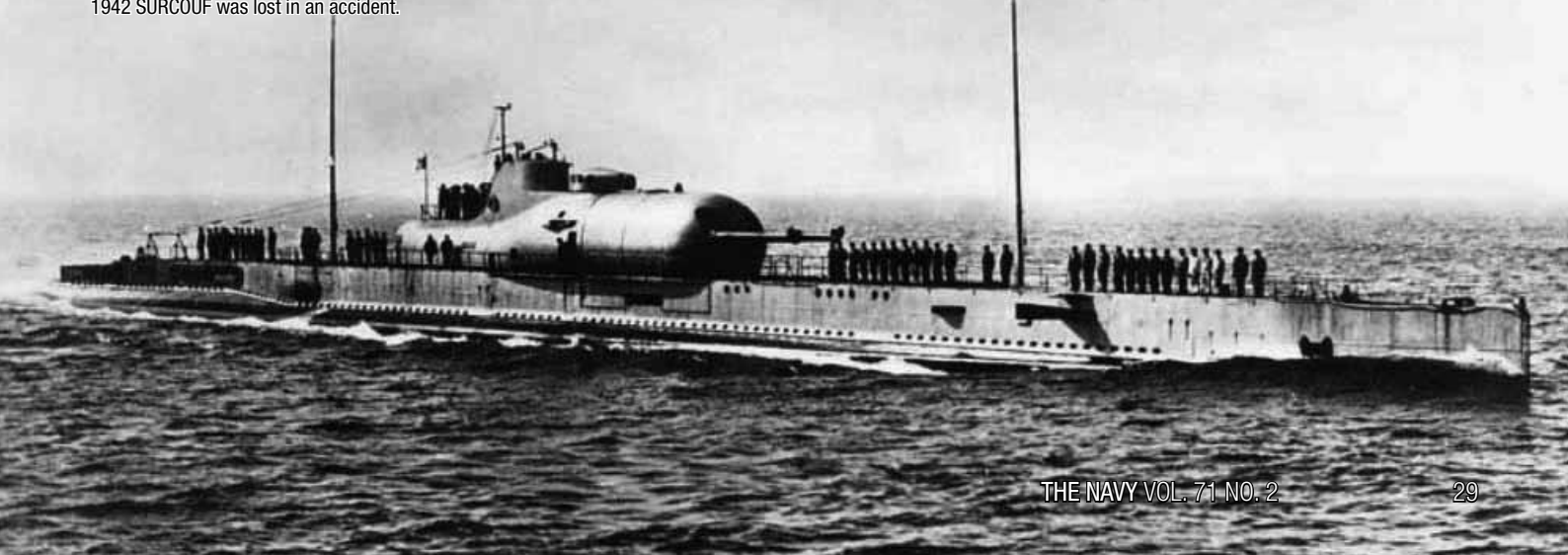
CHEVREUIL & CAP DES PALMES

CHEVREUIL had a relatively brief spell under repair in Sydney and was operational again by the end of April. In early May the US commanders in Noumea were pre-occupied with the Coral Sea battle, but the French did their best to wreck relations with the USN for the rest of the war. CHEVREUIL sailed from Noumea with the ex-Governor Sautot and four associates onboard. All had been arrested under the orders of d'Argenlieu, an action that was far from justified. Sautot was taken to NZ, while the others were dropped off then picked up again from a lonely uninhabited island. When CHEVREUIL sailed from Noumea on this political mission, distress messages were received from a Greek merchant vessel, *CHLOE*, which was being attacked by a Japanese submarine a short distance away. On board CHEVREUIL most of the officers and crew were thrilled at the thought of going into action. However, the Captain locked himself in his cabin and refused to deviate from their initial course, thinking the messages must be some kind of political trap.

Obviously, virtually all observers to this were furious at the French Captain's actions. A chain of events subsequently took place whereby d'Argenlieu and his Mission departed a few months later. The RN liaison officer aboard CHEVREUIL was disembarked by the French after writing a factual account of the *CHLOE* incident. CHEVREUIL itself was very busy, having already been included in a plan for the occupation of the Wallis & Futuna Islands, which was a Vichy French territory. At the end of May CHEVREUIL was in the vanguard of the landing on this territory, and a small force of French marines took control in the name of the Free French. CHEVREUIL then sailed on for Papeete, but the *CHLOE* incident ensured that no French forces would have a front-line role for the remainder of the war against Japan.

Meanwhile CAP DES PALMES completed its

The cruiser submarine SURCOUF. Pre-war this, the biggest submarine in the world, had been a symbol of French prestige which they were keen to send to the Pacific. SURCOUF had a useful cruising range and was thought an adequate replacement for LE TRIOMPHANT, so she could serve in the Mediterranean. However, in February 1942 SURCOUF was lost in an accident.



FRENCH NAVAL FORCES IN THE PACIFIC 1941-45

refit in Sydney and then resumed voyages between Sydney and Noumea, with occasional trips to the New Hebrides. In September d'Argenlieu and the remainder of his original Mission embarked on CAP DES PALMES and sailed for Papeete, from where they exited the Pacific (he was later appointed Commanding Officer of all Free French naval units in 1943). This was also the end of all such 'political' voyages. Meanwhile a surprising message came from Washington stating that CAP DES PALMES would be upgraded as an AMC in the USA, provided that afterwards she could be operated in the South Pacific under US command. Someone in the US had found an unusual use for CAP DES PALMES, as a Q-ship. However, in the accounts of the US Q-ship program there is no mention of CAP DES PALMES or indeed the Pacific. History seems to have largely bypassed the ship.

Anyhow, CAP DES PALMES entered Mare Island naval dockyard in November 1942. She was given a disguise as a Soviet merchant ship and was to sail under a Soviet flag. She received two 6-inch guns that were concealed by fake life-boats and derricks. Two triple torpedo tubes were installed, hidden behind steel plates. The ship also received anti-submarine armament, Asdic and radar. It arrived back in the Pacific in April 1943.



The French colonial sloop SAVORGNAN DE BRAZZA. Her and her sister ships were perhaps the ideal ships for the French Pacific fleet.

However, perhaps because of the *CHLOE* incident the commanders in the Pacific never seemed as enthusiastic about CAP DES PALMES as those in Washington who authorised the Q-ship conversion. The ship plied the routes of the South Pacific as an escort, but in a region that had become a fairly benign back-area. Nevertheless in May 1943 the vessel made an attack on a submarine contact and at the time made a strong case for claiming a likely kill. However, the US authorities appear to have pretty much ignored the claim as there is no reference to it in post-war records. In mid-1944 CAP DES PALMES went back to Mare Island and emerged without the 'disguise'. The ship served in the South Pacific, under US command, until May 1945.

FNFL SHORE PRESENCE: NOUMEA & PAPEETE

With the departure of Vichy forces in 1940, the FNFL inherited the small naval base at Papeete. This base had less than 150 personnel, many of which were sent to FNFL training courses in the UK. A small seaplane base continued flying surveillance missions with its last airworthy aircraft until late 1941. However this small base showed some inventiveness in using local resources. A small number of locally based sailing vessels were utilised as FNFL naval vessels. The largest was Oiseau des Iles, of about 400 tons, which was commissioned as an Armed Auxiliary

Schooner. The machine gun armament was partly sourced from retired seaplanes. There was a real threat of enemy raiders and submarines in the islands, and vessels such as this maintained communications during the war years. Oiseau des Iles reverted to merchant duties in 1944.

Meanwhile at Noumea a significant French Naval establishment was built up to oversee the extensive US base there. The FNFL was responsible for many non-naval duties such as piloting and harbour police work. Eventually there were over 300 personnel in the French base at Noumea, with a comparable but lesser number at Papeete. A sizeable portion were natives, who were used mainly for shore-based work such as sentry duty. Within these numbers were a company of marines, who among other duties maintained the small contingent 'occupying' Wallis Island.

The French were able to maintain such establishments largely through Lend Lease sources. Through Lend Lease five harbour patrol launches were acquired from the US in 1943. These were used to patrol Noumea, Papeete and also the New Hebrides until the end of the war.

FNFL MERGES INTO NATIONAL NAVY: 1943-45

In November 1942 the American landings in French North Africa took place. After some bloody combat, the sizeable French forces in North Africa agreed to join the Allies. From this, the French National Navy was re-born, and later in 1943 was formally merged with the smaller FNFL. The new French forces were nominally referred to as the Fighting French.

The freeing up of the forces in North Africa saw a number of significant vessels modernised in the US. These included several cruisers and the great battleship RICHELIEU. However, in the Pacific the USN was making it fairly clear that it did not want the distraction of having to include Allied forces in the front-line battles against Japan. As such, the newly armed CAP DES PALMES quietly escorted merchant vessels between South Pacific ports with little chance of action.

As we have seen, LE TRIOMPHANT spent virtually all of 1942-43 in the South West Pacific Area, before departing via the Indian Ocean.

CHEVREUIL was active throughout the South Pacific area in 1943, but in August departed for California. The following month she entered a shipyard in San Pedro for a refit and modernisation. In early 1944 she passed through the Panama Canal for further work on the US east coast. Finally she sailed for Casablanca and was active in the Atlantic until the end of the war.

The French were now able to consider replacements on the Pacific station, although there was little military need by that time. As mentioned earlier, the colonial sloops such as SAVORGNAN DE BRAZZA were perhaps the ideal ships for the French Pacific. In January 1944 this ship was based at Madagascar, but arrived in the Pacific the following March. The ship spent about six months doing escort duty in the Solomon Islands - New Hebrides area, before returning to the Indian Ocean.

Meanwhile in May 1944 a sister-ship to SAVORGNAN DE BRAZZA, LA GRANDIERE entered the Pacific via the Panama Canal fresh from an armament upgrade in the US. LA GRANDIERE subsequently performed escort and patrol work across the entire southern Pacific region, venturing as far west as Manus Island. However, by mid-1945 the defeat of Japan was imminent and there was little need for a continued presence in the region. In July LA GRANDIERE again passed through the Panama Canal and sailed for France.

BOOK

A Century of Carrier Aviation

CDR David Hobbs, MBE, RN (Rtd)

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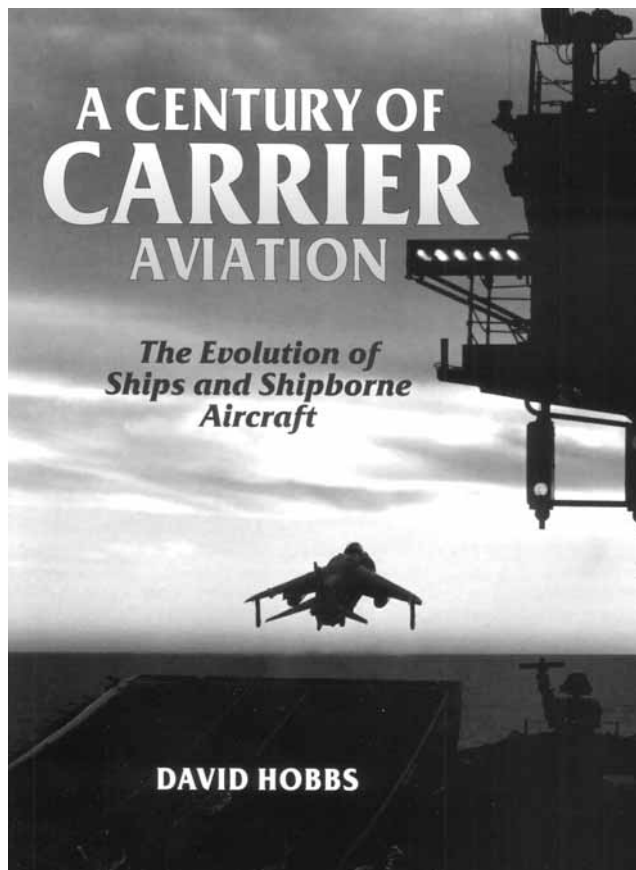
It is almost exactly a hundred years since Eugene Ely first flew an aircraft from and back onto a warship, heralding the birth of naval aviation. As warplanes grew larger, faster and heavier, air operations from ships were only possible through constant development in technology, techniques and tactics. A Century of Carrier Aviation outlines the progress and growing importance and effectiveness of

naval air power from the very beginning, concentrating on the advances and inventions - most of them British but refined and implemented by the Americans - that allowed shipborne aircraft to match their land-based counterparts. Many of those aircraft have also found their way into the inventories of land based air forces. The book also charts the contribution to 20th century warfare that the carrier has made leaving no one in doubt as to why the aircraft carrier is regarded as the 20th century's most flexible and capable weapon system.

The detailed examination of the inventions that better enabled naval fixed wing aviation are fascinating with the author writing from a position of experience with some of the systems.

While the book is written from a British point of view, the US contribution to carrier technology and development is not overlooked.

Written by a retired RN Fleet Air Arm pilot and award-winning historian of naval flying, this is a masterly overview of the history of aviation in the world's navies down to the present day. The book is heavily illustrated



from the author's comprehensive collection of photographs. Nearly all the images are previously unseen. One that particularly took my attention involved WW II Grumman Wildcats on HMS QUEEN during 1945. Aircraft parking space on straight decks had been an issue for sometime. A British innovation involved a steel outrigger rail fitted perpendicular to the flight deck and level with it so the tail wheel of the Wildcat could be pushed over the side of the flight deck. The front wheels remaining on the main deck. Thus while the back of the aircraft was essentially suspended over the water, the front was over the deck thus reducing the space the aircraft would take up when parked on the side of the flight deck.

Another image sees RN and USN F-4 Phantoms parked together on the flight deck of HMS ARK ROYAL as well as RN Buccaneer and USN A-6 Intruders.

Some of the subjects covered by A Century of Carrier Aviation include the development of the angled flight deck, mirror landing aid, the rubber deck, helicopter operations from ships, VSTOL operations and a chapter entitled 'What might have been' looking at three RN carrier proposals including the cancelled CVA-01 carrier project.

This book is essential reading to anyone with an interest in naval air power. It is truly the last word on aircraft carrier development.

David Hobbs retired after a 33 year Royal Navy flying career and worked for some years as the Curator of the Fleet Air Arm Museum in Yeovilton. He is no stranger to audience members of the RAN's King Hall history conferences and is a former Aerospace Journalist of the Year title winner. He is also the author of many articles in THE NAVY on naval aviation a number of books, including a comprehensive encyclopaedia of the world's aircraft carriers.

This book cannot be recommended more highly.

RAN STEWARDS REUNION 2009

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The strategic background to Australia's security has changed in recent decades and in some respects become more uncertain. The League believes it is essential that Australia develops the capability to defend itself, paying particular attention to maritime defence. Australia is, of geographical necessity, a maritime nation whose prosperity strength and safety depend to a great extent on the security of the surrounding ocean and island areas, and on seaborne trade.

The Navy League:

- Believes Australia can be defended against attack by other than a super or major maritime power and that the prime requirement of our defence is an evident ability to control the sea and air space around us and to contribute to defending essential lines of sea and air communication to our allies.
- Supports the ANZUS Treaty and the future reintegration of New Zealand as a full partner.
- Urges close relationships with the nearer ASEAN countries, PNG and South Pacific Island States.
- Advocates the acquisition of the most modern armaments, surveillance systems and sensors to ensure that the Australian Defence Force (ADF) maintains some technological advantages over forces in our general area.
- Believes there must be a significant deterrent element in the ADF capable of powerful retaliation at considerable distances from Australia.
- Believes the ADF must have the capability to protect essential shipping at considerable distances from Australia, as well as in coastal waters.
- Supports the concept of a strong modern Air Force and a highly mobile well-equipped Army, capable of island and jungle warfare as well as the defence of Northern Australia and its role in combatting terrorism.
- Advocates that a proportion of the projected new fighters for the ADF be of the Short Take Off and Vertical Landing (STOVL) version to enable operation from suitable ships and minor airfields to support overseas deployments.
- Endorses the control of Coastal Surveillance by the defence force and the development of the capability for patrol and surveillance in severe sea states of the ocean areas all around the Australian coast and island territories, including the Southern Ocean.
- Advocates measures to foster a build-up of Australian-owned shipping to support the ADF and to ensure the carriage of essential cargoes in war.

As to the RAN, the League:

- Supports the concept of a Navy capable of effective action off both East and West coasts simultaneously and advocates a gradual build up of the Fleet and its afloat support ships to ensure that, in conjunction with the RAAF, this can be achieved against any force which could be deployed in our general area.

- Believes that the level of both the offensive and defensive capability of the RAN should be increased, and welcomes the decision to build at least 3 Air Warfare Destroyers (AWDs).
- Noting the increase in maritime power now taking place in our general area, advocates increasing the order for AWDs to at least 4 vessels.
- Advocates the acquisition of long-range precision missiles and long-range precision gunfire to increase the RAN's present limited power projection, support and deterrent capabilities.
- Welcomes the building of two large landing ships (LHDs) and supports the development of amphibious forces to enable assistance to be provided by sea as well as by air to island states in our area, to allies, and to our offshore territories.
- Advocates the early acquisition of integrated air power in the fleet to ensure that ADF deployments can be fully defended and supported by sea.
- Supports the acquisition of unmanned surface and sub-surface vessels and aircraft.
- Advocates that all warships be equipped with some form of defence against missiles.
- Advocates the future build-up of submarine strength to at least 8 vessels.
- Advocates a timely submarine replacement programme and that all forms of propulsion be examined with a view to selecting the most advantageous operationally.
- Supports continuing development of a balanced fleet including a mine-countermeasures force, a hydrographic/oceanographic element, a patrol boat force capable of operating in severe sea states, and adequate afloat support vessels.
- Supports the development of Australia's defence industry, including strong research and design organisations capable of constructing and maintaining all needed types of warships and support vessels.
- Advocates the retention in a Reserve Fleet of Naval vessels of potential value in defence emergency.
- Supports the maintenance of a strong Naval Reserve to help crew vessels and aircraft and for specialised tasks in time of defence emergency.
- Supports the maintenance of a strong Australian Navy Cadets organisation.

The League:

- Calls for a bipartisan political approach to national defence with a commitment to a steady long-term build-up in our national defence capability including the required industrial infrastructure.
- While recognising budgetary constraints, believes that, given leadership by successive governments, Australia can defend itself in the longer term within acceptable financial, economic and manpower parameters.



The former HMAS ADELAIDE being towed down harbour after much of her equipment has been stripped away for her conversion to a dive wreck for the NSW central coast region. (Chris Sattler)

Russia's Northern Fleet Kirov class nuclear-powered missile cruiser PYOTR VELIKY on her recent historic visit to Cape Town, South Africa, during January. This was the first time a Russian naval ship had visited South Africa. (Ken Fletcher)





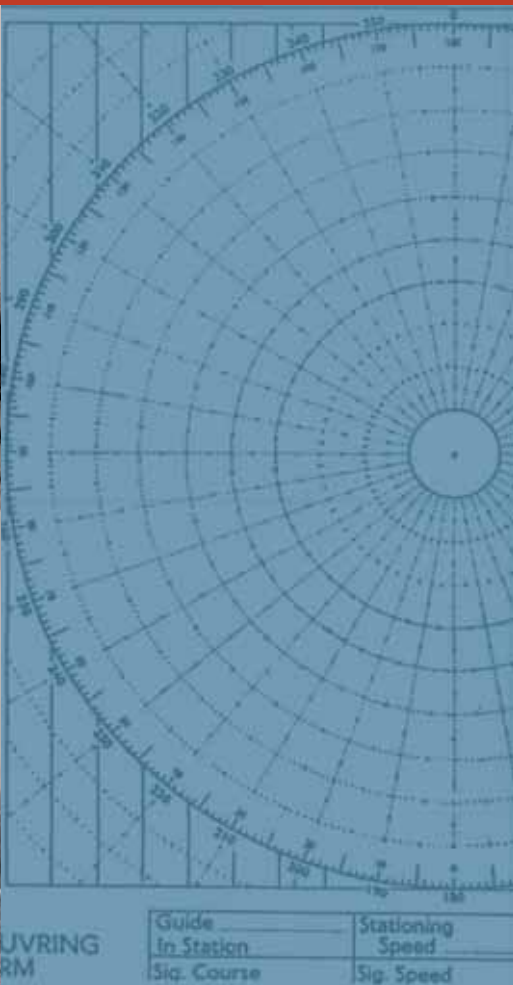
THE COMMONWEALTH NAVIES: 100 YEARS OF COOPERATION

The sixth biennial King-Hall Conference will be held in Canberra on 30-31 July 2009. The conference will be organised by the Sea Power Centre - Australia with assistance from the School of Humanities and Social Sciences, University of New South Wales at the Australian Defence Force Academy. The King-Hall Conference has become a significant event in the national and international sea power communities for its wide-ranging discussion of topical naval historical and maritime strategic issues. The conference is open to the public, and previous events have attracted a wide range of naval historians, academics and retired and serving military personnel, as well as interested lay people from Australia and overseas.

The Commonwealth Navies: 100 Years of Cooperation

2009 King-Hall Naval History Conference 30-31 July 2009

The theme of the 2009 conference is 'Commonwealth Navies: 100 Years of Cooperation'. In 1909, Australia, with the encouragement of the British Admiralty, decided to acquire a modern ocean-going fleet; one which would not only protect local ports and shipping from enemy incursions but also support the Royal Navy in its determination to retain command of the sea. Other members of the Empire followed, and over the next 100 years the various Commonwealth navies have routinely sailed together in both peace and war and with a remarkable degree of interoperability. Arguably the most successful international grouping of its type, Commonwealth naval cooperation can also be seen as the precursor to more recent initiatives such as the US Navy's Maritime Partnership.



GENERAL INFORMATION

Venue:

Adams Hall, Australian Defence Force Academy, Canberra ACT.

Registration:

Registration will be at no cost, however, the number of delegates will be limited by the size of the venue. Early contact with the Sea Power Centre - Australia is recommended.

(Registration includes lunch and light morning tea)

FURTHER INFORMATION

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