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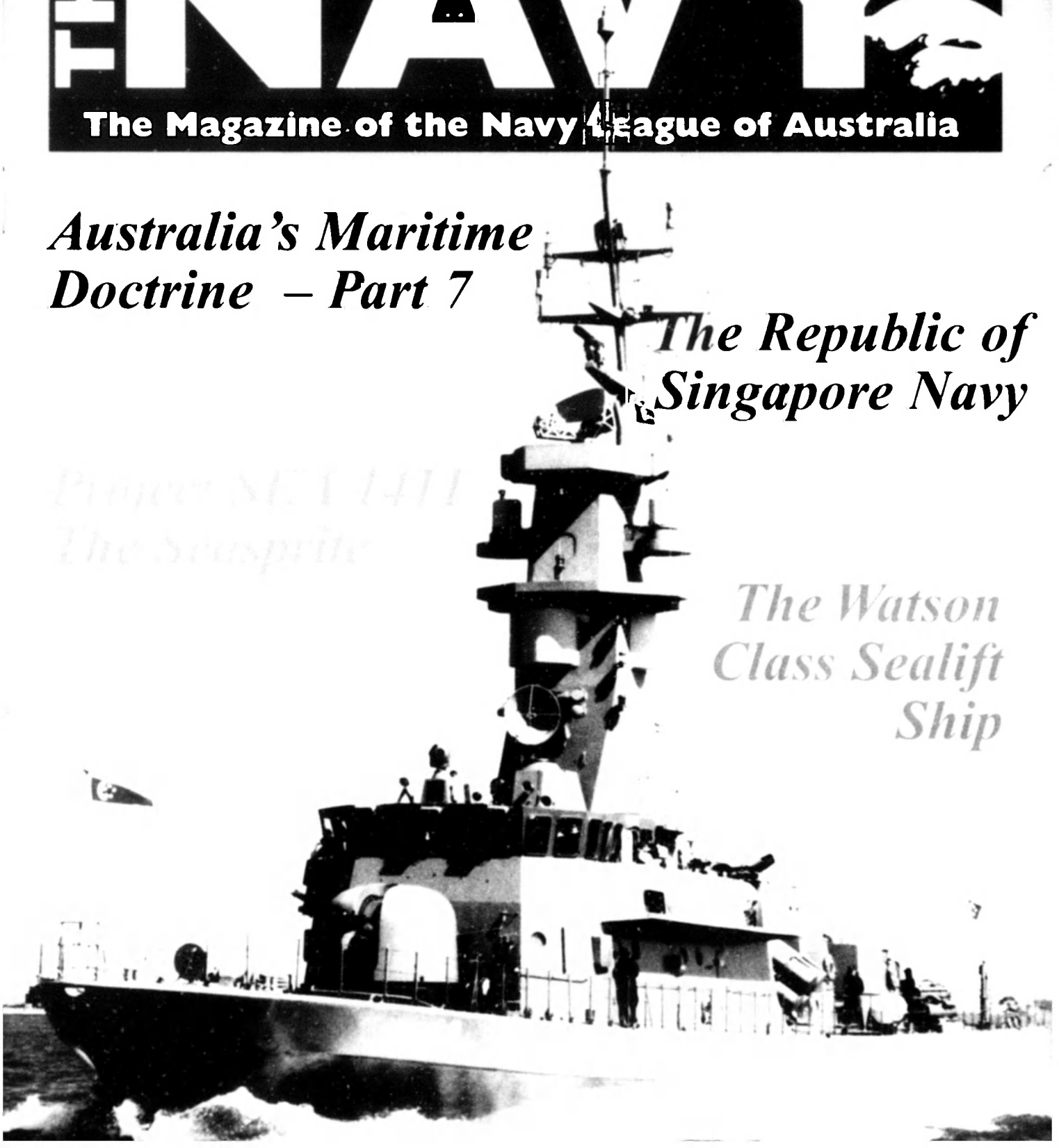
THE NAVY

The Magazine of the Navy League of Australia

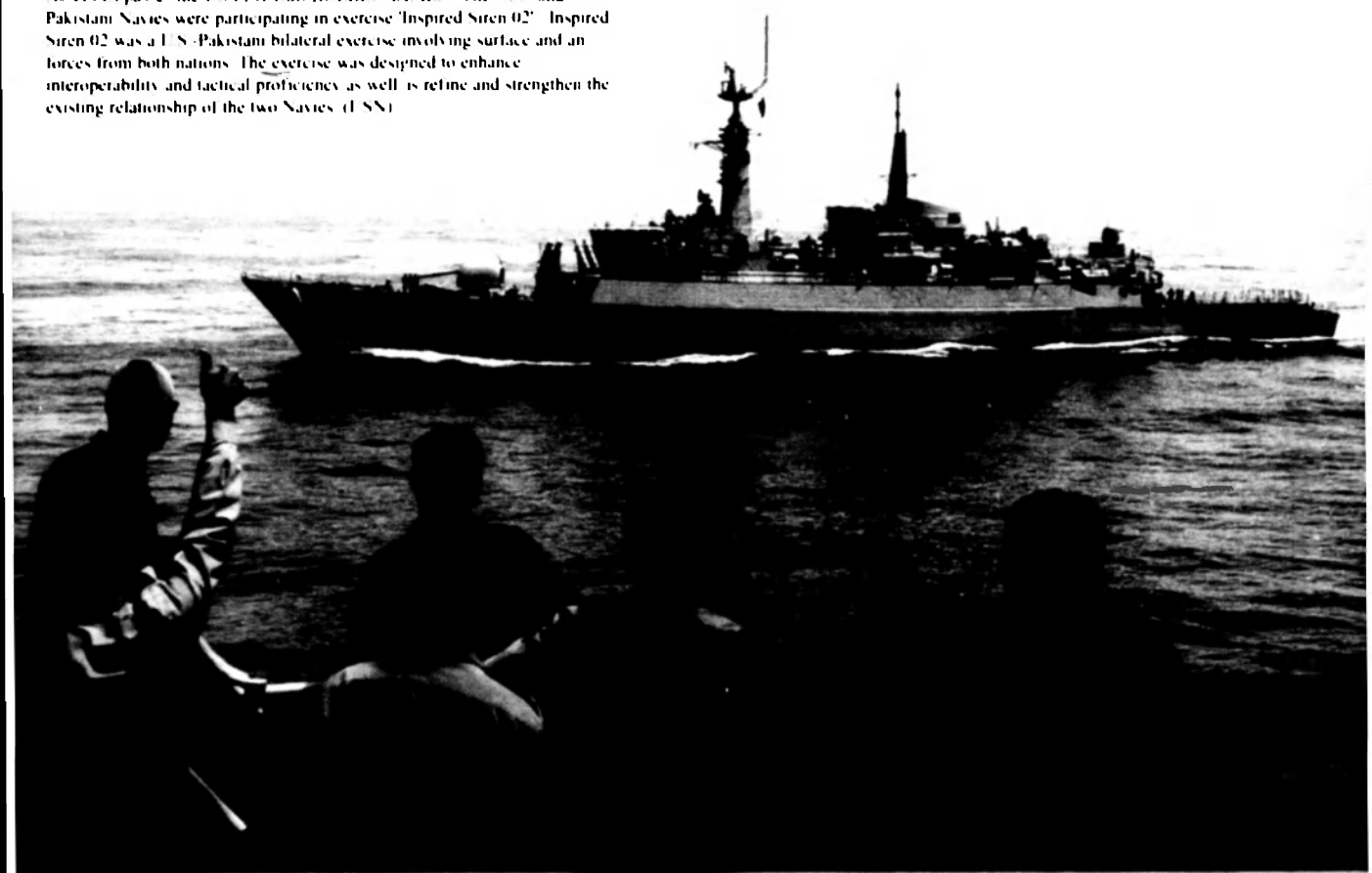
Australia's Maritime Doctrine – Part 7

The Republic of Singapore Navy

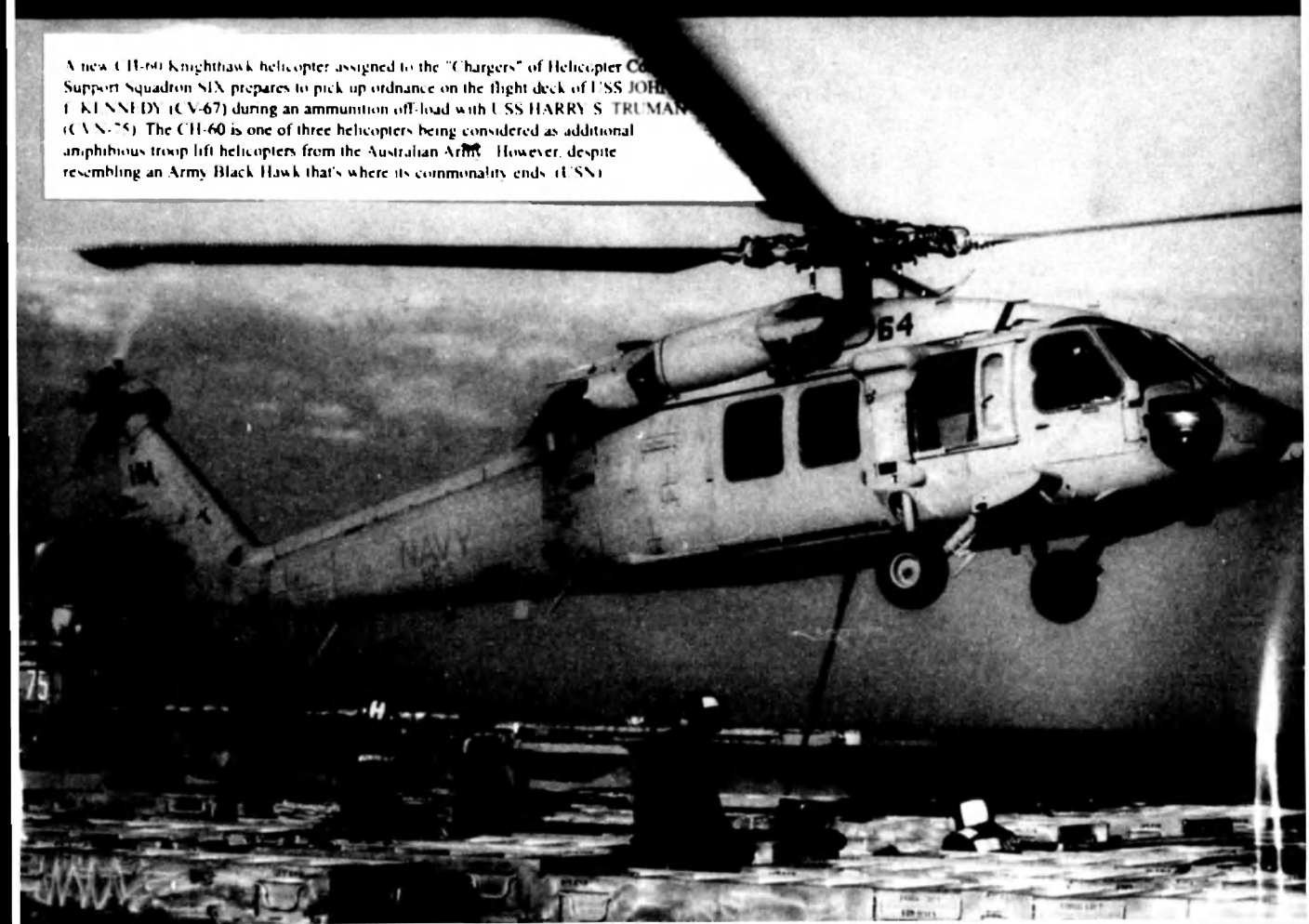
The Watson Class Sealift Ship



The Pakistan Navy Type 21 Frigate PNS SHAHJAHAN (DDG-166) (ex-HMS ACTIVE) passes the US FFG USS RUBEN JAMES. The USN and Pakistani Navies were participating in exercise 'Inspired Siren 02'. Inspired Siren 02 was a US-Pakistani bilateral exercise involving surface and air forces from both nations. The exercise was designed to enhance interoperability and tactical proficiency as well as refine and strengthen the existing relationship of the two Navies. (USN)



A new CH-60 Knighthawk helicopter assigned to the "Chargers" of Helicopter Co... Support Squadron SIX prepares to pick up ordnance on the flight deck of USS JOH... F. KENNEDY (CV-67) during an ammunition off-load with USS HARRY S. TRUMAN... (CVN-75). The CH-60 is one of three helicopters being considered as additional amphibious troop lift helicopters from the Australian Army. However, despite resembling an Army Black Hawk that's where its commonality ends. (USN)



THE NAVY

Volume 65 No. 1

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Front cover: The Singapore corvette RSS VALOUR. RSS VALOUR was the first Victory class corvette to be built in Singapore with the lead vessel being built in Germany. This corvette carries an impressive armament that puts it in the class of a frigate. See our special on the Republic of Singapore Navy on page 3. (Brian Morrison, Warships and Marine Corps Museum, Franklin, Tas).

The Navy
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FROM THE CROW'S NEST

DEFENCE AWASH WITH INQUIRIES.

The Department of Defence and Armed Forces are quite used to inquiries into their activities, especially when fault is suspected, but it is some time since they were involved with so many inquiries simultaneous as in the year just past. The Navy, for example, has been digesting the outcome of several internal and external examinations of its Collins-class submarine project; its role in the 'Children Overboard' affair ensured publicity for months, an internal review of defence policy in the aftermath of the 2001 terrorist attacks; and a parliamentary committee inquiry into the nation's Maritime Defence Strategy now under way. In addition the management of the Department has also been under scrutiny – all together a stressful period for senior Defence personnel.

With regard to the particular inquiries listed above, major defence projects, not least new ships and aircraft, are almost always the cause of problems – not the carrier but equipment which is to be fitted into the hull or frame and is under constant development. As the armed forces naturally want the latest equipment the financial and completion aspects of contracts are inevitably thrown into disarray. During the 10 or more years it may take to select, design (or look overseas), to obtain approval and funding and build the ship, aircraft or whatever, it is doubtful if cost and delivery time problems can ever be fully overcome.

The 'Children Overboard' affair has been dealt with at length by media and no further comment is necessary here, other than to remark that the parliamentary inquiry drew attention to the complexity of defence command and management arrangements.

Concerning defence policy, the Government's November 2000 Defence White paper promised periodic reviews, a sensible commitment at any time and a necessity during a prolonged period of global restlessness; Surprising, however, was the decision of the Parliament's Joint Standing Committee on Foreign Affairs, Defence and Trade (JCFAD&T) to institute a public inquiry into Australia's Maritime Strategy, cornerstone of defence policy for the past 25 years; Further reference to this inquiry is made elsewhere in this issue of *THE NAVY*.

The internal inquiry ordered by the Defence Minister is however timely.

Geoff Evans

FROM OUR READERS

If the US can do it, why can't we?

Dear Editor

For the past twenty years since the USN allowed a film crew access to the aircraft carrier USS NIMITZ (CVN-68) for the movie, *The Final Countdown*, Hollywood and the United States Military have collaborated on many movie projects. Some movies of note that have had Military assistance include *Saving Private Ryan*, *Top Gun*, *The Hunt For Red October* and *Black Hawk Down*.

This level of co-operation between both the military and Hollywood is such that the US Defense Department has an office that both gives permission and then co-ordinates all film activity that uses US military assets, even to the point of assigning advisers to assist in the filming.

Sometimes the Department of Defense says no, as happened for both *Crimson Tide* and the sci-fi movie *Independence Day*, due to items or storylines that were found to be against the Military's interest. When they say yes, the results can be very impressive, putting forward a positive image of the US Military to the movie going public.

In Australia, there have been many TV mini-series loosely based on the Australian Military, the last one being *Changi* on the ABC. There has not been a major film made about the ADF since *The Light Horsemen* in the late 1980's. The last TV series on our military was the ABC series *Patrol Boat*.

It is not like there are no great stories out there. Our military history has everything from great stands (Elands River in the Boar War, Long Tan during Vietnam) through to dangerous missions (HMAS MURCHISON during the Korean War) to heroes (Teddy Sheean, John Collins). They are just as good as stories from overseas and they show Australians at their finest in some of our darkest hours.

The question is: Why can't we promote our military history through the Australian Film industry? We know that people are interested in our military with the ever growing resurgence of Anzac Day and the increasing numbers of visitors going through our military museums, there is no doubt of this fact.

There is also the *U-571* factor. The movie *U-571* caused an uproar from its creation of a fantasy military mission. For Australians the movie was an insult with the real U-571 sunk by 461 Sqn RAAF in 1944. Yet this movie was made and even with a fantasy story scored well at the box office. Movies such as *U-571* put forward the belief that America won the war single handed, which was never the case.

When Hollywood puts out a great military movie, the world watches. *Saving Private Ryan* was a watershed event for both the American Film Industry and the American public. It showed Americans at their finest at a turning point in history. With a no holds barred approach the movie showed the horrors of war. It is now the standard to which all military movies are now judged.

We as a nation have got nothing to be ashamed of! Australian Military history is just as interesting and poignant as those overseas. We have a world-class film industry here that can do the job (particularly evident with movies such as *The Matrix* and *Star Wars* being made in Australia). The question is how do we get the ball rolling? How do we get the Australian Film industry interested? Once this question is answered the rest can be dealt with.

It is time for the Australian Department of Defence to start generating interest beyond that of issuing press releases on current operations. Australia's Defence Public Affairs people should start being enthusiastic about their role and begin discovering how it can assist the Australian Film Industry, and if possible, generate interest with Movie Studios into getting our military history into the public domain.

But until that happens, lamentably, Australia's children will continue to see the military history of other nations, namely America, in Australia's Cinemas.

Ian Johnson
WA

THE REPUBLIC OF SINGAPORE NAVY

By George Kaplan

The Victory class corvette RSS VALIANT. The Victory class are very well armed ships and have a top speed of 35kts. (Brian Morrison, Warships & Marine Corps Museum, Franklin, Tas)

The navy of the Republic of Singapore (RSN) is one of South East Asia's most interesting and dynamic. From humble beginnings following independence in 1963, the RSN has grown to a position of control over one of the world's most important waterways.

Today, the RSN is capable of exerting 'Sea Control' over their area of immediate interest and sea denial much further away. With the introduction into Singapore service of four ex-Swedish Navy submarines and the addition of new stealth frigates on order from France the RSN will soon be in a position to exert 'Sea Dominance' on, over and under the waters surrounding the Singapore Strait.

Such is the mix of capabilities that the RSN is integrating that, with the exception of the Japanese Maritime Self Defence Force with their Aegis destroyers and fleets of modern destroyers and submarines, and the overwhelming firepower of the United States Navy, the RSN is on track to become the most powerful navy in the region.

The RSN of Today

Today's RSN is based around a core of missile armed fast patrol boats. These vessels are ideal for operations in and around the intensely crowded littoral waters of the Singapore and Malacca Straits. Small, fast and easily able to disappear amongst the numerous islands, ferries, fishing boats and merchant ships that ply these waters, they are also possessed of potency far outweighing their size.

The largest and most capable of Singapore's fleet are the six Victory class corvettes. Displacing 600 tonnes, they are armed with up to eight Harpoon anti-ship missiles, each with range of 130kms and more than capable of seriously damaging a frigate-sized opponent. A recent upgrade to these corvettes has seen a substantial improvement in their self-defence capabilities, with the addition twin vertical launch octuple Barak surface to air missile launchers to augment the single 76-mm dual-purpose super rapid gun and passive defence measures.

The Israeli Barak is designed to be a relatively low-cost point defence missile system to protect ships against both manned aircraft and anti-ship missiles and consequently has a quick reaction time, typically 3 seconds including 0.6 seconds to turn over. The fire-control system is based upon the Elta EL/M-2221GM I/J- and K-band (X-Ka band) monopulse coherent tracking and illumination radar which is supplemented, on the right-hand side, by a Rafael thermal imager. It features a dish antenna with an elevation of -25 to +85°. Search, acquisition and tracking may be conducted in either I/J (8 to 20 GHz) or K (20 to 40 GHz) bands and it can track the target or targets while controlling two missiles. The system may also be used for controlling guns, possibly with the assistance of a separate ballistic computer.

Upon acquisition of the target/targets by the ship's search radar, the fire-control radar designates the targets. The system automatically calculates the level of threat from each target, allocates a missile or missiles and automatically launches them. In the anti-ship missile role the Barak leaves the launcher and is turned over towards the target by the thrust vector control system at the base of the missile which is

A Sea Wolf class missile armed attack boat. The Sea Wolf are armed with both Harpoon and Gabriel ASMs as well as a 57mm rapid fire gun and a Simbad twin launcher for Mistral IR homing anti-aircraft missiles.

automatically discarded, presumably by explosive bolts, upon completion of launch. The missile is acquired and controlled by the fire-control radar which then guides it towards the target. The missile is capable of engaging targets 2 m above the sea and can manoeuvre at 25 g. It travels at Mach 2 and has a range of 12kms.

The Victory class are also fitted with two triple 324mm ASW (Anti-Submarine Warfare) torpedo tubes for six Italian Whitehead A 244s anti-submarine active/passive homing torpedos with a range of 7kms.

Backing up the Victory class are six 260 tonne Sea Wolf Harpoon/Gabriel 1 armed missile attack craft, and 12 500 tonne Fearless patrol craft, half of which are fitted out for ASW operations. The Sea Wolf are armed with four Harpoon ASMs and four Israeli Gabriel I ASMs with a range of 20km at Mach .7 and guided by either optical or radar guidance (semi-active homing). The Sea Wolf and fearless are also fitted with the Matra Simbad twin launcher for Mistral IR anti-aircraft missiles, which have a range of 4kms.

The Fearless class are fitted with a 76mm super rapid gun which can fire 120 rpm to 16kms. As mentioned, half of the class are also fitted for ASW operations and employ a Thomson Sintra TSM 2362 Gudgeon hull-mounted active attack medium frequency sonar. One of the ships is also fitted with a towed sonar array. The ASW ships have two triple 324mm torpedo tubes for the Italian Whitehead A244s active/passive torpedo.

Operating close to their bases, and under friendly air cover, these vessels could use Singapore's crowded waters to full advantage, mingling with neutral traffic and darting out to deliver missile attacks against their targets or to search and destroy transiting submarines. They would have the 'Home Ground' advantage of airborne and shore based radar surveillance. Realistic exercises that emphasise these tactics regularly feature in the RSN's training schedule.

Taken together with the Republic's Grumman E-2 Hawkeye AEW&C (Airborne Early Warning & Control) aircraft, and A-4 Skyhawk and F-16 Falcon attack aircraft, these surface assets have the capability to render the waters in and surrounding the Singapore Strait extremely dangerous to opponents. These however are not the only forces that an aggressive maritime force would have to deal with, for further danger lurks beneath the waves.

Singapore took the decision to acquire a submarine force in the early 1990's, with the acquisition announced in 1995 of the first one, then four submarines of the Sjoormen class. All had seen service with the Royal Swedish Navy in the shallow and cold waters of the Baltic. These submarines, 25 years old at the time, were to be decommissioned as part of reductions in the Swedish submarine service. Singapore evaluated them and found them to be excellent entry level technology into submarine operations. Their design, optimised for shallow water operations in the Baltic, is ideally suited for operations in the waters of the Singapore Strait and the surrounding region. However, the water temperature is much higher in the tropics meaning more corrosion and a loss of underwater endurance due to battery overheating.

Following extensive reconditioning, which involved the replacement of most of the submarines pipping, wiring and the fitting of air conditioning, two of the four boats are now in operation in Singapore, with the remaining two completing crew-training duties in the Baltic and due to arrive in Singapore in 2003. The submarines are armed with four 533mm bow tubes and carry up to 10 FFV 613 anti-surface wire guided passive homing torpedos with a range of 15kms at 45kts using a 250kg warhead. The subs also have two 400mm torpedo tubes for four FFV Type 431 anti-submarine active/passive wire guided torpedoes with a range of 20kms at 25kts and using a 45kg shaped charge warhead, or an equivalent war load of mines. The four boats are named CHALLENGER, CENTURION, CONQUEROR and CHIEFTAIN are a potent weapon in the republic's maritime arsenal. Despite their age, they are quiet, manoeuvrable and will be extraordinarily hard to detect in the notoriously difficult anti-submarine environment of the tropics, where shallow water, noisy acoustic environment, varying salinity and complex temperature gradients combine to work to the submarine's advantage. Even the most capable anti-submarine force will struggle to locate the Challenger class subs in these difficult waters.

The RSN is aware that a mining campaign conducted in the waters of the Singapore and Malacca Straits could have a devastating impact on both the economy of the island state, and on the RSN's movements. To this end they have commissioned four Swedish designed Landsort class minehunters. The first, BEDOK (which the class was also named), was built in Sweden with the last three being built in Singapore. While not sufficient to keep the entire Singapore Strait clear of mines, they are sufficient to ensure RSN access

The Fearless class patrol vessel RSS JUSTICE. JUSTICE is armed with a 76mm super rapid gun and a Simbad twin launcher for Mistral anti-aircraft missiles. There are 12 fearless class patrol vessels in the RSN order of battle with six of them having an ASW specialty. (Brian Morrison, Warships & Marine Corps Museum, Franklin, Tas)

One of Singapore's two Challenger class diesel-electric class submarines heading to sea. Singapore owns two more Challenger class (former Swedish Sjoormen class) submarines which are still in the Baltic undergoing trials (Brian Morrison, Warships & Marine Corps Museum, Franklin, Tas)

to their operating areas. The RSN has rightly concluded that any indiscriminate mining campaign in the Strait would endanger the traffic of so many nations that an international anti-mining operation would commence to sweep the waters clean and ensure continued access by shipping.

The mine hunter force is equipped to deal with the most modern mines, being equipped with high definition sonars, remotely operated mine disposal vehicles, and facilities to support teams of divers. The Bedok class is also fitted to lay mines if necessary.

To support Singapore's claims to some of the outlying islands, the RSN operates an amphibious force comprising one ex-Royal Navy Landing Ship Logistic and four Endurance class LST (Landing Ship Tank). Commissioned into RSN service as PERSEVERANCE in 1994 the former Falklands War veteran SIR LANCELOT can lift a maximum of 560 troops and 16 MBTs (Main Battle Tanks), and has two platforms for operating helicopters. While PERSEVERANCE can deliver her cargo by beaching and unloading via bow doors, this is rarely carried out in practice.

The four Endurance class LST's were designed and built in Singapore, and provide a useful capability with each capable of lifting 350 troops, 18 MBT's and 20 other vehicles. These can be delivered through four small landing craft carried in davits, four larger landing craft in the ship's well dock or via the two embarked Puma helicopters. Bow and stern doors are also fitted which allows a mate up with the RSN's larger landing craft for transport of vehicles to the shore. It has a well dock which can flood down to enable landing craft to drive in and out of the ship. The acquisition of these four vessels gives the RSN the capability to land and support troops on any of the numerous islands which surround

The Bedok class minehunter RSS KALLANG. These minehunters cannot only search for and destroy mines but also lay mines too. (Brian Morrison, Warships & Marine Corps Museum, Franklin, Tas)

Singapore's territorial waters, or which control the entrance to the Singapore Strait. In fact one of the Endurance class completed the RSN's first circumnavigation of the globe, in 2000. However, one must really question why a small island nation needs four very large amphibious assault ships at all when helicopters can transport troops around its territory with ease? Some have speculated that the ships are there to protect Singapore interests either up the Malay peninsular or further from home.

All in all, the RSN has developed into a capable navy, emerging from its brown-water status to a green-water force, capable of controlling its direct area of operational interest, which just happens to be one of the most busy and influential waterways in the world. In the years to come, the RSN will extend this capability.

The ex-RN SIR LANCELOT now in her Singapore colours as RSS PERSEVERANCE. (Brian Morrison, Warships & Marine Corps Museum, Franklin, Tas)

The RSN of Tomorrow

For many years it has been apparent that the RSN was seeking a larger more capable vessel to supplement their current fleet of attack craft and corvettes. Most observers expected a larger OPV/corvette design of between 1000 and 1500 tonnes, probably incorporating some measure of stealth technology. In fact Singapore stunned the naval world with the announcement that it would buy six La Fayette-derived stealth frigates from France.

Displacing more than 3200 tonnes, the Singapore, or Delta version of the popular frigates will be armed with a OTO Melera 76-mm super rapid gun, and a mix of anti-aircraft and anti-ship missiles. While exact armaments are still uncertain, it is known that they will be armed with the European anti-aircraft ASTER missile system. The first ship of this class will be completed in France and arrive in Singapore in 2005, while ships 2 and 3 will commence construction at the same time in Singapore. All are scheduled to be in service by 2009.

With the capability to operate a medium sized helicopter for over the horizon surveillance and targeting, far superior sea keeping capabilities than their predecessors and a reduced IR, acoustic and electronic signature, the six as yet unnamed frigates will dramatically bolster the Republic's Navy.

Recent announcements of the features of the six frigates reveals that the 110 metre frigates differ in a number of ways from the base line La Fayette class, as operated by France, Taiwan and Saudi Arabia.

The hull design is in most respects similar to the current La Fayette hull design, but the superstructure is substantially different. The superstructure has been reduced and incorporates further shaping to reduce the radar signature of the ship, relative to the baseline ships. Part of the change will have been driven by the RSN's choice of weapons and

sensors, and others by growing experience in the art of radar reduction.

The ships will be highly automated and have a crew of only 60. An as yet the Singaporeans have not specified an anti-ship missile but may possibly retain Harpoon to maintain commonality with the rest of the fleet. To support over the horizon and terminal guidance for the anti-ship missiles, the frigates will be equipped to operate a Seahawk/NH-90 sized helicopter. Depending on its fit out, this helicopter could also be capable of deploying anti-subinarine sensors and weapons, in concert with the frigates own low-frequency towed sonar array.

The ships will also be fitted with a comprehensive combat system and secure communications to enable it to coordinate the operations of the RSN's missile corvettes and fast attack craft.

Much of the design of the frigate suggests that it may also be destined for "out of area" operations, away from the Singapore and Malacca Straits. In particular the fitting of a EDO low frequency towed sonar array, which would be difficult to operate in the shallow waters of the Strait, but which would be useful for supporting the escort of other ships in the open ocean.

Far surpassing Malaysia's Lekiu frigates, and emphasising the obsolescence of much of the Indonesian, Philippines and Thai navies, it will be interesting to see what responses the other ASEAN navies will announce to try and match the RSN's new frigates. A mini-arms race may develop, as each tries to counter the others capabilities.

The operations of the Challenger class submarines have brought home the many capabilities that an efficient submarine force can offer. Covert surveillance, anti-shipping strikes, special operations and mine-laying operations are just a few of the capabilities available to the RSN, despite the limitations of the boats due to their age.

The Challenger class are all more than 25 years old, and it has always been Singapore policy that these boats were to develop the required submarine operations expertise before selecting a modern class of submarines to replace them.

The most likely candidates are the German U 212 class, the New Viking class of submarines being designed for the Swedish and Norwegian navies, and the French/Spanish Scorpene class. All are small, manoeuvrable and fast for conventional submarines. Fitted with a modern command and control systems, and state of the art sensors and weapons, they would be potent additions to the RSN's arsenal. While use of

The RSN Endurance class LST RSS RESOLUTION. Each of the four Endurance class LST's can carry 350 troops, 18 MBTs, 20 other vehicles, four small landing craft on davits, four larger landing craft in a well deck and two Super Puma helicopters. A very impressive land force expeditionary capability for a small island country. (Brian Morrison, Warships & Marine Corps Museum, Franklin, Tas)

A computer generated drawing of the RSN's newest ship, the Delta class frigate. The Delta is designed with better signature reduction measures than the French La Fayette frigate from which it is based on. (DCN)

the Challenger class submarines may provide the Swedes with a small lead in the choice of a new submarine, the French have considerable expertise in foreign sales, and it must not be forgotten that more German submarines have been built and operated by more navies worldwide than any other nations.

A timeframe for the selection and construction of the new submarines has not been announced however, the age of the Challenger class will to some extent force the RSN's hand. Most likely an announcement of the search for a replacement will be made within the next 12 months, and a decision within two years after that, by which time the youngest of the Challenger class will be approaching 30 years in service.

The acquisition of the Challenger class, and the expected announcement of their replacements has already stirred other South East Asian states to consider the acquisition of submarine arms (Thailand), or the revitalisation of their currently moribund sub forces (Indonesia), to match the Singapore capability. Malaysia has already announced the purchase of two of the French/Spanish Scorpene class submarines (see *THE NAVY* Vol 64, No.4, p 22)

Conclusion

The RSN is the most capable navy in South East Asia. Its potent mix of missile corvettes and submarines, in concert with the surveillance and strike aircraft of the RSAF, can control the waters surrounding Singapore, and allow it to exert control over the length of the Singapore Strait, one of the world's most vital waterways, and further a field.

The addition of the six stealth frigates, and the anticipated replacements for the Challenger class submarines, will allow the RSN to dominate the waters of its direct interest, and to project that power into surrounding seas.

The Delta class frigates will also provide the RSN with the capability to deploy naval power further from home waters, allowing participation in United Nations sanctioned maritime operations such as the Multi-National Interception Force enforcing sanctions against Iraq.

One key weakness in the Singapore naval order of battle is the lack of support ships. Replenishment vessels would allow the RSN to extend into the South China Sea and to the entrance of the Malacca strait. It is more than likely that a Singapore acquisition of such replenishment ships would spark unrest in the navies of the region as this would be the key indicator of Singapore expansion.

With tensions periodically rising and falling between the nations of the region, the powerful RSN will still provide the rulers of their tiny nation state with a versatile and potent arm in support of diplomacy.

Project SEA 1411
The Kaman Super Seasprite SH-2G(A)

By Paul Johnston

The RAN's first Seasprite conducting flight trials in the US. The RAN SH-2G(A) Seasprite has been fitted with two GE T-700 engines to provide some commonality with the RAN's existing Seahawk fleet. The new engines also give the rebuilt helicopter a near single engine performance envelope. (Kaman)

Paul Johnston takes a look back at the Seasprite helicopter acquisition for the RAN/RNZN and provides a snapshot on where the project is today.

In 1997, Australia embarked upon Project SEA 1411 (the Seasprite Helicopter). At the same time New Zealand also embarked on a similar program known as the Maritime Helicopter Project.

For Australia, the project meant the acquisition of 11 rebuilt Kaman Aerospace International SH-2G(A) Super Seasprite Helicopters primarily for use on the Anzac class frigates, with a simulator and support facilities. Further purchases of up to nine more Seasprites were to occur for the then proposed joint construction project with Malaysia (a Corvette sized Off Shore Patrol Vessel or OPV). The OPVs were to replace the current fleet of Fremantle class patrol boats. Later, under a connected project called SEA 1414, the RAN acquired the Kronsberg Defense Penguin MK 2 MOD 7 Anti-Ship Missile as one part of the offensive armament of the Seasprite. Lightweight torpedoes were to be later acquired under a different project designation although the G model of the Seasprite is already cleared to operate the MK 44, 46 & 50 torpedoes and is able to use a wide range of European ASW weapons as well.

The purpose of acquiring a platform such as the Kaman Seasprite was to provide a less expensive capability to that offered by the Sikorsky S-70B-2 Seahawks already in RAN service, and to supplement some of the capabilities provided by the ageing Westland MK 50A Sea Kings. In particular, the Seasprite was to provide the ability to embark a common helicopter in the Anzac frigate and OPV in a time of crisis and to provide an over-the-horizon reconnaissance and targeting ability for the ship. It was to provide a real-time data link back to the ship and the ability to hunt and attack surface targets thereby significantly increasing the capability of the Anzacs and OPVs given their 'Tier 2'/'Fitted For But Not With" patrol functions as outlined in the 'Dibb Review' and 1987 Defence White Paper.

The 11 RAN Seasprites were remanufactured from ex-USN SH-2F models and have in the rebuilding process been fitted with two GE T-700 engines, which will enable some commonality with the Seahawks already operated by the RAN.

The USN ceased using the Kaman Seasprite in 2001 with the last airframe being operated by the National Guard which has since surrendered for a static display in an air museum.

The Australian side of the project soon began to run into problems. One contributing factor was that all of the airframes that they were attempting to remanufacture back to 'zero hours' had to be recovered from deep storage in the Arizonian desert from the famous 'bone yard' at Davis-Monthan Air Force Base before they could be re-worked to 'zero' flight hours. Other concerns were that this aircraft usually had a crew of three, yet the RAN had decided to modify the design of the Seasprite considerably and only have a flight and navigation crew of two. The RAN believed that enhanced technologies would reduce the need for crew numbers and more advanced weapons and sensor suites could be installed and applied. It was also argued that most of the sensors were obsolete having been designed to fight a Cold War adversary and had last seen active service in the Gulf War in 1991. The removal of these obsolete systems and new leaps and bounds in technology meant that replacement systems would be smaller and lighter increasing internal space and contributing to the installation of additional capabilities and aircraft endurance. This has recently been demonstrated in the RAAF

A USN SH-2 Seasprite helicopter flying by a Spruance class destroyer. The Seasprite has been withdrawn from USN service and is now only in service with the Navies of Australia, New Zealand, Egypt and Poland. (Kaman)

P-3C Orion upgrade to AP-3C level which saw new technologies and capabilities reduce the aircraft's mass by approximately 500kg.

The collaboration synergy between the various sub contractors (Kaman, the ADF and RAN) began to wane as pioneering work began to get costly and increasingly difficult to manage. Much of this trail blazing through the interaction of various systems and software proved difficult and this began to contribute extensively to project overruns.

The problems with the Australia Seasprite began in 1999, when Litton, a major US company tasked with designing software and contracted by Kaman International, abandoned the project. During this time frame, Litton, received a major US project and chose to remove key staff members from the Seasprite Project to work on another newer and larger contract. As a result, Kaman delivered seven helicopters without their mission control systems. Unfortunately, the Australian Defence Material Organisation had not written penalty clauses into the contract thus allowing the software designer to succeed with this action.

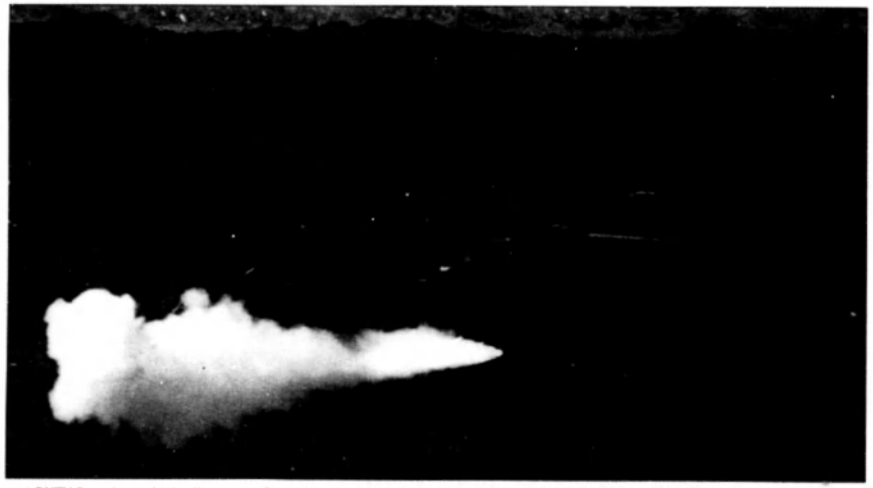
It is also speculated that Litton used deficiencies in the contract conditions to successfully abandon its commitment to the RAN Seasprite Project.

Litton decided to walk away from the complex Seasprite software design and integration task and under the contract conditions later won a legal settlement that cost Kaman $32 million. The Australian firm CSC has now been contracted for the task, currently, overdue by more than three years. Six of the 11 airframes have now been delivered but it is expected that they will not be to the RAN contract standard until 2005.

The Department of Defence is trying to redraft Kaman's contract, despite having already paid out $960 million of the $1 billion budget. Top Defence officials recently informed a Senate hearing that the government was examining suing Kaman for breach of contract and could possibly recover that money however, collective wisdom indicated that we would still "Not end up with the helicopters and would have to start again".

Like the Collins class submarines and the AP-3C Orion aircraft in the ADF inventory, the Seasprites have run into complex technological challenges and cost overruns. Much of this is linked to the unique requirements placed by the ADF which specifies a variety of roles and systems from its equipment not normally offered by a single initial manufacturer's design. The ADF often seeks to have an integration of cutting edge technologies from a variety of suppliers. While this may result in an overall poor synergy of contract management and compatibility, the upside is that many of the platforms within the ADF inventory have a significantly broad spectrum of capabilities.

The Kaman Seasprite was chosen when the SH-2G nosed out Westland's Super Lynx in the Australian and New Zealand competitions, marking the end of Westland's dominance of the low-end naval export market. The deal also dashed Eurocopter's hopes of achieving a real breakthrough in the shipborne helicopter market in the Asia Pacific Rim, where its Panther/Dauphin and Cougar/Super Puma have failed to find customers. Though it is important to note that Eurocopter has achieved some success with the sale of its Tiger Armed Reconnaissance Helicopter to the ADF and the establishment of a Brisbane manufacturing and maintenance base for its civilian helicopter market. The Army's Aussie Tiger with its mainly composite construction and folding rotors will see it deploy on ships such as HMAS MANOORA and KANIMBLA in the near future.



A RNZN Seasprite conducting live weapon firing trials of an AGM-65 Maverick missile in the US before delivery. The RNZN opted for the TV guided Maverick for anti-ship targets as its Skyhawks also used the missile. Unfortunately New Zealand's Skyhawks have since been decommissioned. However, the up shot of this is that given the Maverick's original land attack capabilities the RNZN Seasprite is the only naval helicopter in the region able to conduct strike missions of land targets. (Kaman)

Another dilemma remains for the Navy. When the RAN does receive working Seasprites the ships for which they were partially acquired will not exist, i.e. the OPVs. Embarking the fleet of Seasprites on the existing Anzac frigates, while utilising the aircraft's capabilities, provides less capability to the Anzacs' than a Seahawk could provide. The Seasprites carry an anti-surface missile, the Penguin, originally intended as cover for the now defunct OPV's lack of such a weapon, but the Anzacs already, under SEA 1413 Phase 3, are to receive the Harpoon Block II anti-ship missile. The Seahawk is also cleared for Penguin use too. It should also be noted that the Anzacs' helicopter hangar was designed to accommodate the larger and more capable Seahawk and that the four Anzacs currently in service are operating Seahawks quite well.

Kiwi Success

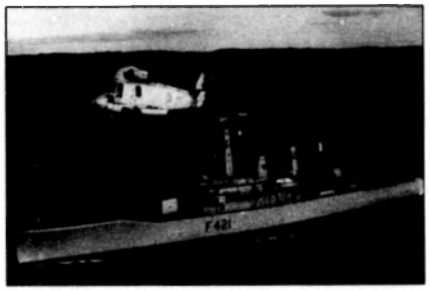
Selected by both Australia and New Zealand for service on their Anzac frigates, the Seasprites chosen by each nation differ in abilities, systems and weapons.

The contract with New Zealand is for four aircraft beginning in 2000. In August 1999, New Zealand announced it would buy a fifth SH-2G. The Royal New Zealand Navy's (RNZN) SH-2Gs will serve aboard their two new Anzac frigates and older Leander-class frigate.

While awaiting the delivery of five brand new build Kaman Seasprites, designated SH-2G(NZ), the RNZN and RNZAF (who will jointly operate the aircraft) will for the interim operate a number of leased and older Seasprites, SH-2F's. This lease period has enabled the RNZN to begin familiarity operations and to maintain the skills of a shipborne helicopter arm rather than have a capability lull or solider on with their 32-year-old Westland Wasp's.

New Zealand's five new SH-2G(NZ)s will be equipped with Telephonics APS-143(V)3 radar, FLIR Systems AAQ-22 thermal imager and Litton Amacon LR-100 electronic support measures. The aircraft will be armed with two AGM-65 Maverick missiles. The analog cockpit is based on the Litton ASN-150 tactical navigation system.

An Egyptian SH-2G Seasprite demonstrating its dunking sonar capability. (Kaman)



A leased SH-2F Seasprite flies over the RNZN's last Leander class frigate. The RNZN leased a number of older F model airframes in order to train on the new type of helicopter and retain many helicopter handling skills that may have been lost while waiting for the newer aircraft after their ageing Westland Wasps were taken out of service. (RNZN)

New Zealand sought the Hughes AGM-65B Maverick Air to Surface missile to arm its Seasprites citing tactical considerations and because the AGM-65 was already in use with the now disbanded combat air arm of the RNZAF's A-4K Skyhawks.

The physical or st uctural difference between the RAN and RNZN Seasprites revolves around the cabin and tail boom. The installation of the new GE T-700s on the RAN rebuilt F models means that an entire engine and transmission-mounting structure is required to be replaced. Other structural changes included the forward fuselage and cockpit sections to accommodate the new radar and Integrated Tactical Avionics System or ITAS.

The RNZN views an effective maritime helicopter as an essential addition to the fighting capability of a modern frigate because it enhances the ships ability to defend itself and other shipping against both surface and undersea adversaries. "A naval force without modern helicopters is vulnerable and becomes a liability to our regional allies. A helicopter such as the Super Seasprite increases the surveillance capability of a frigate at least six fold."

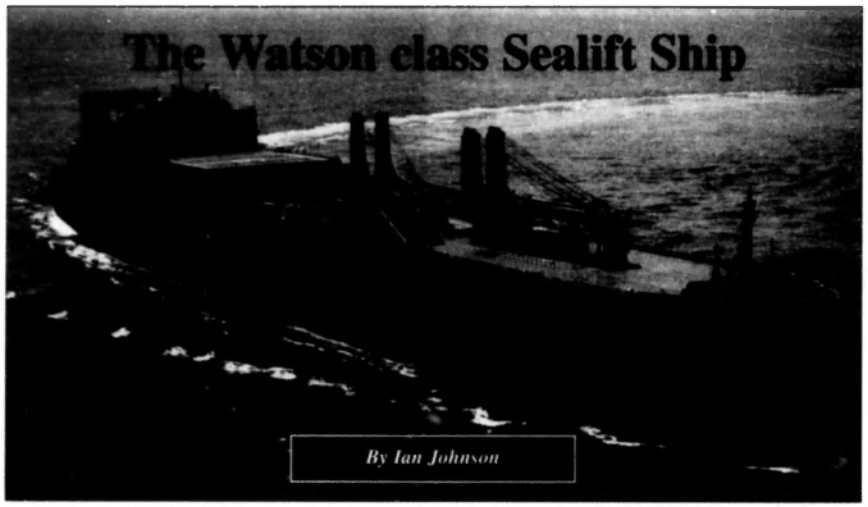
Conclusion

The USN no longer operates the Seasprite helicopter with many airframes in long term storage, up for sale or in museums. The Super Seasprite is currently in service with the Navies of Poland and Egypt and may be soon acquired by Mexico, Morocco and Bangladesh. Egypt has recently placed an order with Kaman Aerospace International for additional airframes principally to use in the SAR role.

The regional and operational challenges faced by the ADF will continue to become more complex and expensive placing enormous budgetary and technological challenges upon our nation and military. It is important that cutting edge military capabilities be acquired, supported and maintained and that management processes, contract design and delivery conditions are substantially improved. The scandal and enormous burden placed upon the Defence and the Australian taxpayer through ignorance and inexperience in acquisitions projects can no longer be tolerated. For the sake of the men and women who serve in uniform we must get our acquisition and project management on target and on time both now and in future ventures.

The Watson class Sealift Ship

By Ian Johnson



USNS WATSON makes a turn during sea trials. The eight ship Watson class sealift ships are powered by two LM-2500 gas turbines. (MSC)

Last year *THE NAVY*'s WA based correspondent Ian Johnson was able to tour the US Sealift Command's newest class of ship. The Watson class is an impressive sealift platform and one that RAN planners should not discount too quickly in their upcoming amphibious study because she mounts no weaponry. A ship such as this has the capability to transport the Australian Army's 1st Armoured Brigade almost anywhere in the world.

Last year the USNS CHARLTON (T-AKR-314) visited HMAS STIRLING in WA to undergo some scheduled maintenance with the assistance of several Western Australian based companies.

CHARLTON is named after Army Sgt. Cornelius H. Charlton who was posthumously awarded the Medal of Honor for his heroic actions in 1951 near Chipore during the Korean War. The ships of this class are named after Medal of Honor recipients.

CHARLTON is one of 20 large, medium-speed roll-on/roll-off ships that have joined the Military Sealift Command (MSC) fleet since 2002. CHARLTON was delivered to the USN in May 2000 from National Steel and Shipbuilding Company in San Diego who built the ship. Each ship of the class is crewed by 30 civilians employed by Maersk Shipping on contract to MSC. Up to 50 military cargo supervisors and be embarked to maintain the equipment the ship may carry.

At 950 feet (290m) long CHARLTON is nearly the size of a Nimitz class aircraft carrier and can carry over 40,000 tons of military equipment, or 2,280 Holden Commodore station wagons. Weighing over 64,000 tons fully loaded, the CHARLTON can sail up to a speed of 24 knots.

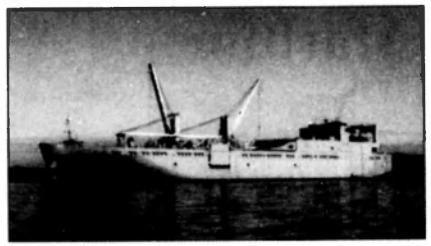
The ship's huge, six-deck interior has a cargo carrying capacity of approximately 380,000 square feet – equivalent to eight football fields. Capable of carrying an entire U.S. Army armour or air assault battalion, the ship's decks have ample space for lashing down helicopters, tanks, trucks and other large vehicles, including 900 plus associated battalion support vehicles. The cargo decks are a controlled environment; everything from the air temperature to the humidity is controlled to ensure the cargo is kept in good condition for use at any time. The cargo holds are also equipped with foam fire fighting and de-watering systems. A list control system provides stability to compensate for arrangement of the cargo.

Interior ramps between decks ease the traffic flow once cargo is loaded aboard ship. CHARLTON has a slewing stern ramp and a movable ramp that services two side ports make it easy to drive vehicles on and off the ship – speeding loading and off-loading. The entire on-load and off-load process of the class can be accomplished in 96 hours or less. CHARLTON is also equipped with two cranes that make it possible for the ship to unload almost anywhere and away from docking facilities. The ships provide self sustaining roll-on/roll-off (RO-RO) capability, and lift-on/lift-off capability. The ship is optimised for roll-on/roll-off operations with all RO-RO decks fixed and a combination of fixed and hinged RO-RO ramps. The ship is equipped for the following operations: roll-on/roll-off and lift-on/lift-off for transport vehicles and transport containers, for cargo transfer onto a pier and in-stream up to Sea State 3. The ship is also equipped for lift-on/lift-off onto transport lighterage, i.e. flat-bottomed cargo-transporting barges.

The class has a large helicopter landing pad forward of the bridge large enough to land a CH-47 Chinook but the ship is not currently equipped to either deploy or maintain a helicopter detachment for protracted periods.

The Watson class has seven engineers to run the two LM-2500 gas turbine engines that power the ship. Each gas turbine has an output of 32,000bhp. There are two shafts with 24ft controllable pitch propellers providing 95rpm at full power. The ship's total service generating capability is 121,500kW and the emergency generating capacity is 2,000kW. The ship is equipped with bow thruster units.

The design speed, set at 90% of the maximum cruise rating and at design draft of 34ft, is 24 knots. The range at the design speed of 24 knots and at design draft of 34ft is 13,800 miles.



USNS CHARLTON in WA undergoing maintenance. The Watson class sealift ships are almost as long as a USN Nimitz class aircraft carrier. Notice the size of the ship's cranes which enable it to offload either in a stream onto landing craft or barges or onto docks without proper unloading facilities.

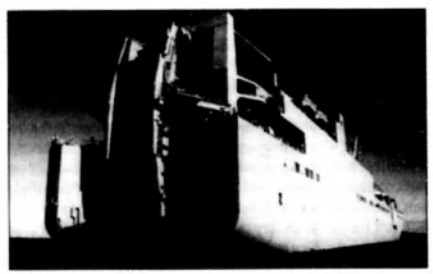
From a control booth all engineering operations are run through touch screen monitors, thus allowing the ship to be run with a very small crew. The ship's environmental controls are also located in engineering.

The crew quarters are spacious with every crewman having his own stateroom. The ship has a first class galley and a well-stocked gym. There are rooms that can very quickly become berthing for up to 90 military personnel. There is even a lift going from engineering to the bridge that can carry four people.

CHARLTON is based at Diego Garcia in the Indian Ocean as part of the Military Sealift Command's Maritime Pre-Positioning Fleet. These ships carry the equipment for both the US Army and US Marine Corps, and are ready to be deployed at a moment's notice. The Military Sealift Command is the civilian run arm of the USN and as its name implies it is responsible for the global military seaborne cargo and supply of the US military. The MSC comes under the control of the US Department of Transportation as part of the U.S. Transportation Command (USTRANSCOM) based out of Scott Air Force Base in Illinios.

Although they do not generally conduct port visits, the strategic sealift forces are a big part of the Military Sealift Command and continually conduct exercises with the Navy. The last full deployment of the strategic sealift forces was during *Operation Desert Shield/Storm* when MSC moved over 1.7 million tons of military cargo and over 10,000 container loads of supplies a month to Saudi Arabia as part of the operation to defend Saudi Arabia and liberate Kuwait. There are three pre-positioning squadrons of MSC, which are based in the Atlantic (1st squadron), Guam (2nd squadron) and Diego Garcia (3rd squadron) who were activated for *Operation Desert Shield/Storm*, *Operation Restore Hope* off Somalia in 1992 and several times for operations within Kuwait. When these ships sail from Diego Garcia to the Persian Gulf it is seen as a clear signal that the American Government is taking events in that area seriously.

Photos by Ian Johnson and Brian Goodman

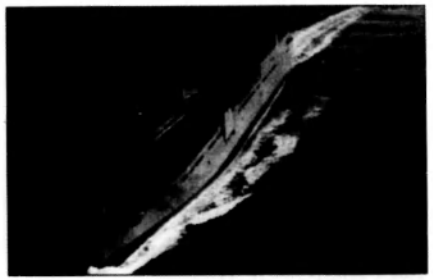


The stern ramp of the roll-on-roll-off Watson class sea lift ship USNS CHARLTON. The Watson class can be unloaded from full capacity in under 96 hours.

The helicopter deck of the USNS CHARLTON is big enough to land a heavy lift CH-47 Chinook helicopter. However, the class is not fitted to support an embarked helicopter flight. It can however ferry helicopters in its large cargo holds.

The Watson Class

Builder: National Steel and Shipbuilding Co., USA
Power Plant: Two GE Marine LM-2500 gas turbines; 64,000 hp (7.7 MW); 2 shafts, cp props
Length: 951.4 feet
Beam: 106 feet
Displacement: 62,644 long tons (63,969.2 metric tons) full load
Cargo capacity: 393,000 sq. ft.
Speed: 24 knots (27.6 mph)
Ships:
USNS *Watson* (T-AKR 310)
USNS *Sisler* (T-AKR 311)
USNS *Dahl* (T-AKR 312)
USNS *Red Cloud* (T-AKR 313)
USNS *Charlton* (T-AKR 314)
USNS *Watkins* (T-AKR 315)
USNS *Pomeroy* (T-AKR 316)
USNS *Soderman* (T-AKR 317)
Crew: 26 civilian crew (up to 45); up to 50 active duty military



The USNS WATKINS, another of the Watson class sealift ships. One ship such as this has enough cargo capacity to carry the Australian Army's 1st Armoured Brigade anywhere in the world at 24kts. Negating the need to rely on leased aircraft or foreign owned merchant ships. And although not an amphibious assault ship per se it is understood that the Australian Army has given up the notion of opposed D-Day style beach landings any way making such a large capacity sealift ship an attractive option. (MSC)

Australia's Maritime Doctrine Part 7

HMAS CANBERRA in the Persian Gulf with a Sea King over the bow about to lower supplies and a Seahawk on the helicopter pad aft. The RANs FFGs now make up the core at sea surface combatant fighting force. Their embarked helicopters also add greatly to the RAN's capabilities. (RAN)

In part 7 of our presentation of the RAN's new Maritime Doctrine we detail Chapter 10 on The Constituents of Maritime Combat Forces. The document was written by the Seapower Centre and is reproduced in *THE NAVY*, with the Centre's approval, given its importance to readers of *THE NAVY*, Australians and to the Navy League in general.

Chapter 10
THE CONSTITUENTS OF MARITIME COMBAT FORCES

COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS AND INTELLIGENCE (C4I)

The key to understanding what naval forces can create and sustain in combat power is the fact that they can perform multiple tasks at the same time for extended periods. These attributes are particularly valuable when there is a requirement to gather information to build and maintain up to date battlespace awareness. The operations rooms of major combatants down to the level of destroyers and frigates can acquire, process and display information on a 24 hour basis to a level approached only by airborne early warning and control aircraft in some dimensions of maritime operations, or the largest and most sophisticated headquarters in other environments.

Command, Control, Communications and Computers (C4)

Effective maritime operations are highly dependent on information management, a clear picture of what is occurring and a continual awareness of the commander's intent. C4 is the enabler that satisfies these demands by providing the means and procedures to pass and act on information more quickly than the adversary. It is a unifying concept that brings an accurate picture of the battlespace, timely and detailed mission objectives and the clearest view of the targets.

The volume of information that can be provided and shared is managed by a strong reliance on networked systems. These networks vary according to their purpose but are integrated ship and shore systems to provide a synthesised picture of events. Each individual unit can be thought of as a node in the network which is capable of continuously receiving more or less information, and which has the option of remaining passive or actively contributing with information derived from its own sensors.

The number of networks which are established to maintain local battlespace awareness will depend upon the size and composition of the forces in area, their distribution and competing demands for bandwidth. In the event that forces are widely dispersed, multiple networks will be created, exchanging data internally on different radio frequencies. The more effective all these networks, the more scope given to commanders to operate some of their units or formations covertly. Maritime forces which do not transmit any signals on radio, radar or sonar and which deliberately reduce their acoustic, magnetic and infrared *signatures*, are extremely difficult for any adversary to locate and target. This means that they can be positioned or repositioned to achieve *surprise* at the tactical or even operational level and can rely upon the information that they receive from other elements to avoid being *surprised* in their turn.

Land forces can make significant contributions to the conduct of maritime operations. In addition to providing conventional and special forces to interdict enemy naval forces by strike, they can seize and protect naval operating bases and control areas of land adjacent to choke points and focal areas. (Aust Army)

THE CONSTITUENTS OF MARITIME COMBAT FORCES

The common operating picture that maritime forces work from is known as the *wide area picture*. This is generally organised by a shore headquarters with real time connections into a variety of intelligence systems and wide area surveillance systems such as JORN (Jindalee Over the Horizon Radar). The generated picture is up to date, but not real time. Seaborne forces can and do contribute to this wide area picture, as do airborne units. This picture is fundamental to effective operational level command, but its primary use in tactical terms is to focus local surveillance effort and manoeuvre with consideration to adversary positions.

To utilise the wide area picture to its best effect, it is not necessary that all combatant units have access to every aspect, but it is certainly essential for the local command platforms to possess the computer systems, communications bandwidth and personnel to make full use of the information for their own tactical purposes and to ensure that local forces are operated effectively according to the requirements of the higher command. The requirements for an operation that involves land forces as well as air and seaborne units will be even more demanding. The capabilities of the modernised amphibious transports MANOORA and KANIMBLA increase their utility for use by forward deployed elements of a Joint Task Force headquarters.

Information Security and Assurance

Information Security (INFOSEC) and assurance are vital elements of successful C4I. The growing dependence on information and information technology systems creates increased risks if they are not considered. The physical security of systems is only part of the awareness necessary for security, system integrity and survivability. Information operations are a burgeoning area of warfare. They seek to provide effective responses to threats ranging from hackers to sophisticated computer experts. Information operations also seek to exploit those areas which may be vulnerable in the adversary.

Spectrum Management

C4 also involves effective management of the components of the electromagnetic spectrum allocated for an operation. Possible sources of interference within the force, and those generated by the force that have the potential to impact on the civil infrastructure require accounting and isolation. Most importantly, bandwidth is itself a scarce commodity which requires careful administration.

Intelligence

Intelligence is vital to maritime operations to give the level of information about the adversary and the operating environment required to ensure the success of the mission and the security of the operation. The development, maintenance and communication of intelligence assessments at the strategic and operational levels are essential for advising commanders of the capability and intentions of adversary forces and other factors affecting the conduct of the operation. At sea, intelligence reporting from strategic and operational assessment agencies, together with combat information and intelligence from multiple sources, when processed by embarked organic staff contributes to overall force effectiveness and protection.

TASK ORGANISATIONS

The maritime forces available to the ADF represent, within certain limits, a highly effective balance of capabilities. The capabilities of individual platforms are not merely complementary to those of other units but become considerably more effective in combination that they are in isolation. Because of this, maritime forces are generally operated in *task organisations*. A task organisation is a hierarchy of units. It is based on the Task Force, which is divided and sub-divided into subordinate components which are called *Task Groups (TG)*, *Task Units (TU)* and *Task Elements (TE)* respectively. The mission or missions to be accomplished and the expected threat environment are normally the primary means by which the composition of particular components is decided.

Not only the composition of the formations but their command can be organised and varied according to the requirements of the job to be done. Components can be

Three RAAF F/A-18 Hornets. As the RAN has no aircraft carriers it relies on the RAAF for fighter protection. Sea control cannot be guaranteed without the support of the RAAF fighters and strike aircraft. (RAAF)

detached or recalled when required. Dormant components can be set up and activated when required by assigning units from other tasks. Organisation by task also simplifies coalition operations in cases where units of different nations are not familiar with operating with each other. The extent to which units are mixed or integrated can easily be varied according to the situation. Organisation by task is a highly flexible system for organising maritime forces and it is used for practically every type of maritime operation in peace or conflict.

PLATFORMS, SYSTEMS AND CAPABILITIES

The following discussion gives a brief description of particular platforms and systems before analysing the primary warfare areas in which they operate. This includes the contributions which air and land forces can make to maritime operations. Effective maritime forces depend upon a balance *of capabilities* working together. The nature of that balance, of the particular capabilities chosen and the amount of resources allocated to each will depend upon a nation's strategic situation. However, while it is relatively easy to dispense with a capability, it is by no means easy to acquire or resuscitate one. Maritime forces cannot be created overnight and the process of acquiring a new capability extends not only to the acquisition of platforms and systems, but to training and integrated logistic support, to the building of maintenance systems and base facilities and to the development of operating doctrine. Above all, it involves people. In recent years, for example, the RAN has devoted considerable effort to the revival of a credible mine warfare force, a process which has taken the better part of a decade and which is still in train.

Maritime Air Forces

The organic combat helicopters available to the RAN include the *Seahawk* and Seasprite helicopters described below, while the *Sea King* operates in the organic utility role. Smaller helicopters can also be utilised for shipborne utility operations, notably in support of the Hydrographic Force, but are not normally employed on combat operations. The Army's Blackhawks can operate as battlefield utility helicopters organic to the amphibious transports.

Integral to Australian concepts of maritime warfare are the P-3C *Orion* maritime patrol aircraft, the F-111 strike reconnaissance aircraft and the F/A-18 Hornet fighter aircraft. In the future, airborne early warning and control aircraft will be similarly critical to the ADF being an effective operator in maritime warfare and both naval and air force personnel will be embarked. The ways in which these aircraft interact with naval forces are described below but it is important to emphasise that very few maritime operations can be contemplated without consideration of the air and that control of the air is an integral component of sea control. Furthermore, the capabilities of air and naval forces tend to be complementary rather than supplementary because of the unique characteristics of platforms of each environment. The characteristics of seaborne units have been discussed in Chapter Six (Vol 64, No 2 *THE NAVY*) and those of air forces in AAP *1000-The Air Power Manual*.

Land Forces

Land forces can make significant contributions to the conduct of maritime operations. In addition to providing conventional and special forces to interdict enemy naval forces by strike, they can seize and protect naval operating bases and control areas of land adjacent to choke points and focal areas. Army units can provide forces for boarding parties and supplement naval air warfare systems with ground based air defence. This may be either in co-operation with naval forces from the shore or, in the case of shoulder fired missiles, in the form of detachments to particular ships in need of protection. In amphibious operations, Army units provide forces for ship-to-shore material and personnel transport in the form of both rotary wing aircraft and water transport.

Surface Combatants

Frigates and Destroyers

The RAN currently (at the end of 2002) possesses 10 operational *frigates*. This force is in transition to a mixed force of fourteen *Adelaide and Anzac* class, a process which should be complete by 2005. All of these ships will carry at least one helicopter. These helicopters, the *Seahawk* in *the Adelaide* class and the *Seasprite* in the *Anzac* class, are *organic* to the ships and are an extremely important multiplier of their capabilities, particularly for surface and undersea warfare. Destroyers and frigates represent the minimum size of surface combatant which possess surveillance and combat capabilities in all three primary warfare areas (air, surface and undersea) and which are capable of sustained independent operations. They would be key elements in any *task group* that the ADF may deploy for maritime operations. Their flexibility and versatility make these ships platforms of first resort in contingencies throughout the spectrum of conflict.

Patrol Boats

The RAN has 15 *Fremantle class patrol boats* in service. These 42 metre patrol and surveillance efforts, particularly for inshore and harbour defence. They can also be used to transport and insert small parties of land forces.

Submarines

The RAN's submarine arm consists of a force of six *Collins* class submarines. These are large, very long range diesel-electric boats equipped with both heavy weight torpedoes and anti-ship missiles. Their qualities of endurance and stealth make them not only extremely useful for intelligence gathering, surveillance and reconnaissance but also primary strike assets for the ADF, both in their own right and as delivery platforms for special forces. In addition to these roles, submarines can also make an extremely effective contribution to other naval combat tasks, such as undersea and surface warfare. Their potential for blockade and sea denial makes them a formidable asset. Their covert nature means that they can operate in a hostile air or surface environment. They will often operate in association with surface task groups, generally well separated in distance but positioned to provide the greatest levels of defensive or offensive support. These operations call for careful *waterspace management* by the controlling authority to ensure that no confusion arises as to the identity of friendly forces, as well as effective communications between ships, aircraft and submarines.

Mine Warfare and Clearance Diving Forces

The offensive mine warfare capabilities of the ADF are currently in the form of air dropped mines, while a submarine launched mining capability is under development. Six *Huon* class coastal minehunters are entering service. These units hunt for mines by means of a high definition sonar and remote controlled underwater vehicles. The *Huon* class also have a limited minesweeping capability. They are designed to possess the smallest possible *acoustic and magnetic* signature to reduce their vulnerability to mines actuated by these methods. *Craft of opportunity*, converted tugs, fishing vessels and other small craft, can also be used to tow devices to clear minefields or confirm that areas are clear of threats. The activities of all these units are controlled by a *Mine Warfare Command Support System*, a mobile shore command facility which is organised to plan and coordinate mine clearance operations and which can be moved rapidly around the country to the area under the greatest threat. *Clearance Diving Teams* assist with the identification and rendering safe of devices, particularly in shallow water and in ports and harbours. They can also conduct clandestine hydrographic surveys of beaches for amphibious operations and clear mines or obstacles. Other elements within Clearance Diving Teams can conduct underwater battle damage repair of fleet units, as well as support tasks involving the fitting and repair of underwater fittings. The rendering safe and disposal of all explosive ordnance including improvised explosive devices is a core skill of all Clearance Diving Team elements.

Amphibious Forces

The full concept of *amphibious forces* encompasses not only the ships and helicopters which provide the lift, but land forces which have been trained and prepared for such operations. An effective amphibious capability is thus dependent upon a very high degree of sustained joint effort in the form of equipment, doctrine and training.

The naval elements of Australia's amphibious forces include two amphibious transports (LPA), the MONOORA and KANIMBLA, a heavy landing ship (LSH), the TOBRUK, and six heavy landing craft (LCH). In addition, the utility Sea King helicopters, although not ideal for battlefield operations, provide a very important vertical lift capability for troops and equipment. This force is capable of transporting the equivalent of an Army battalion group, together with its equipment and ready use stocks of fuel, stores and ammunition. Some smaller vessels, such as mechanised landing craft (LCM), are provided by the Army and are trained to operate effectively with the big ships, all of which can carry at least one LCM. TOBRUK also carries two of the smaller naval manned landing craft vehicle and personnel (LCVP). Elements of Clearance Diving Teams would normally form part of an amphibious force.

The major army formation which is equipped and trained for amphibious operations is 3 Brigade at Townsville. Together with a number of other elements, including aviation, medical and special forces, 3 Brigade maintains a high degree of readiness to respond to contingencies. In the event of a requirement for an amphibious operation, a Landing Force based on 3 Brigade elements would be task-organised to meet its specific needs. This could also, if the situation required, comprise elements of those forces designated secondary' to the ADF amphibious capability. These elements include 1 Brigade, based in Darwin, medium lift helicopters, ground based air defence assets and logistic support elements. These elements are all maintained at high readiness and trained and equipped for amphibious deployment.

RAAF fixed wing support would also be an essential requirement for most amphibious operations, whether conducted in conjunction with airborne [illegible] or not. Other forms of support could include reconnaissance, air superiority, surveillance, strike and ground attack.

The last Collins class submarine RANKIN. RANKIN has been provisionally accepted into the RAN awaiting the successful completion of trials and modifications before commissioning. RAN)

Afloat Support

Underway replenishment units represent vital force multipliers, particularly for Australia where practically every conceivable operation must be conducted at considerable distances from shore bases and which will therefore require *reach*. The RAN possesses one multipurpose replenishment ship, SUCCESS, which is capable of transferring fuel, water and limited amounts of food, ammunition and stores. There is also one fleet tanker, WESTRALIA, which is designed primarily for the transfer of fuel and water only, although it can also provide small quantities of food and stores. Resupply of fuel is important not only for the endurance of the ships themselves, but for their organic helicopters. Afloat support ships therefore carry separate supplies of both marine and aviation fuel.

Marine Science

Because knowledge of the maritime environment is a vital element for success across the spectrum of maritime operations, the Navy possesses hydrographic units which also conduct data collection and research in other areas. The Navy is the national authority charged with carrying out the work required to meet Australia's international commitments within the *Australian Area of Charting Responsibility*. This is one of the largest in the world. Hydrographic vessels are required to conduct offshore, coastal and inshore work and the RAN's force has been developed to ensure that all these areas are covered.

In addition to the larger hydrographic vessels MELVILLE and LEEUWIN, there are four survey motor launches and the Laser Airborne Depth Sounder (LADS) system. More work is conducted by survey motor boats and shore parties deployed from the hydrographic vessels and other teams are often detached to areas such as the Antarctic to conduct surveys when required. Other units, including combatant forces, regularly collect oceanographic information, which is collated by the Australian Oceanographic Data Centre (AODC).

PRIMARY MARITIME WARFARE AREAS

Air Warfare

The RAN does not possess aircraft carriers and thus has no capability to deploy organic fixed wing aircraft. This means that the ADF must not only always plan for maritime air warfare on a joint basis but its naval forces must also ensure that they possess the capacity to defend themselves in the absence of fixed wing air. The provision of air cover for seaborne forces by land based aircraft is a highly demanding task that becomes progressively more difficult as the range between the air base and the theatre of operations increases and which has to be balanced against other tasking. *Combat Air Patrols (CAP)* will be provided by the RAAF's F/A-18 fighters or, under certain conditions, by the F-111 as *Active Air Defence*. This will be one part of the Counter Air operation undertaken by the Air Component of the Joint force, which may also include *Offensive Counter Air activities* to reduce the adversary's capacity to control the air. The endurance of F/A-18 CAP on task can be extended by the provision of air-to-air refuelling. Their operations will be controlled either by air intercept controllers (AICS) working in AEW&C aircraft, when these come into service, or in frigates or destroyers.

The sensors and combat data systems fitted within our frigates mean that these ships are capable of developing and maintaining a local *recognised air picture*, vital for the coordination of the air battle. Many other units can contribute to this, including non-organic systems and sensors. The more units available, whether air – or seaborne, the more comprehensive will be the recognised air picture and the more capable the force of achieving *battlespace dominance* in the air battle. AEW&C aircraft and major surface combatants are especially effective when operating in combination. The aircraft will have a much wider radar horizon than that of the ships, while the latter can carry many more missiles than all but the largest formations of fighter aircraft. This synergy creates considerable offensive capability.

The CAP will generally function as an outer element of a *layered defence*. Closer in, the missile and gun systems of the frigates will provide further layers of *hard kill* against an incoming raid of aircraft or missiles. An SM-1 missile equipped unit will usually have between 30 and 40 missiles onboard. Although the SM-1 system is ageing, units so fitted possess a substantial local *area defence* capability by which their missiles can be used to protect more than one other ship in company. This is an important capability over the *point defence* systems such as the *Sea Sparrow* missile and the Phalanx Close In Weapon System, both of which are primarily intended to protect only the ship on which they are carried. The frigates also possess soft kill capabilities in the form of electronic decoys, such as the Australian developed Nulka hovering rocket, and other systems that aim to divert missiles from their intended targets. Helicopters and other units can contribute to these soft kill defences in a number of ways. Electronic warfare, optronics, and other systems will have an increasingly important role in sifting the air picture from an increasingly cluttered and complex electromagnetic environment.

In high threat conditions, *Amphibious units and support ships* will also be fitted with a range of defensive systems, both hard and soft kill. These may include the employment of detachments of land forces equipped with shoulder fired missiles. In a littoral situation, every effort will be made to co-ordinate air defence with the ground based air defence provided by land forces.

Surface Warfare

The ADF possesses a wide range of assets to conduct operations against adversary surface forces. The heavyweight torpedoes of the Collins class represent a formidable threat to the largest surface vessels. In addition to the attacks which can be conducted by fixed wing aircraft, such as the F-111 and the P-3C *Orion*, in the *Maritime Strike role*, with anti-ship missiles, or with laser guided weapons, submarines, surface combatants and helicopters are all capable of deploying anti-ship missiles. The difficulties of target identification and targeting, particularly in crowded or littoral environments mean that short notice engagements will often be inevitable. This increases the importance of organic capabilities. These include the Penguin missile which will be carried in the *Seasprite* helicopter and the Harpoon missiles which are already installed in the Adelaide class guided missile frigates and which are being fitted to the Anzac class frigates to supplement their 5-inch guns.

Undersea Warfare

Undersea warfare falls into two main categories, anti-submarine operations and mine warfare. Anti-submarine operations are complex, demanding and time consuming, requiring close coordination of many assets and a very high level of understanding of environmental conditions. The P-3C *Orion* aircraft are amongst the most effective assets in searching for adversary submarines, whether by means of their radar and infrared systems, or by monitoring the sonobuoys they drop into the sea to detect submarine generated noise. Some sonobuoys can also be used actively, generating a sound signal to echo range on an underwater target. The primary weapon of maritime patrol aircraft will be lightweight torpedoes specially designed for use against submarine targets. Carefully positioned submarines also have considerable ability to detect adversary submarines by listening for their noise on *towed sonar arrays*. Similar devices are being fitted to a number of the RAN's surface combatants, which also have active hull mounted sonar and carry light weight torpedoes. These systems are primarily intended for self-defence, but may be employed to cover and protect other units when the frigates or destroyers are escorting *high value or mission essential* units such as amphibious forces. In these circumstances, layered defence will probably be the most effective way to ensure that such units are successfully protected. Seahawk helicopters possess a variety of sensors and are also able to deploy sonobuoys and drop light weight torpedoes. They will generally be used by the frigates to investigate and engage an underwater contact while the surface ships remain out of torpedo range. Both *Seasprite and Sea King* helicopters can be used as lightweight torpedo carriers. Defensive minefields are a very useful tool to complicate the task of adversary submarines because they can have a considerable deterrent effect, as well as reducing the areas that require to be searched.

Mines can be cheap and simple enough to be employed by the smallest powers or terrorist groups and represent a formidable challenge for maritime powers. Mine warfare has considerable potential for gaining and maintaining the initiative against an adversary. Preemptive sowing of even a limited number of mines outside its bases or in choke points can prevent its ships from deploying or returning to port and will force it to conduct time consuming and painstaking mine counter measures (MCM). Mine warfare is subject to some restrictions under international law, nevertheless, it has been employed covertly on at least one occasion as a form of maritime terrorism by a nation-state.

Mine countermeasures are most effective when forces possess a high degree of understanding of the environment, preferably in the form of route and local bottom surveys which can minimise the time taken to detect and identify mines. MCM operations will be limited to the minimum area required to be made safe to allow operations to resume or shipping movements to continue and they will be conducted so as to achieve the greatest possible threat reduction in the shortest possible time.

INTEROPERABILITY

As discussed in Chapter One, sharing the same seas, Navies frequently interact with one another and are at ease with the issues involved in international operations. Nevertheless, *interoperability cannot* be assumed and requires substantial and sustained effort to achieve *common doctrine, common procedures and common communications*. The greater the commonality in equipment and methods achieved, the less duplication of resources and the fewer delays there will be in achieving operational results when nations come together in contingencies. Formal alliances are the primary mechanism for achieving interoperability, but other approaches are possible through port visits, passage exercises and other cooperative activities. They can range from regular and highly sophisticated multinational exercises to exchange postings and information exchange agreements. One multilateral example of co-operation is the Western Pacific Naval Symposium (WPNS), which brings together regional Navies to discuss matters of mutual interest. Amongst the products of the WPNS is the Code for Unalerted Encounters at Sea (CUES), a code of practice for naval units encountering each other unexpectedly, which provides guidance on manoeuvring and communications.

Two clearance divers at work searching for mines with a hand held sonar. Clearance Diving Teams assist with the identification and rendering safe of devices, particularly in shallow water and in ports and harbours. Their role in keeping the seas open are vital. (RAN)

Flash Traffic

RAN buys Harpoon Block II

The RAN has signed a contract with Boeing for the purchase of 64 Block II Harpoon missiles. Readers of *The Navy* will know that the Harpoon Block II provides a considerable capability enhancement for anti-ship operations in an archipelagic environment over the current versions as well as providing the added spin off of precision standoff land attack.

The new Block II Harpoon is designed to operate in the littoral environment through the application of a number of new and existing technologies. Its new guidance system incorporates technologies from two other existing weapons – the low-cost, inertial measuring unit from the JDAM (Joint Direct Attack Munition); and the software, mission computer, integrated Global Positioning System (GPS)/INS, and the GPS antenna and receiver from the SLAM-ER (Standoff Land Attack Missile Expanded Response) missile.

The Block II mission computer can be fed a database of coastlines to allow accurate navigation and target landmass discrimination. Its search pattern can also be controlled by limits placed on it by the GPS correlating landmass and coastline data with that detected by the missile's radar. Upon finding a ship target in a littoral cluttered environment the Harpoon Block II can attack in the same manner as the current Block IC version used by the RAN. An added benefit of this Block upgrade is the ability to attack land targets such as SAM sites, harbour facilities, runways, buildings etc using almost any attack profile, i.e. high diving etc.

It is understood that the Anzac frigates will be the sole operator of the Block II missile giving them the capability to not only strike ships attempting to hide in the radar clutter found near coastlines but also inland targets at a range of approximately 130kms.

Armidale: class name for RAN's new patrol boats

The RAN's new patrol boats will be known as the Armidale class. Defence Minister Robert Hill made the announcement to coincide with 60th commemoration events of the sinking of the original HMAS ARMIDALE.

The Bathurst class corvette HMAS ARMIDALE

"There has been strong community support to continue the Armidale name and its proud links to the Royal Australian Navy," Senator Hill said.

"The Government has agreed to the recommendation of the Chief of Navy and it is a great honour to announce the Armidale class for the replacement patrol project, given the proud history and heroic feats of the original Armidale corvette."

ARMIDALE (I) was a Bathurst Class corvette with a crew of 149. Her initial service was as an escort vessel protecting Australian coastal and mainland to New Guinea convoys.

She was sunk by enemy action on 1 December 1942 during operations off Betano, south coast of Timor. Of the 49 survivors, only five are still alive today.

ARMIDALE is also significant for the heroic actions of Ordinary Seaman Edward 'Teddy' Sheean who, while wounded and after "abandon ship" had been ordered, returned to the 20mm gun and strapped himself to the weapon.

He destroyed a Japanese aircraft before going down with the ship, still firing. A Collins class submarine is named in memory of his heroic efforts.

The first of the RAN's Armidale Class replacement patrol boats is to be delivered during the second half of 2004, consistent with the Government's 2000 Defence White Paper commitments.

Tenders for the new patrol boats are currently being evaluated by Defence. The new fleet will replace the current fleet of 15 Fremantle Class Patrol Boats and will provide the RAN with a more capable, modern and reliable vessel for protecting Australia's coastline.

AP-3C accepted

A fleet of upgraded AP-3C Orion aircraft with the best surface surveillance capabilities in the world will now operate out of RAAF Base Edinburgh in South Australia following an acceptance ceremony.

Defence Minister Robert Hill said the combination of the new 'imaging' radar with the Electronic Support Measures fitted previously represents a quantum leap in maritime patrol capability and has made the upgraded Orion the most advanced in the world today.

Four of the six AP-3Cs that have been delivered to the RAAF. The modifications to the RAAF's Orions make them one of the best maritime patrol aircraft in the world. (RAAF)

Six of the upgraded Orion aircraft have now been delivered to Edinburgh from L-3 Communications Integrated Systems. The new technology will improve Australia's maritime patrol capability and allow the Air Force to extend the life of the Orion aircraft until 2015.

The Maritime Patrol Group's Acceptance Transition and Evaluation Unit has commenced an extensive Operational Test and Evaluation program to certify the aircraft in its various roles, and to develop tactics and procedures. This program will involve exercises with other ADF assets including the Collins Class submarines and Anzac class frigates.

Prototyping and system integration of the first AP-3C was conducted at Greenville, Texas, with further testing at the contractor's production facility at Avalon Airfield, Lara, Victoria. The integration of the mission and flight systems has been a very complex task involving substantial testing and analysis in both Australia and the United States to ensure stability and robustness of the systems.

The first two upgraded AP-3C aircraft, were delivered to RAAF Edinburgh in October 2001. The delivery enabled the Air Force to commence testing the aircraft in January 2002 prior to the formal Commonwealth acceptance. The final aircraft is to be delivered in late 2004.

As part of the operational testing period, the AP-3C also participated in Exercise RIMPAC 2002 in Hawaii, where two Harpoon missiles were successfully launched.

Senator Hill said the new Orion aircraft was the culmination of the efforts and close working relationship between the Defence Materiel Organisation's Maritime Patrol Systems Program Office, Air Force, the Defence Science and Technology Organisation and L-3 Communications Integrated Systems and its major sub-contractors.

Spruance class destroyers for Brazil?

Brazil has made an application to the US Defense Security Cooperation Agency for the purchase of four decommissioned Spruance class destroyers from the USN. US sources also confirm that these same four ships have been offered to the Chilean Navy however, the destroyers will not be available until they are officially deemed 'excess defense articles'.

The news of Brazil's desire for the extra ships comes at a time when the Brazilian Navy is suffering budget cuts. Two dock landing ships and the aircraft carrier SAO PAULO (A-12) are currently in refit/repair which was to have lasted only a year but to save money this has been rescheduled to two. Brazil has also had to place half its A-4 Skyhawk fleet into storage as a cost saving measure. Construction of its new submarine and corvette design have also been shelved.

Four ex-USN Spruance class destroyers laid up at Pearl Harbor. Their fate is now being decided and they may yet see service again. So far they have had a staring role in the Hollywood blockbuster movie Pearl Harbor. (Brian Morrison, Warships & Marine Corps Museum, Franklin, Tas.)

Cracks in Anzacs hulls

Bilge keel cracks found in the RAN's and RNZN's Anzac class frigates have Tenix Defence and Blohm+Voss working to identify the cause and formulate a cure.

During an unscheduled survey last January cracks were found in the bilge keel of HMAS ARUNTA. Since then problems with cracking of bilge keel welds, bilge keel plating and hull plating have subsequently been observed in all other vessels of the class built by Tenix.

Bilge keels are intended to reduce vessel roll and direct water flow to mechanical stabilisers mounted on the hull. The cracking appears to be where the bilge keels attach to the hull.

It is understood that the other MEKO 200 users (Greece, Portugal and Turkey), the design from which the Anzac was modified from, have not suffered the same problems.

The cracks are being repaired progressively as ships are docked for other routine maintenance in Australia and New Zealand and involves removing the bilge keels, strengthening the area where cracks have occurred to prevent further cracking and re-attaching the structure to the ship's hull. The procedure takes around two weeks to complete per ship.

HMAS WARRAMUNGA underwent warranty repairs at Williamstown in April/May last year while repairs to HMAS STUART were completed in May 2001 before delivery to the RAN.

It is understood that Tenix and Blohm+Voss are not willing to accept unconditional responsibility for the problems, although talks between the concerned parties continue. Fortunately, some of the ships are still covered under warranty, in which case Tenix will be required to bear the costs of repairs.

First ESSM delivered to RAN

Raytheon Missile Systems has announced it has delivered of the first ESSM (Evolved Sea Sparrow Missile), from an initial production batch of 255, to the RAN last October. Australia is the first nation to receive ESSM which will outfit the Anzac class frigates early this year. The ESSM radar-guided ship self-defence missile has been developed and is being produced by a team of 18 companies from 10 countries, including Australia.

Australia was to have conducted the first ESSM live firing but delays in the US saw the first test shot made from the Arleigh Burke class destroyer USS SHOUP (DDG-86), on 24 July 02 at the Naval Air Warfare Center Weapons Division sea range near Point Mugu, California. In what also constituted the first firing by a USN crew, the launch validated ESSM's ability to accept mid-course guidance updates from SHOUP's AEGIS Baseline 6 Phase III combat system via the missile's S-band uplink.

This enabled timely and accurate information to be sent to the missile to allow it to compensate for the incoming target executing low altitude, high-speed evasive manoeuvres. In this case, the launch resulted in the ESSM's

An ESSM being launched from a test Mk-29 Octuple launcher. The ESSM has performed well in testing with the first now being delivered to the RAN for testing from an Anzac frigate. (Raytheon)

destruction of a BMQ-74 drone approaching the vessel with a closure speed between ESSM and the manoeuvring target drone approaching Mach 3.

Although ESSM uses a slightly modified version of the semi-active radar seeker fitted to the RIM-7P NATO Sea Sparrow Missile, the ability to uplink target information provides a greatly increased range of guidance and homing modes. As ESSM is also designed to counter incoming aircraft, the missile can also fly in an electronically stealthy delayed illumination mode, with its radar switched off until the final phases. This enables the missile to remain undetected by radar warning receivers.

F-123 frigates receive silent treatment

Noise problems which have plagued the German Navy's Type F-123 multipurpose frigates ever since the four ships entered service between 1994-96 are believed to have been solved.

The F-123 frigates, a close relative of the Anzac frigate and the new F-124 frigate which is one of the lead contenders for the RAN SEA 4000 program, feature a conventional two-shaft combined diesel or gas turbine (CODOG) propulsion system – comprising two GE LM-2500 gas turbines, two MTU diesels, Renck-Tacke reduction gearboxes and Sulzer Escher Wyss controllable pitch propellers. Despite being a "low-risk" propulsion design unexpected vibration problems occurred which were finally tracked down to an imbalance of the shafts connecting the diesel engines with the gearbox through a watertight compartment bulkhead. The heavy weight of the shaft led to the elastic rubber parts in the coupling to 'creep', which in turn resulted in a "noticeable imbalance" at high speed. The noise

The German Type 123 frigate FGS BRANDENBURG. The F-123s have had some serious problems since launch which are now being addressed. (German Navy)

created has been described as an earthquake inside the ship that made it possible to not only locate the type of ship using sonar but also identify the individual ship.

The problem is believed to have been solved by installing a lighter Gesilco (Geislinger Silent Coupling) shaft/coupling assembly made of carbon fiber.

Other problems experienced with the F-123s have involved the diesel generator exhaust ducts located just above the waterline on both sides of the ship. Frequent and expensive repairs have been necessary because of the corrosive mixture of sea water, exhaust gas condensation and carbon particles. The exhaust system is currently being redesigned involving the use of titanium alloys, a new ducting and cooling system, and a new flap and control design.

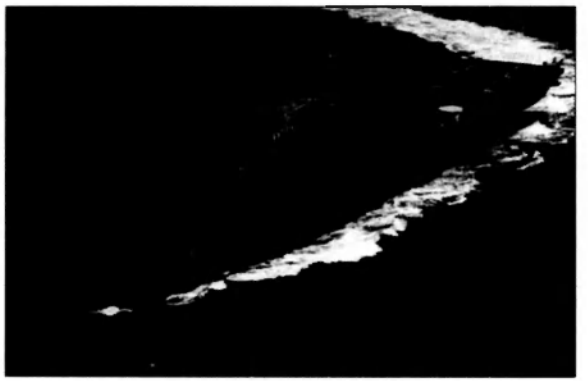
This will however, not solve a more structural problem with the exhaust fumes forming around the ship's deck and bridge wing areas at low speeds and or in low winds. It is understood exhaust fume concentrations are sometimes penetrating into the ship's ventilation system, while the side exhaust ducts above the waterline cannot be used if another ship is moored alongside.

SVTOL F-35 JSF for RN

The UK Defence Procurement Minister, Lord Bach, announced on 30 September 2002 the selection of the short take-off and vertical landing (STOVL) variant of the Lockheed Martin F-35 Joint Strike Fighter to equip the Royal Navy's new aircraft carriers. The carriers will, however, be designed to allow future adaptation to accommodate other aircraft designs if need be.

The STOVL version of the F-35 meets the UK's requirement for a Joint Combat Aircraft to replace the Harrier, both for service afloat and ashore, retaining the flexibility offered by a 'jump-jet' configuration, yet offering all the advantages of a modern stealth design. This version is also being adopted by the US Marine Corps. However, given that the new carriers are planned to have a service life of up to fifty years – longer than that expected for the aircraft – BAE Systems and Thales, competing for the design and construction of the vessels, have been asked to opt for a design which can be adapted to operate more conventional aircraft types if necessary later in the ships' lives. To this end, the ships will

A STOVL F-35 JSF in the hover mode during testing. The RN has decided to stay with the STOVL-ski-jump combination for its new aircraft carriers.



BAE's design for the RN's new aircraft carrier.

Thales's design concept for the RN's new aircraft carrier. A rather unconventional design with two islands.

have the capability to be fitted with catapults and arrestor gear, although they will be built with the 'ski-ramp' well-known from the Royal Navy's current Invincible class carriers for STOVL operations.

The UK is heavily involved in the Joint Strike Fighter project, with Rolls-Royce leading the development of the lift system for the STOVL variant. Up to 150 of the aircraft will be acquired by the MoD, in a programme worth up to £10 billion.

RNZN shopping for ships

The New Zealand Ministry of Defence (MoD) has short listed six organisations to supply vessels under its US$500 million 'Project Protector'. The project will see the RNZN receive up to three helicopter-capable offshore patrol vessels and a multi-role vessel (MRV) to replace the Leander-class frigate HMNZS CANTERBURY when it is decommissioned in 2005.

The upgrade or replacement of five existing RNZN inshore patrol boats is included under 'Project Protector', although budget constraints may see this dropped.

The cost of the MRV has been capped and not to exceed US$100 million.

When the shortlist is announced, a Vessel Performance and Integrated Logistics Specifications study will be undertaken, involving extensive consultation with all client agencies that will task the vessels through the NZ Maritime Co-ordination Centre.

So far the shipbuilders invited to respond to the requirement are BAE Systems of the UK, Blohm+Voss of Germany, Singapore Technologies Marine, Tenix Defence Australia, Vosper Thornycroft (UK) and DSA (DSA being a partnership between the Australian company ADI and Damen Shipyards and Schelde Naval Shipbuilding, both from the Netherlands).

HMS SHEFFIELD to Chile?

According to Chilean government sources the Chilean Navy is in advanced negotiations with the UK Ministry of Defence (MoD) for the acquisition of the ex-RN Type 22 Batch 2 frigate HMS SHEFFIELD.

SHEFFIELD was officially decommissioned early from the RN at a ceremony at Devonport, Plymouth, on 14 November 02. She was named after the ill-fated Type 42 destroyer sunk in the Falklands Conflict.

It is also understood that the UK MoD has indicated to the Chileans that two RN Type 23 frigates could become available from 2004 or 2005.

Upon successful conclusion of the negotiations the frigate would be taken to Chile for refit in a local shipyard. The Chilean Navy needs to replace three Prat-class (former RN County-class) destroyers acquired from the UK in the 1980s, and which are to be paid off in 2004, 2006 and 2007, respectively.

The now decommissioned Type 22 Batch 2 frigate HMS SHEFFIELD. It is understood Chile and the UK are in advanced negotiations for Chile to purchase the ship. (RN)

Tenix strengthens its submarine warfare capabilities

Australian Defence contractor Tenix Defence has signed a research

agreement with Royal Melbourne Institute of Technology University to examine developments in technologies used in Anti-Submarine Warfare (ASW).

The study, in three stages over 12 months, will focus on the Airborne-ASW environment in which the S-70B-2 Seahawk Helicopter operates and the improvements needed to enhance the aircraft's capabilities and lifespan.

The Seahawks are an integral part of the FFG weapon system, planned to continue in service until 2020. The life of the Seahawks will need to be extended to 2020 to provide the necessary ASW capability.

The Tenix/RMIT study will be carried out by the Sir Lawrence Wackett Aerospace Centre of RMIT.

Tenix Defence Aerospace Division Business Development Manager, Mr Phil Middleton, said the study will be used to examine and model optimised development and implementation strategies for the Seahawk mid-life upgrade.

"The study will analyse threat perceptions in the Asia Pacific region and interoperability with allies and future alliance partners in neighbour countries, to establish operational requirements for future Airborne ASW.

"Future technologies and advancements in mission systems will be part of the study to establish capability and technology timelines for enhancements.

"The study will utilise the research skills and methodology of a leading university combined with Tenix Defence's practical experience and excellence in technology development.

"During the study program, Tenix Defence will gain in-depth knowledge of requirements for ASW and will be in a good position to further support Australian Defence Force programs," Mr Middleton said.

South African SSKs back on patrol

The South African Navy (SAN) has returned its two Daphne-class diesel electric attack submarines (SSKs), UMKHONTO and ASSEGAAI, to service following a locally developed Service Life Extension Programme by African Defence Systems.

The two Daphne-class diesel electric attack submarines were originally laid down in the late 1960s, and suffered in the wilderness of South Africa's years of apartheid-related sanctions. Despite constant local efforts to upgrade and maintain the boats, by the early 1990s the SAN was desperately searching the world for increasingly hard-to-find spares.

This latest much-needed upgrade has seen UMKHONTO and ASSEGAAI receive a new combat system developed by African Defence Systems, incorporating a new radar and a cylindrical conformal array intercept sonar. The boats have also been outfitted with new communications and electronic-warfare suites and upgraded Zeiss periscopes.

Their upgraded systems will now afford the SAN a stop-gap force until its three new HDW-built Type 209 SSKs are delivered, starting in 2005. This is crucial not just to maintain a submarine capability, but also to retain operational experience for the SAN crews, as only very small numbers of SAN personnel are trickling through the German Navy's submarine commander's course and serving attached to active Type 209 boats.

V-22 starts high rate of descent testing

The V-22 Osprey Integrated Test Team (ITT) commenced Phase I of the high rate of descent (HROD) test plan on 25 Nov 02, completing 13 test points over the course of two back-to-back sorties. The last accident involving the V-22 concerned the flight characteristics of a rotary wing aircraft. It is understood the crash occurred due to an aerodynamic phenomenon called vortex ring state. This occurs when a rotary wing aircraft descends faster that its forward momentum and passes through its own down wash. One way to avoid vortex ring state is with forward momentum, that way the aircraft can descend at speed and not pass through its own downwash. In the last accident it is understood that one side of the V-22 entered a vortex ring state thus completely unbalancing the whole aircraft and causing an unrecoverable spin.

Osprey No.8 in its folded state for storage on aircraft carriers is wheeled out for another series of tests. (USN)

The ITT is using Aircraft No. 8, one of four Ospreys in the current test inventory, exclusively for the HROD testing.

Aircraft No. 8 has been specially instrumented and wired to provide crucial feedback to pilots and engineers during the series of flights designed to ultimately give fleet pilots the confidence to exploit the V-22's unique manoeuvring capabilities.

"There were no big surprises," said Steve Grohsmeyer, test co-pilot for the initial HROD events. "The airplane behaved very nicely."

While the team has taken a methodical and safe approach toward the HROD plan, Grohsmeyer explained that the first flights were by no means "baby steps."

"Already, we're hitting rates of descent that are well beyond where we expect fleet pilots to go," he said. "We're going to give the average tilt rotor aviator plenty of space to do what he needs to do in any operational environment."

The HROD test plan is divided into two phases: Phase I will clear the "placarded" envelope – no greater than 800 feet-per-minute rate of descent combined with a forward speed of less than 40 knots – for the fleet's return to flight in the fall of 2003.

Phase II is designed to be the more experimental portion of the plan that will fully explore the Osprey's flight envelope, including the tilt rotor's characteristics with regard to vortex ring state. Although the test plan is driven by events and not time, Fred Madenwald, ITT contract flight test director, estimated Phase I would be complete by late February.

SM-3 scores, again

A developmental Standard Missile-3 (SM-3), designed to intercept short to medium-ranged ballistic missile threats in space, is launched from the Pearl Harbor-based Aegis cruiser USS LAKE ERIE (CG-70). (USN)

For the third time this year, a Raytheon Company STANDARD Missile-3 (SM-3) destroyed a ballistic missile target in space during a Nov. 21 Missile Defense Agency (MDA) and U.S. Navy sea-based Aegis Ballistic Missile Defense (BMD) element flight test off the Hawaii coast.

This was a more stressing test of the system than in the previous interceptions, requiring missile launch during the target's ascent phase (prior to apogee). SM-3 successfully demonstrated aimpoint shift control and guidance during the test, by impacting the target as predicted.

This test, designated Flight Mission-4 (FM-4), is the seventh consecutive successful missile defense test for Raytheon's sea-based and ground-based midcourse programs in the past 16 months, continuing to demonstrate Raytheon's 'hit-to-kill' capabilities. In all, Raytheon systems have successfully intercepted eight targets in space.

The SM-3 was launched from the Aegis BMD cruiser USS LAKE ERIE (CG-70) and shortly thereafter hit the target that had been launched from the USN's Pacific Missile Range Facility on Kauai.

With the two previous Aegis BMD test successes this year, MDA and the USN have accelerated the fight test objectives of the Aegis BMD project. FM-4 marked the beginning of an ongoing flight test series that continues to move toward deployment as an element of the Ballistic Missile Defense system.

"Along with the USN and the Missile Defense Agency, we are on track to develop this ship-based Aegis Ballistic Missile Defense system for deployment against short-to-medium-range ballistic missile threats. The success of this test demonstrates that sea-based missile defense on a forward deployed ship with a high-velocity guided missile can defend large regions, on the order of 500,000 square miles, or almost twice the size of the State of Texas," said Edward Miyashiro, Raytheon's Vice President for Surface Navy Air Defense Systems.

Indonesia successfully tests Exocets

The Indonesian Navy has test fired three MM-38 Exocet missiles that were remanufactured in Indonesia after concerns were issued by the missile's maker that they had passed their used by date. Batteries, solid rocket propellant and other systems needed to be replaced as they had exceeded their shelf life. All of Indonesia's MM-38 Exocet stockpile has long since passed the manufacturer's use-by date with Indonesia, up until now, apparently doing nothing to keep the missile's serviceable. All of the missiles fired had been overhauled and prepared by an unnamed Indonesian company. Four missiles were meant to be launched during the firepower demonstration, but one apparently misfired which may indicate that the upgrade program has some more testing to do. It is unknown if the three that were launched made it to the target and actually hit it.

The three MM-38s were fired from one of Indonesia's three Fatahillah class frigates. In total, the Indonesian Navy has eight vessels in service notionally capable of launching the MM-38, although it is unknown how many are still sea-worthy.

Exocet Block 3 on way

The French Ministry of Defence has given the European company MBDA the go ahead to start development of the extended-range, expanded-capability MM-40 Block 3 Exocet anti-ship missile.

The Block 3 version should nearly triple the range of the existing MM-40 Block 2 – to about 180km – by replacing the missile's existing solid rocket fuel sustainer motor with an air-breathing turbojet propulsion unit. The aft body will be modified to accommodate the new propulsion plant, with fixed geometry air intakes situated between the missile's cruciform mid-body wings.

The jettisonable solid-fuelled rocket booster from the Block 2 Exocet will be retained. The missile is similar in size to its forerunner but different enough so as to not be able to integrate into existing MM-40 launch equipment or mission planning hardware.

A new navigation system and mission planning software, together with a J-band seeker will be used from the cancelled ANF supersonic missile. This will enable the MM-40 Block 3 missile to navigate to pre-planned targets through a series of three-dimensional waypoints, to make full use of a sea-skimming flight profile and terrain masking to avoid air defences. Lethality will also be increased with a new insensitive high-explosive blast warhead. It is not known if a GPS will be fitted to enable precision land attack missions such as the Harpoon Block II.

MBDA is also planning improvements to reduce the infrared and radar signature of the missile, while at the same time strengthening the airframe to allow high-g evasive manoeuvres.

First firings of the Block 3 are due in 2004, with production to start in 2006.

CHARLES DE GAULLE fires Aster 15

The French Navy (Marine Nationale) has conducted the first firing of the naval version of MBDA's Aster 15 area defence system from the aircraft carrier CHARLES DE GAULLE in the Mediterranean on 30 October 02.

The missile was fired from a Sylver vertical-launch system and intercepted its target at a distance of 6km from the carrier after a nine second flight. The incoming target was destroyed.

The CHARLES DE GAULLE is equipped with an octuple Sylver vertical-launch system for the Aster 15 naval missile and an Arabel radar and fire-control system.

The Aster 15 missile system was first installed on the new French aircraft

carrier in December 2001, before its departure for service in the Arabian Sea in support of the US-led *Operation Enduring Freedom*.

The Aster missile forms part of the Franco-Italian Famille de Systeme Sol-Air Future programme, which is managed by the European four-nation procurement agency, OCCAR. Apart from the CHARLES DE GAULLE, the Aster 15 will also be fitted to the Franco-Italian Horizon anti-aircraft frigate and the RN's Type 45 destroyers. It is understood Saudi Arabia has also chosen the Aster 15 to equip its Sawari II frigates.

RN task group to visit Down Under

The UK MoD has announced that a Royal Navy Task Group would deploy to the Asia Pacific region in 2003 to take part in *Flying Fish*, an exercise with the UK's partners under the Five Power Defence Arrangements with Australia, Malaysia, New Zealand and Singapore.

A naval task group is routinely deployed on exercises around the world every three years. The 2003 deployment will be led by the Invincible class aircraft carrier HMS ARK ROYAL and escorted by the Type 42 destroyer HMS LIVERPOOL and the Type 23 class frigate HMS MARLBOROUGH, and the Royal Fleet Auxiliaries FORT VICTORIA and ORANGELEAF. A nuclear powered submarine will also accompany them. The group will visit over 25 allies and partners en route in the Mediterranean, Gulf, Indian Ocean and Pacific, and undertake several training exercises. *Exercise Flying Fish* itself will commence off Malaysia and Singapore in June 2003.

(From left to right) A RN Type 42 destroyer, a Fort Victoria class replenishment ship and an Invincible class aircraft carrier. The RN will deploy a Task Group to the Pacific area mid 2003 made up of similar ships plus three others. (RN)

AUSTAL Joins US firms to develop Focused Mission High-Speed Ship for USN

Austal USA, the Mobile, Alabama based subsidiary of world-leading aluminium shipbuilder, Austal Limited, will team with Bath Iron Works, a subsidiary of General Dynamics, to explore advanced concepts for a Focused Mission High-Speed Ship (FMHSS) for the United States Navy.

Austal USA will play an integral part in the study team as one of six consortia selected from 18 proposals to receive a US$500,000 grant to develop the concept. Led by Bath Iron Works, the team will also include The Boeing Company, British Aerospace Corporation (BAE), Maritime Applied Physics Corporation, CAE Marine Systems and five other General Dynamics business units.

Austal's Managing Director, Mr Bob McKinnon acknowledged the study as a major development in the medium and long-term prospects for United States military vessels.

"We are delighted to be part of such a strong team but are aware that there is quite a long way to go before a contract is awarded", Mr McKinnon said. He also confirmed that the large commercial vehicle-passenger ferry market remains subdued.

FMHSS is an integrated surface combatant capability envisioned to operate in littoral (coastal) areas against terrorist threats, high-speed swarm boats, mines and diesel submarines. It may also be called upon to carry logistics supplies or personnel and equipment for Special Operations Forces and the U.S. Marine Corps, acting in a role similar to the Austal built 101 metre theatre support vessel, "WestPac Express" currently contracted to the U.S. Marine Corps in Okinawa, Japan.

The FMHSS will incorporate state-of-the-art materials, modular mission packages, and a multi-purpose platform design to provide the U.S Navy with a highly flexible concept for future littoral operations. The mission capability of the FMHSS will play a pivotal role in assuring the access for joint and coalition forces into contested coastal regions around the world.

The team has chosen to base its FMHSS hull design on Austal's advanced hullform technology, developed and designed by Austal's experienced design team located in Western Australia, to create a highly automated ship capable of speeds in excess of 50 knots.

Austal's design offers outstanding efficiency and performance in all sea conditions, endurance and reliability for sustained independent operations and a high degree of flexibility/adaptability to meet evolving military requirements through open architecture and modular configuration. The system will enable advanced operational concepts such as those employing high speed, enhanced manoeuvre, distributed forces and reduced signatures as well as the ability to efficiently embark from a broad array of aircraft, amphibious, land and marine vehicles.

The team will develop an integrated system that delivers significantly enhanced capabilities to naval, joint and coalition forces operating within the littorals. In defining system design characteristics, the team will address FMHSS integration with FORCEnet, the information network into which the U.S. Navy will integrate sensors, decision aids and weapons, as well as other joint and coalition information networks.

The spectrum of technologies to be evaluated by the team will include all forms of remotely deployed and operated vehicles, distributed sensors, modular payloads, weapons, communications, command and control and automation systems as well as advanced propulsion technologies and hull construction materials.

The results of this study will assist the U.S Navy in defining requirements for the rapidly emerging Littoral Combat Ship (LCS) Program. Between 30 and 60 LCS ships are planned, with construction to commence in 2005. Earlier construction may be required by the U.S. Navy in order to accelerate defence against growing worldwide threats and terrorist operations.

The decommissioned USS TOWERS (DDG-9), an old Charles F. Adams-class DDG, slowly sinks in the Pacific Ocean after being used as a target during live-fire sinking exercises (SINKEX) off the California coast. Working with the state and environmentalists, the USN sank the ship - first made environmentally safe - in a selected coastal area to provide an artificial reef to promote the growth of marine life and enhance recreational fishing and sport diving opportunities. Commissioned in June 1961, TOWERS served the U.S. for nearly 30 years. (USN)

The aft section of a new Scorpene class SSK submarine being loaded onto a ship for transport to the dockyard for final assembly. This particular submarine is destined for the Chilean Navy and is being built by the Spanish firm IZAR. (IZAR)

Navy League concerned at air warfare state

At its recent AGM in Canberra the Federal Council of the Navy League of Australia (NLA) has called on the Federal Government to address urgently the need to acquire air warfare destroyers to enable Australian forces deployed abroad, including Army units, to be adequately protected.

The Federal Council of the NLA is concerned that while current surface combatants are well suited to low threat situations the Navy now has r- higher level capability.

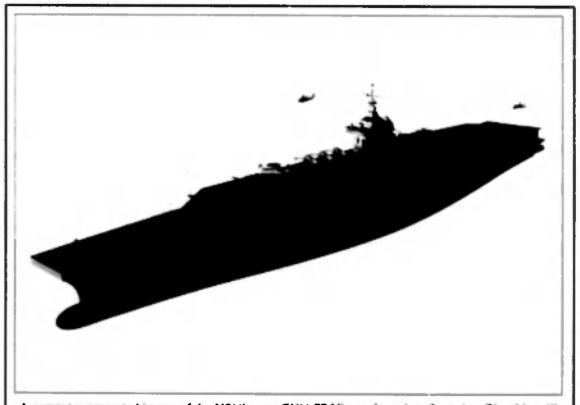
Experience proves there is a clear need for the RAN to have an enhanced air warfare capability. This need can be best met by the acquisition of air warfare destroyers.

The government has itself recognised the need for such ships. It has announced that Australia will acquire more than three air warfare destroyers in its 2000 White Paper. But they are not planned to enter service until 2013-2015.

The NLA Federal Council was highly critical of governments past and present for not ensuring this important capability was maintained when the guided missile destroyers PERTH, HOBART and BRISBANE were decommissioned without replacement.

To fill the gap until Australian built air warfare destroyers are delivered and become available the NLA recommends that Government obtain some air warfare capable ships, by way of loan or lease, to provide this capability.

The League strongly urges the Government to act on this proposal. The alternative is to leave Australian forces without the protection they deserve, and need to complete some missions, for at least the next 10 years.



A computer generated image of the USN's new CVN-77 Nimitz class aircraft carrier. The ship will be named USS GEORGE H. BUSH after the current US President's father who was also a US President. This is the second carrier in a row to be named after a Republican President with the most recent Nimitz class carrier named USS RONLAD REAGAN. (USN)

Observations

By Geoffrey Evans

MARITIME STRATEGY INQUIRY

The Navy League has participated in a number of defence and maritime-related inquiries during the past 25 years and did not hesitate when Parliament's Joint Standing Committee on Foreign Affairs, Defence & Trade (JSCFAD&T) announced an inquiry into the role of maritime strategy in Australia's defence policy. A submission was lodged by the end of October and the League has been advised that public hearings will begin in February.

A maritime strategy has been a vital part of Australia's defence policy for many years and was endorsed only two years ago with the release of the government's Defence 2000 White Paper, a policy statement preceded by extensive public consultation. The Navy League appreciates the prevailing state of nervousness in communities world-wide, created largely, but not only by, the acts of terrorists, but believes implementation of Defence 2000 is the best way to ensure the nation's security. The League's submission follows:

NAVY LEAGUE OF AUSTRALIA SUBMISSION TO THE JOINT PARLIAMENTARY COMMITTEE ON FOREIGN AFFAIRS DEFENCE & TRADE INQUIRY INTO AUSTRALIA'S MARITIME STRATEGY

The Navy League believes it is necessary to refer to the Government's November 2000 Defence White Paper – "Defence 2000 – Our Future Defence Force" – before addressing matters that are the subject of the present Inquiry.

Defence White Paper 2000 – Ministerial Endorsement

The Minister's introduction to the Defence White Paper 2000 claims that this document has established an historic benchmark for the development of Australia's defence force. It states that the White Paper sets it apart from its predecessors in three key ways.

The first is the degree of ministerial involvement.

The second is the Government's decision to lay down the most specific long-term defence funding commitment given by any Australian Government in over 25 years.

The third is a clear statement of the Government's requirements of its defence organization.

The League notes the Minister has stated that the White Paper establishes "an heroic benchmark for the development of Australia's defence force".

Australia's Strategic Interests

In considering Australia's strategic interests and objectives the White Paper asserts that the highest priority is accorded to our interests and objectives closest to Australia. It states that:

- Australia's most important long-term strategic objectives is to ensure the defence of Australia and its direct approaches.
- The second objective is to foster the security of our immediate neighbourhood.
- Our third objective is to work with others to promote stability and cooperation in South East Asia.
- Our fourth objective is to contribute in appropriate ways to maintain strategic stability in the wider Asia Pacific region.
- Our fifth strategic objective is to contribute to the efforts of the international community, especially the United Nations, to uphold global security.

Having addressed these objectives the White Paper states that "We will continue to support the United States in the major role it plays in maintaining and strengthening the global security order. Australia also has a strong interest in non-proliferation regimes that prevent the spread of weapons of mass destruction."

Australia's Military Strategy and Priorities

The Defence White Paper, having established Australia's strategic interests and objectives, comments on Australia's military strategy and priorities as follows:

- The priority task for ADF is the defence of Australia. This embraces self-reliance, control of the sea and air approaches and the ability to attack hostile forces as far from our shores as possible.
- The second priority for the ADF is contributing to the security of our immediate neighbourhood. The capability to help our neighbours would be drawn from the forces we have developed for the defence of Australia.
- The third priority for Australia's forces is supporting Australia's wider interests and objectives by being able to contribute effectively to international coalitions of forces to meet crises beyond our immediate neighbourhood. The White Paper states we would do this by contributing to international coalitions, drawing on the forces we develop for higher priority tasks.

Following so closely on the Defence White Paper 2000, the terms of reference for the Joint Standing Committee on Foreign Affairs, Defence and Trade (JSCFAD&T) appear to now question Australia's fundamental strategic interests and objectives or, at least, to raise doubts about the completeness of the White Paper.

That being said, the Navy League supports periodic reviews of government policy in relation to defence of Australia, particularly when this has been seen as the consistently highest priority of successive governments.

Since the White Paper was published there have been two major events which have relevance to Australia's fifth strategic policy, namely to contribute to the efforts of the international community, especially the United Nations, to uphold global security. These are the terrorist attacks of 11th September 2001 in New York and the current circumstances in Iraq. The former led to the deployment of Australian defence personnel and equipment to Afghanistan and the Arabian Gulf, the latter to consideration of Australia's possible involvement in military action against Iraq.

The JSCFAD&T Committee, in the preamble to the Terms of Reference (TOR) appears to re-affirm Australia's "fundamental maritime strategy" requiring the Australian Defence Organization (ADO) to "maintain and further develop an integrated and balanced joint force" and the preamble also illuminates the reason for the Inquiry in stating that:

- The inquiry aims to develop a comprehensive understanding of Maritime Strategy and its place within Australia's broader military strategy and defence policy, and
- Also seeks to understand the implications of a Maritime Strategy for the other tasks set out in the White Paper.

Terms of Reference

While the foregoing rationale for the Inquiry is clear, one might however question whether there is some underlying reason for it, or whether there is now a perception that insufficient study was put into the development of the White Paper. The later seems unlikely, noting the previous Minister's perception that the White Paper established an historic benchmark.

The Terms of Reference themselves are of such a broad nature that they give the JSCFAD&T full scope to examine and challenge every aspect of the Defence White Paper, including the long held principle that the first responsibility of Government is the defence of our country and our community from armed attack. Given the findings of the Community Consultative Team (The Peacock Inquiry) that preceded the White Paper it would seem unwise for any Government to change the general order of priority accorded home defence.

The Navy League has contributed to a number of inquiries into defence and maritime-related matters over the past thirty years and is not unfamiliar with the problems government and security planners have had to face. During the whole of that period "change" and "uncertainty" have been words most often used to describe the difficulties of those charged with the responsibility of ensuring the nation's security. It is the view of the Navy League that the White Paper, "Defence 2000", made significant progress in grappling with unknowns of the future.

It is the opinion of the League that, while events overseas during the past 12 or so months have to a degree heightened the uncertainty of forecasting our security needs, the broad thrust of "Defence 2000" remains valid.

Funding

The Committee will be aware that for a number of years money allocated for defence purposes has not kept pace with ever-increasing costs, particularly for equipment but in other areas such as personnel.

In publishing "Defence 2000" the Government estimated that defence spending would need to grow by an average of about three percent per annum in real terms over the next decade, albeit it was acknowledged that such growth is slightly below the average annual growth rate of Australia's economy over the last two decades. However, the Government did speculate that if our economy grows on average as fast as it has over the last two decades, in 2010 we will be spending about the same proportion of GDP on defence as we are today. That is 1.9%.

The Navy League is deeply concerned that the increased demands placed on the Defence Force since "Defence 2000" was published and the possibility of continued and growing involvement with international coalitions of forces has already shown that actual and forecasted funding for Defence is inadequate.

The League does not believe that the solution lies in a recasting of Australia's broader strategic interests, nor in an adjustment of those capability development principles set out in the White Paper. To do so would, in the opinion of the Navy League, more likely than not skew the achievement of the Defence Capability Plan set out in Chapter 8 of "Defence 2000".

The Navy League strongly recommends the JSCFAD&T acknowledge the increased demands being put on the Defence Force since the White Paper was formulated and include in its report a strong recommendation for additional annual funding.

Other Matters

Maritime Strategy

While the Navy League supports in principle the term "Maritime Strategy" as indicating Australia's geographic environment, it believes there is some risk this will be narrowly interpreted as restricted to the sea/air gap between North West Australia and the southern limit of the archipelago area to the north. The strategic reality is that should Australia have to defend itself from an external threat, serious consideration would have to be given to operations beyond the sea/air gap. This could involve ground forces, which would need logistic and combat support from both Navy and Air Force operating beyond the southern limits of the Archipelago.

The Navy League recommends the JSCFAD&T address this issue in their deliberations:

Range of Maritime Activities

The Navy League also wishes to emphasise that a nation's Maritime strategy is not confined solely to military forces but must also include a range of activities associated with the sea. These include merchant shipping a vital factor in the nation's well being; shipbuilding and ship repair and maintenance; the fishing industry and policing of adjacent waters.

The Navy League recommends this be noted.

Naval Force Balance

While the composition of the Navy's present combat forces conveys the impression of a reasonably well-balanced force to support Government's policies, there is one notable omission. This is the absence of adequate air defence. Without this the operational range of ships must be suspect. With the decommissioning of the RAN's three Guided Missile Destroyers (DDG's) the Navy is now left with no Tier One surface combatant. This weakness is recognised in the White Paper but it would appear that an adequate platform (three Air Defence capable ships) will not be available until about the year 2013, this must place undesirable restriction in the flexibility of our naval forces.

The Navy League recommends the JSCFAD&T seek expert advice from Defence on this perceived weakness.

Employment of Naval Forces

The League has some concern about the need for the RAN to use its largest warships for "border protection" in northern waters and occasionally, for dashes to southern waters to apprehend fish poachers. While there are benefits in the experience gained by such operations the Navy League does not believe this is the most cost effective way of employing major combatants. The League thinks this should be a major factor in deciding the size and capabilities of the replacements for the FREMANTLE-Class patrol boat.

The Navy League recommends this view be noted.

Merchant Shipping Industry

For a significant trading nation it is remarkable that Australia has for so long relied on overseas owned/flagged ships to carry cargoes in and out of the country. On two occasions it seemed that Australia had lessened its reliance on other countries. During WW I following the withdrawal of foreign owned shipping the government acquired 43 ships and traded as the Commonwealth Line of Steamers until a succeeding government disbanded the Line in 1928; and in 1956 under enterprising leadership the Australian National Line traded successfully and profitably for more than a decade before declining in importance due largely to government inertia. Australian flagged shipping has continued to decline.

The Navy League considers a healthy Australian shipping industry to be of vital importance to the nation's wellbeing and an essential part of a credible maritime strategy. The League urges the JSCFAD&T to give urgent attention to this matter.

Evacuation of Australian Nationals

The Navy League does not envisage Australia declaring war on or engaging in a pre-emptive strike against any State in the neighbourhood. This is not to say Australia could not become involved in hostile activities instigated by other States, nor preclude a need, in our immediate area, to evacuate Australian nationals in a variety of circumstances.

The 1987 Fijian troubles indicated shortcomings in Australia's ability to evacuate nationals but the conversion of two former USN vessels into multi-purpose ships, the LPAs MANOORA and KANIMBLA, has improved the RAN's ability to meet this requirement. The League does not discount the importance of the Air Force in evacuating nationals but airfields may not always be available.

The Navy League recommends the JSCFAD&T note the value of multi-capable Surface Vessels

Australian Defence Industry

The Navy League is aware that the naval shipbuilding industry has been under review and that proposals have been submitted for consideration by the Government. The League desires only to caution against having a "single entity" with which the Government would deal. Instead the League recommends several "preferred tenderers" with known expertise or experience in the field into which the equipment sought by Defence falls. It will be obvious that shipbuilding is not a self-contained industry as the requirements extend into all types of industry.

The Navy League recommends several "preferred tenders" for defence contracts.

SUMMARY

Notwithstanding the recent tragic loss of innocent lives in Indonesia and uncertainty surrounding events in Iraq and Australia's present commitments in Afghanistan, the Navy League believes the broader policies outlined in the White Paper "Defence 2000" remain valid. It believes that, on the whole, Australia's military commitments can be met from a force in being tailored for the defence of Australia employing a maritime strategy.

Should the JSCFAD&T inquiry reveal weaknesses in the present force structure to meet Australia's strategic priorities the Navy League recommends the solution lies in increasing funding arrangements rather than disruption to long term defence funding projections.

PRODUCT REVIEW

Lucky Ross
The Autobiography of an RAN officer 1934 – 1951

By W.H. (John) Ross. Published by Hesperian Press W.A.
Reviewed by Ian Johnson

Lucky Ross is an insight into the RAN both prior to, and including, the Second World War. This autobiography goes into detail about serving as a midshipman on HMAS AUSTRALIA (II) as it takes H.R.H. the Duke of Gloucester from Australia to Britain in 1934. Ross then served on HMAS SYDNEY (II) from commissioning in Britain through to combat in the Mediterranean and the shock at her sinking. HMAS CANBERRA was his final ship and he was there when this ship was lost in 1942. After this he was assigned to various shore establishments until his retirement in 1951.

John Ross freely admits that he had a lucky streak. From great postings to surviving the enemy, John Ross talked about these things in both letters and his dairy as he served along some of the RAN's finest officers. From Captain John Collins to Captain Harold Farncomb. His personal accounts of life at sea as both serious and on the lighter side of life.

This is a great first hand account of some of the RAN's history. Filled with rare photographs this book is a great edition to any library.

Available from Hesperian Press at www.hesperianpress.com or PO Box 317 Victoria Park W.A. 6979. Ph (08) 9362- 5955

THE CAPITAL SHIPS
Their Battles and Their Badges

and

THE DESTROYERS
Their Battles and Their Badges

Both by Vic Cassells
Price: $49.95 each
Published by Kangaroo Press Pty Ltd, 20 Barcoo Street, East Roseville, NSW 2069
Reviewed by: Vic Jeffery

These two superb reference books by respected naval author Vic Cassells are worthy additions to any naval or maritime library.

Lavishly illustrated and affordable, both contain hundreds of photographs and line drawings, many in colour. I have always admired the author's meticulous attention to detail, and these two books are no exception to the rule.

Consisting of 221 pages, *The Capital Ships* covers Australia's first flagship, the battle cruiser HMAS AUSTRALIA (I), 13 cruisers, three light fleet aircraft carriers, the seaplane carrier HMAS ALBATROSS and the destroyer tender HMAS STALWART (II).

The 250 page *The Destroyers* covers three flotilla leaders, HMAS ANZAC (I), HMAS STUART (I) and HMAS VAMPIRE (I), 22 destroyers, 11 torpedo boat destroyers and three guided-missile destroyers. The ill-fated light destroyer project of 1968-73 is also included.

Not included are destroyer escorts or frigates, these types of ships being the subject of a third volume in preparation.

Both books cover a similar format. Battle Honours, Derivation of the Names, Technical Data, Ships' Badges, Commanding Officers, Casualty Lists and Ships of the Name. A chapter is devoted to each individual ship and four excellent appendices; *Glossary of Heraldic Terms*, *The Naval Crown*, *Ships' Badges – Ancient Glories*, and *Battle Honours* support each book.

The author's time as Heraldry Advisor to the Royal Australian Navy when he was involved in the design of ships badges and previous to that in the Ship Design Drawing Office shows, providing a level of in-depth information one would not obtain from books available at this price.

It is interesting to note how some ships badges have evolved and been altered over the years. Others have been re-designed, ie. HMAS SHROPSHIRE, re-designed and approved on January 4, 1974 for use by the RAN, it is highly unlikely it will ever be reactivated for Australian warships.

Battle Honours makes a fascinating appendix in both books with re-examination of a ship's service. For instance the heavy cruiser HMAS AUSTRALIA inherited a new Battle Honour, *Pacific 1941-43* for convoy escort duty and had *Guadalcanal 1942-43* amended to *Guadalcanal 1942* because the ship wasn't in the area in 1943.

The light cruiser HMAS PERTH has had two additions to her proud Battles Honours, *Mediterranean 1941* and *Pacific 1941-42*, taking her tally to nine. The destroyer HMAS QUIBERON was awarded an additional three *Battle Honours*,

Atlantic 1942-42, Indian Ocean 1943-44, and also *Pacific 1945*, taking its tally to seven.

All-in-all, they are two most informative and thoroughly enjoyable books. Recommended reading. I look forward to the third in the series covering destroyer escorts and frigates.

Mighty Midgets at War – The Saga of the LCS(L) Ships From Iwo Jima To Vietnam

By Robin L. Rielly
Hellgate Press 2000
Soft Cover, 299 pp Illustrated
Reviewed by Paul D. Johnstone
Available from Crusader Trading, 9 Townsville St, Fyshwick ACT 2609. Phone orders (02) 6239 2332
Price: $46.20 (+pp when phone ordering)

This book is one that you definitely do not judge by its cover or by the introductory paragraph which are both misleading in terms of the high quality of research and detail. Written in extensive detail the military history of the Might Midget LCS begins with the USN and USMC placing pressure upon the US government to design and develop landing craft for amphibious assaults. In a period of American disengagement with Europe and arms limitations, the author notes interestingly that in 1936 Britain and the USA were working cooperatively to design and develop vessels and doctrine for amphibious landings and assaults. As a consequence of this program and the adaptation of several civilian craft designs, the grandfathers of our present concept of LSD, LST and LCT were created. Charged with the landing of infantry these Landing Ships (LS) and Landing Craft (LC) were designed to traverse the oceans, remain seaworthy, and be able to be beached and to defend themselves against surface, sub surface and air threats. To incorporate these wartime demands the Landing Craft Ship (LCS) was conceived and developed achieving the popular nickname the *Mighty Midget*.

The author's in-depth research clearly reveals the extensive role and responsibility placed upon LCS crews and of the highly versatile design of the *Mighty Midget*. The *Mighty Midget* went on to have a distinguished service role in the Pacific Theatre and provided a variety of tasks such as mine sweeping, troop and vehicle landing, smoke coverage, rocket attack, radar picket, search and rescue and anti-Aircraft roles.

The service and resilience of this design saw LCS involved in Allied and USN service in Korea and Vietnam. The eventual retirement of this design was a milestone in itself, when in 1997 Thailand retired its last LCS from service.

The author, Rielly, is generous in detail and has no doubt extensively combed the US National archives and collective memories of those who served to produce *Mighty Midgets at War*. The illustrations span from the engraving dock to the scrap yard with many others showing the *Mighty Midgets* in action and the weapons deployed on the LCS as well as those used against them by subsequent enemies.

The Mighty Midgets at War The Saga of the LCS(L) Ships from Iwo Jima To Vietnam is a well researched, illustrated history of Naval Maritime design that made a significant contribution across three conflicts and countless skirmishes. It is a simple yet informative writing style and makes this book one worth reading.

Band of Brothers DVD box collection

Warner Bros Home Entertainment
Available in stores now
Reviewed by James Rickards

From Steven Spielberg and Tom Hanks, the creative forces behind *'Saving Private Ryan'*, comes the powerful ten-part television epic now available in a boxed set on DVD.

The most expensive mini-series ever made, *Band of Brothers* is the epic true story of elite US parachute unit Easy Company, 506th Regiment, 101st Airborne Division's engagement in World War II.

Based on the novel by Stephen Ambrose and taken from interviews with the surviving members of Easy Company, *Band of Brothers* is a ten-part portrayal of a unit's struggle to survive in war-torn Europe while sustaining over 150% casualties, the largest in US history.

Employing the same cinematic techniques as those used for Spielberg's *Saving Private Ryan*, such as hand-held cameras and drab colour tones of browns and greys, the series' documentary feel vividly captures the confusion and terror of young soldiers dropped behind enemy lines under the harshest of conditions.

Each episode begins with the real life survivors of Easy Company discussing their memories of the story about to be told. These brief minutes of emotional insight remind the audience that what is about to come is grounded in fact, with character names taken from their living counterparts.

While dramatic licence has obviously been taken in parts, it is somewhat humbling to hear the survivors talk of their simultaneous terror and excitement of dropping into Normandy unaware of what to expect, and then to see their story dramatically recreated over the next hour.

We are introduced to the men of Easy Company during their intensive airborne training in the United States and begin to see the bond that will carry them through the next three years of action. From the second episode Easy Company is thrown into action, taking a significant role in some of the major offensives of the end of WWII including the Normandy D-Day invasion, 'Operation Market Garden', the Battle of the Bulge and the seize of Hitler's Eagle's Nest at Berchtesgaden.

Visually stunning, each engagement is a harrowing experience, with the DVD format making excellent use of the dynamic camerawork and perfectly balanced surround sound. The invasion of Normandy, engagement at Ardennes forest near Bastogne, Belgium and the horrific Carentan encounter are particular standouts for their realism and deeply emotive sequences.

Led by a cast of relative no-names and character actors, *Band of Brothers* succeeds with an ever-changing ensemble committed to strong dialogue and historically accurate action. With almost 60 key roles throughout the ten-part series, there is not a weak link among the cast members, surprising considering at least half of the lead cast are English carrying off US accents.

Although driven by a plot filled with moments of tension and loss, *Band of Brothers* refuses to fall into the melodrama or sob story trap, instead relying upon smart writing and strong visuals to communicate the mix of terror, courage, sacrifice and humanity of the Second World War effort.

Supporting the five discs of the *Band of Brothers* series (two episodes per disc) is a stand-alone special features disc containing an 80-minute documentary profiling the surviving members of Easy Company. Titled *We Stand Alone Together: The Men of Easy Company*, the documentary is a deeply moving examination of the lives of the men of Easy Company, with the survivors talking of how they first learnt of the war, their training, first jump, and their memories good and bad of their numerous conflicts as dramatised in the *Band of Brothers* series.

Using rare archival footage to overlay the interviews, the documentary is an excellent epilogue to the overall ten episode series, showcasing both the talents of the men who survived and the credibility of the film makers who chose to try and tell their story as factually accurate as possible.

We Stand Alone Together is a riveting examination of the history of the airborne unit, detailing some of the most savage as well as quiet moments experienced on the front. The documentary should be considered a must for anyone who enjoyed the initial ten episode series or wants to learn of what was then a new and untested type of combat unit. This documentary is in essence the motivation and heart and soul of the *Band of Brothers* epic.

Other special features available on the disc include a 30-minute behind the scenes making of the documentary on the series and a video diary from actor Ron Livingston showcasing the basic training boot camp the actors were forced to endure to ensure they could realistically portray their real life counterparts.

Other special features include a TV special on the series premier at Normandy and an expanded field guide 'Who's who' to the men of Easy Company, identifying each character in the series and giving an outline of their history and involvement in the *Band of Brothers* story.

The quality of the DVD transfer itself is exceptional. Both visual and audio quality is astounding, with each layer of DTS sound split evenly throughout the surround speakers, with a nice balance for dialogue ensuring everything is crystal clear and easy to hear even during the series' quietest moments.

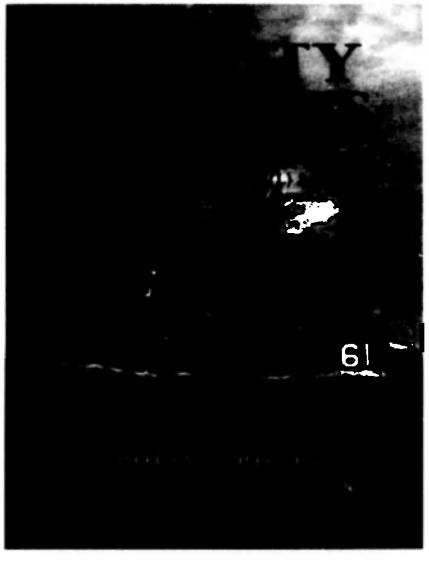
Visually, the image is incredibly clean with little bleed, fading, shadows or distortion, even during the night sections where most films struggle with the DVD format.

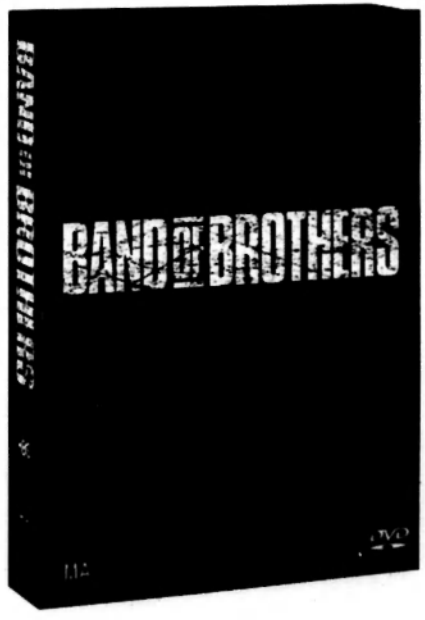
The series' documentary film technique works exceptionally well on the small screen, with the DVD minimising any sense of grain experienced during the recent television broadcast, ensuring a crisp edge to the widescreen format.

Available in one of the more dynamic box set packages in recent years, the overall look and ease of access to the set is commendable and looks good on the shelf.

Overall, the *Band of Brothers* DVD box collection is a resounding success and should be considered a must have for anyone who enjoyed the series or is an avid fan of excellent storytelling and war drama.

Without question, *Band of Brothers* is one of the most successful and resoundingly emotive war stories captured on screen in the past decade.





STATEMENT of POLICY

Navy League of Australia

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 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 a close relationship with the nearer ASEAN countries, PNG and the Island States of the South Pacific.
- Advocates a defence capability which is knowledge-based with a prime consideration given to intelligence, surveillance and reconnaissance.
- Advocates the acquisition of the most modern armaments and sensors to ensure that the ADF maintains some technological advantages over forces in our general area.
- Believes there must be a significant deterrent element in the Australian Defence Force (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 highly mobile Army, capable of island and jungle warfare as well as the defence of Northern Australia.
- Supports the development of amphibious forces to ensure the security of our offshore territories and to enable assistance to be provided by sea as well as by air to friendly island states in our area.
- Endorses the transfer of responsibility for the co-ordination of Coastal Surveillance to the defence force and the development of the capability for patrol and surveillance 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 ensure the carriage of essential cargoes in war.
- Advocates the development of a defence industry supported by strong research and design organisations capable of constructing all needed types of warships and support vessels and of providing systems and sensor integration with through-life support.

As to the RAN, the League:

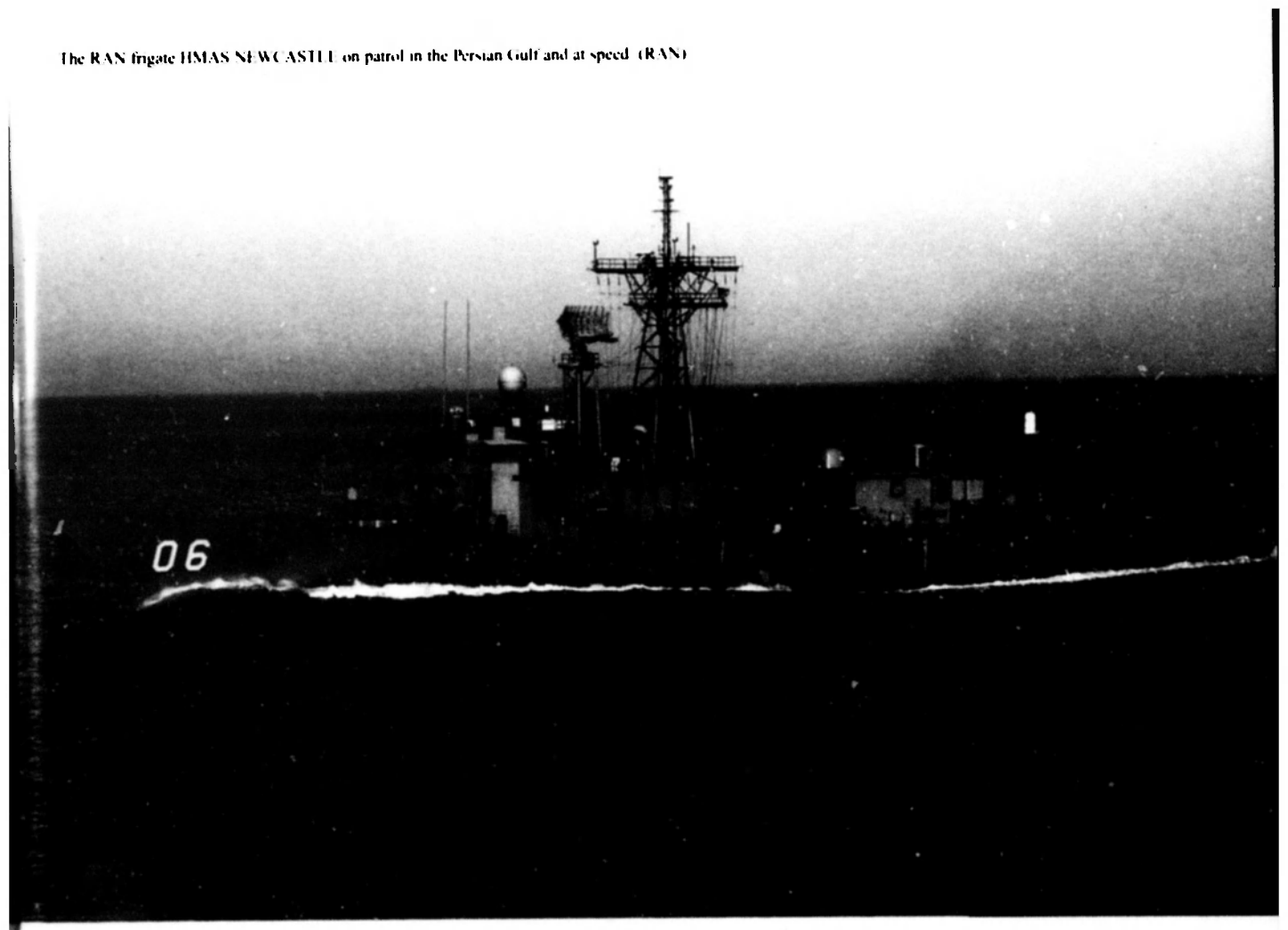
- Supports the concept of a Navy capable of effective action off both East and West coasts simultaneously and advocates a gradual build up of the Fleet to ensure that, in conjunction with the RAAF, this can be achieved against any force which could be deployed in our general area.
- Is concerned that the offensive and defensive capability of the RAN has decreased markedly in recent decades and that with the paying-off of the DDGs, the Fleet will lack air defence and have a reduced capability for support of ground forces.
- Advocates the very early acquisition of the new destroyers as foreshadowed in the Defence White Paper 2.
- Advocates the acquisition of long-range precision weapons to increase the present limited power projection, support and deterrent capability of the RAN.
- Advocates the acquisition of unmanned surveillance aircraft such as the GLOBAL HAWK primarily for offshore surveillance.
- Advocates the acquisition of sufficient Australian-built afloat support ships to support two naval task forces with such ships having design flexibility and commonality of build.
- Advocates the acquisition at an early date of integrated air power in the fleet to ensure that ADF deployments can be fully defended and supported from the sea.
- Advocates that all Australian warships should be equipped with some form of defence against missiles.
- Advocates that in any future submarine construction program all forms of propulsion be examined with a view to selecting the most advantageous operationally.
- Advocates the acquisition of an additional 2 or 3 updated Collins class submarines.
- Supports the maintenance and continuing development of the mine-countermeasures force and a modern hydrographic/oceanographic capability.
- Supports the maintenance of an enlarged, flexible patrol boat fleet capable of operating in severe sea states.
- 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 in reserve, or taken up for service, 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 current economic problems and 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 RAN frigate HMAS NEWCASTLE on patrol in the Persian Gulf and at speed. (RAN)



The RN Type 42 destroyer HMS NOTTINGHAM being raised on the ship lift vessel SWAN for transport back to the UK after the destroyer's grounding on 'Wolf Rock' off Lord Howe island. A damaged section of the bow can be seen just clear of the water. The ship suffered even more damage down the unseen starboard side which very nearly sank her. (Chris Sattler)

Proving they are not a spent and rusting force the Russian Navy's Pacific Fleet recently sent the 11,000 tonne Slava class cruiser VARYAG to the Japanese Naval Review in Tokyo Bay. The cruiser is a very powerful ship armed with 16 SS-N-12 'Sandbox' supersonic anti-ship cruise missiles. These missiles have a range of 550kms and a 2,000lb warhead with the ability to be targeted by ship, helicopter or even satellite. She also carriers 64 100km range SA-N-6 'Grumble' anti-aircraft missiles and 40 shorter range SA-N-4 'Gecko' for close in missile defence. Apart from more guns, heavyweight torpedos and anti-submarine mortars she has a top speed of 32kts and a range of 7,500nm at 15kts. It is understood that China is interested in buying a partially complete Slava class cruiser currently still under construction in the Black Sea. (Brian Morrison, Warships & Marine Corps Museum, Franklin, Tas)

The Navy League of Australia

APPLICATION FOR MEMBERSHIP

HISTORICAL

The Navy League was established in Australia in 1901, initially in the form of small branches of the United Kingdom Navy League (established in 1897) and since 1950 as an autonomous national body headed by a Federal Council consisting of a Federal President and representatives of the six States, the Australian Capital Territory and the Northern Territory.

The Navy League of Australia is now one of a number of independent Navy Leagues formed in countries of the free world to influence public thinking on maritime matters and create interest in the sea.

The Navy League of Australia cordially invites you to join us in what we believe to be an important national task.

MEMBERSHIP

Any person with an interest in maritime affairs, or who wishes to acquire an interest in, or knowledge of, maritime affairs and who wishes to support the objectives of the League, is invited to join.

OBJECTIVES

The principal objective of the Navy League of Australia is "The maintenance of the maritime well-being of the Nation" by:

- Keeping before the Australian people the fact that we are a maritime nation and that a strong Navy and a sound maritime industry are indispensable elements of our national well-being and vital to the freedom of Australia.
- Promoting defence self reliance by actively supporting manufacturing, shipping and transport industries.
- Promoting, sponsoring and encouraging the interest of Australian youth in the sea and sea-services, and supporting practical sea-training measures.
- Co-operating with other Navy Leagues and sponsoring the exchange of cadets for training purposes.

ACTIVITIES

The Navy League of Australia works towards its objectives in a number of ways:

- By including in its membership leading representatives of the many elements which form the maritime community.
- Through soundly-based contributions by members to journals and newspapers, and other media comment.
- By supporting the Australian Navy Cadets, and assisting in the provision of training facilities.
- By encouraging and supporting visits by recognised world figures such as former United States Chiefs of Naval Operations and Britain's First Sea Lords.
- By publishing *The Navy*, a quarterly journal reporting on local and overseas maritime happenings, past, present and projected.
- By maintaining contact with serving naval personnel through activities arranged during visits to Australian ports of ships of the Royal Australian and Allied Navies.
- By organising symposia, ship visits and various other functions of maritime interest throughout the year.

Member participation is encouraged in all these activities.

JOINING THE LEAGUE

To become a Member of The League, simply complete the Application Form below, and post it, together with your first annual subscription of $24.20 (which includes the four quarterly editions of *The Navy*), to the Hon Secretary of the Division of the Navy League in the State in which you reside, the address of which are as follows:

NEW SOUTH WALES DIVISION: GPO Box 1719, Sydney, NSW 2001.
VICTORIAN DIVISION: PO Box 1303, Box Hill Delivery Centre, Vic 3128.
QUEENSLAND DIVISION: PO Box 13402, George Street Post Shop, Brisbane, Qld 4003.
SOUTH AUSTRALIAN DIVISION: GPO Box 1528, Adelaide, SA 5001.
TASMANIAN DIVISION: C/- 42 Amy Road, Launceston, Tas 7250.
WEST AUSTRALIAN DIVISION: C/- 23 Lawlor Road, Attadale, WA 6156.

If you live in the Australian Capital Territory or the Northern Territory, please post the form to the Hon Secretary of the New South Wales or South Australian Division respectively.

Subscriptions are due on 1 July in each year, and your membership will be current to 30 June immediately following the date on which you join the League, except that if your first subscription is received during the period 1 April to 30 June in any year, your initial membership will be extended to 30 June in the following year.

THE NAVY LEAGUE OF AUSTRALIA

Application for Membership

To: The Hon. Secretary
The Navy League of Australia

.....Division

Sir or Madam,

I wish to join the Navy League of Australia, the objectives of which I support, and I enclose a remittance for $24.20 being my first annual subscription to 30 June next.

Name:
(Mr)
(Mrs).....
(Ms) PLEASE PRINT CLEARLY
(Rank)

Street.....Suburb.....

State.....Postcode.....

Signature.....Date.....

Subscriptions are due on 1 July in each year and your membership will be current to 30 June immediately following the date on which you join the League, except that if your first subscription is received during the period 1 April to 30 June in any year, your initial membership will be extended to 30 June in the following year.

JOIN THE AUSTRALIAN NAVY CADETS

If you are between the ages of 13 and 18 years:

The Australian Navy Cadets provide for the spiritual, social and educational welfare of boys and girls and help to develop them in character, a sense of patriotism, self-reliance, citizenship and discipline.

Uniforms are supplied free of charge.

Cadets are required to produce a certificate from their doctor to confirm they are capable of carrying out the normal duties and activities of the Cadet Units. If injured while on duty, Cadets are considered for payment of compensation.

Parades are normally held during a weekend day or on Friday evening.

The interesting syllabus of training covers a wide sphere and includes seamanship, handling of boats under sail and power, navigation, physical training, rifle shooting, signalling, splicing of ropes, general sporting activities and other varied subjects.

Instructional camps are arranged for Cadets and they are also given opportunities, whenever possible, to undertake training at sea in ships of the Royal Australian Navy.

Cadets, if considering a sea career, are given every assistance to join the Royal Australian Navy or Mercantile Marine, but there is no compulsion to join these Services.

For further information, please contact the Senior Officer in your State, using the addresses provided below:

NEW SOUTH WALES: Cadet Liaison Officer, HMAS Penguin, Middle Head Road, Mosman NSW 2088. Telephone: (02) 9960 0560.

QUEENSLAND: Senior Officer ANC, Naval Support Office, Bulimba Barracks, PO Box 549 Bulimba QLD 4171. Telephone: (07) 3215 3512

WESTERN AUSTRALIA: Cadet Liaison Officer, HMAS Stirling, PO Box 228, Rockingham WA 6168. Telephone: (08) 9550 0468.

SOUTH AUSTRALIA: Cadet Liaison Officer, Naval Support Office, Keswick Barracks, Anzac Highway, Keswick SA 5035. Telephone (08) 8305 6708.

VICTORIA: HMAS Cerberus, Westernport VIC 3920. Telephone: (03) 5950 7863.

TASMANIA: Cadet Liaison Officer, Naval Support Office, Anglesea Barracks, Locked Bag 3, Hobart TAS 7001. Telephone (03) 6237 7240.

AUSTRALIAN CAPITAL TERRITORY: Commanding Officer, TS Canberra, HMAS Harman, Canberra ACT 2600. Telephone: (02) 6260 2762.

NORTHERN TERRITORY: Cadet Liaison Officer, HMAS Coonawarra, PMB 11, Winnellie NT 0821. Telephone: (08) 8980 4446.

THE NAVY

All enquiries regarding the Navy Magazine, subscriptions and editorial matters should be sent to:

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NAVY LEAGUE OF AUSTRALIA
GPO Box 1719, Sydney NSW 2001

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VOLUME 65 NO. 2

$5.45 (including GST)

THE NAVY

The Magazine of the Navy L[illegible] of[illegible]tralia

Australia's Maritime Doctrine – Part 8

Pride of [illegible] Sultan

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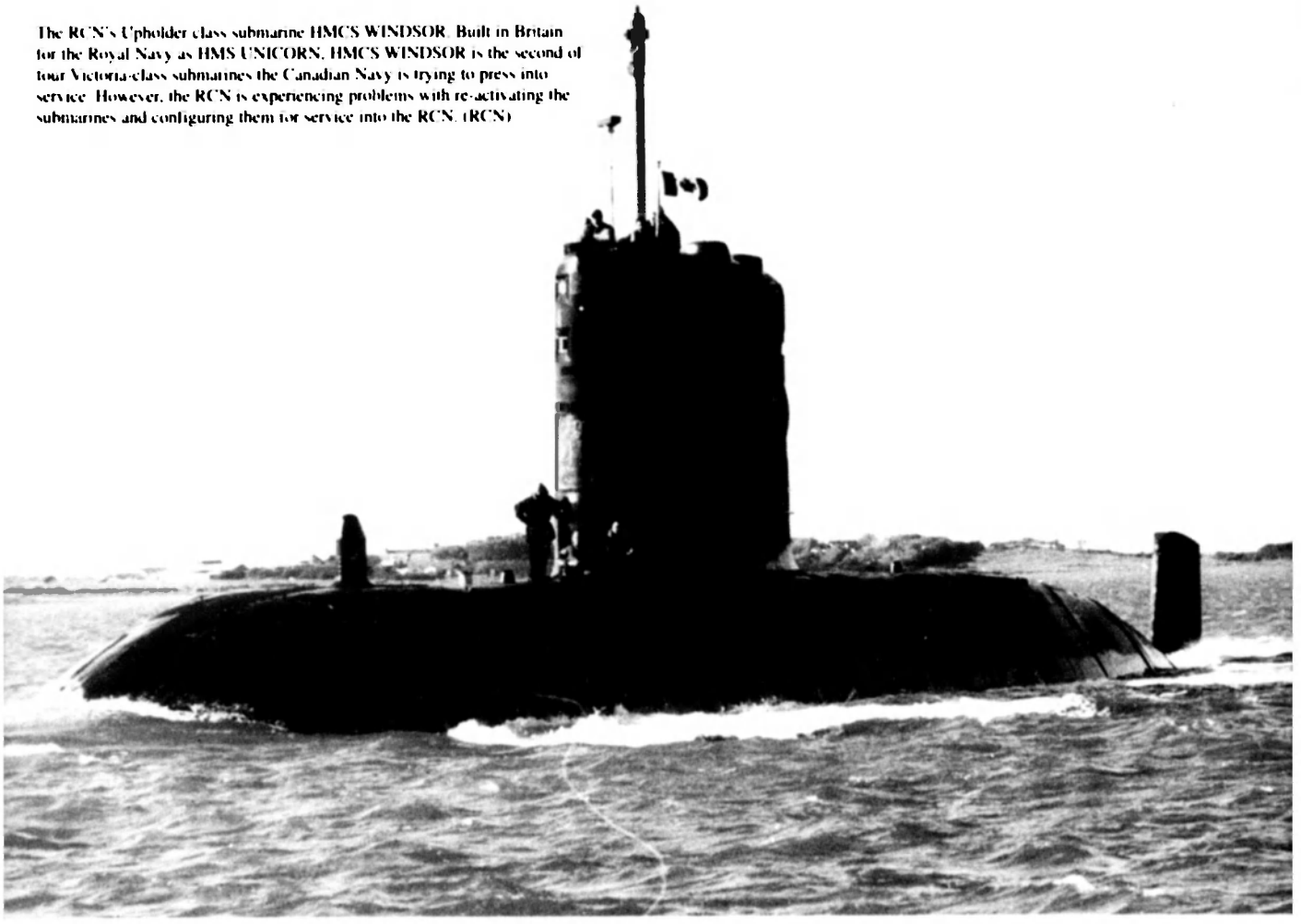
Australia's Leading Naval Magazine Since 1938

The RCN's Upholder class submarine HMCS WINDSOR. Built in Britain for the Royal Navy as HMS UNICORN, HMCS WINDSOR is the second of four Victoria-class submarines the Canadian Navy is trying to press into service. However, the RCN is experiencing problems with re-activating the submarines and configuring them for service into the RCN. (RCN)



HMAS ANZAC in company with the RN Type 42 Destroyer HMS CARDIFF. Both ships are currently operating in the Persian Gulf enforcing United Nations sanctions on Iraq. (RAN)

THE NAVY

Volume 65 No. 2

Contents

Front cover: HMAS DARWIN makes her way through the Indian Ocean. It was revealed in the local press that the RAN's FFG's fire control system suffers at the hands of poor weather to the point of almost making the ship defenceless to air attack. This coupled with the unacceptable delay in the FFG upgrade program should be ringing alarm bells. (RAN).

The Navy
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Deadline for next edition 5 May, 2003

The Navy League of Australia

FROM THE CROW'S NEST

CRISIS IN THE MIDDLE EAST

When this edition of *THE NAVY* is published it is possible, indeed likely that Australia will be engaged in hostilities in the Middle East. As this column is prepared several weeks beforehand, the view ahead is obscure to say the least and it is possible to comment only on the scene at the time.

It is fair to say all wars are different; the cause, the way the war is conducted and the weapons used, the extent of hostilities, all may vary; so far as Australia is concerned however, a common factor until the war in Vietnam has been the overwhelming support of the populace for the armed forces wherever they have been engaged – more often than not a long way from Australia.

Vietnam marked a turning point that seems likely to continue. Supported at first by a majority of Australians, attitudes began to change as the purpose of engagement in Vietnam was questioned and following the introduction of national service, the despatch of young National Servicemen to the war zone; protesters took to the streets to vent displeasure. A similar change of attitude took place in the United States and in the event both countries withdrew their armed forces.

There can be little doubt that a number of factors influence public thinking about war, not only in Australia but in other democracies. Awareness of the deadly weapons increasingly available, the absence of immunity for civilians and consequential casualties and suffering, increased educational opportunities, affluence, travel and exchanges between nations and not least, the influence of television and its depiction of war – factors tending to make war much less acceptable in democracies now than in the past. Regrettably, not all countries are democracies.

Given changes in attitude and without attempting to guess what decisions will be made concerning Iraq – other than to say it would seem essential for the United Nations Organisation to emerge stronger and not weaker whatever the decisions – the fact remains that Australian sailors, soldiers and airmen are in a potentially dangerous area and they must have the support of the Australian people now and when they return. They deserve no less.

Geoff Evans

FROM OUR READERS

Dear Editor,

As an avid reader of *The Navy* for many years, I would like to compliment you on publishing the article by Paul Johnston titled – Project SEA 1411 The Kaman Super Seasprite SH-2G(A) in the Jan – Mar 03 edition. By drawing a comparison with the New Zealand purchase, we are able to see how unrealistic and wasteful this project has become since inception in 1997. Surely there was provision for updating or cancelling the Project due to changed circumstances (like termination of the OPV project)?

Also, of great concern to me, is the fact that the Project SEA 1411 debacle has not attracted greater national media coverage. After all, a $1 billion loss is a national disgrace. Following as it does on the heels of the massive cost blowouts relating to combat systems for the Collins class submarines, one has to ask if the responsible staff/consultants in the Department of Defence and the Australian Defence Material Organisation, have been brought to account for their failures? It is my view that there should be a public inquiry so that such incidents will never re-occur. In the performance stakes, our planners and policy makers have put Australia a long way behind the Singaporeans (and in this case, even the Kiwis). WAKE-UP AUSTRALIA!!

With the above thoughts in mind, I was wondering if Paul Johnston could do a follow up article in 12 months time detailing what progress (if any), and an update on the Kiwi success, including final cost?

Peter Liddle
Darwin

Dear Editor,

It was good to see Mr. Johnson's letter titled "If the US can do it, why can't we". More and more, Australia's cinemas are being filled with movies about America's military, and it is interesting to note that some of the things they have claimed to do were actually done by the British, or French, etc.

Mr. Johnson correctly points out U-571 was actually sunk by 461 Sdn, RAAF. To further Mr. Johnson's argument, it is also interesting to note that the Enigma machine was captured by a Royal Navy taskgroup, not the USN.

Thanks for a great magazine.

Robert Tugen
Via Email

Dear Editor,

I totally agree with Ian Johnson from WA in Volume 65 No 1.

We do need the cooperation of the Australian Armed Forces otherwise a lot of the remarkable stories of our military will remain untold while Hollywood laughs all the way to the bank, and into the history books.

Forget about the Yanks winning the war, don't remember the Alamo. The true and heroic accounts of the RAN, RAAF and Australian Army need to be told!

Brian Vaughan
Qld

AUSTRALIAN NAVY PHOTOGRAPHERS

Dear Editor,

A number of Ex-Photographers are attempting to compile a register of those who were involved with the Photographic Branch of the Royal Australian Navy. I believe the Branch, which was part of the Fleet Air Arm, was formed in the late 1940s and although small it did have, at times, up to thirty or more Officers, Sailors and Civilians attached to it.

We have a list from the 1992 Reunion held at HMAS. ALBATROSS, which has not been amended or added too. Since then more have passed through the Branch and many ex-members have moved from their original address.

We are seeking the assistance of readers to update this register. I would appreciate being contacted at the addresses below, by anyone who was a member or associated with the Branch, or who know anybody who were.

Once a comprehensive list has been compiled, we have a view to look at the possibility of arranging a Reunion in late 2004.

Thanks
Dean Gedling
sicambre@optusnet.com.au
79 Campbellfield Ave
Bradbury NSW 2560

Dear Editor,

I have just read "Australia's Maritime Doctrine Part 7" in the January – March edition of *THE NAVY* and found it necessary to check the date of publication. Whilst I would not have been surprised to read such an article in the mid 80s, I find it incredible to see such outdated views being peddled in the 21st century. I realise that to quote snippets from an article can run the risk of taking matters out of context, but I shall take that risk and quote just three sections of the article to make my case.

The photograph on page 13 carries the caption "As the RAN has no aircraft carriers it relies on the RAAF for fighter protection."

On page 16 we find that "Combat Air Patrols (CAP) will be provided by the RAAF's F/A-18 fighters or under certain conditions, by the F-111."

On the same page we accept that (talking of surface forces) "practically every conceivable operation must be conducted at considerable distances from shore bases"

I have quoted in previous articles, research undertaken in the early 80s, which indicated that to provide a CAP of two aircraft over the fleet at distance in excess of say 1500 miles from the coastline (and considerably further from an air base), in excess of 50% of our available F/A-18 force would be required to be committed. It has been my understanding that it has long been accepted that the likelihood of making such a commitment, when those aircraft may well be required elsewhere, is remote. When the study was carried out, we possessed 75 of these aircraft; we would now require to commit significantly in excess of 50% of the available force. As for the F-111's, the numbers speak for themselves. Senior members of Air Force confirmed these concerns 20 years ago.

If and when the government finds the funds for the Air Warfare Destroyers, or equips the RAAF with the Joint Strike Fighter, with a sufficient number having a STOVL capability, then we can look forward to Navy being able to operate at "considerable distances from shore bases", without putting the ships and those who sail in them, at unacceptable risk.

In the meantime let us accept the fact that the RAAF, with or without air to air refuelling will not be able to carry out the task

Regards
John Bird
Federal Vice President NLA

The 2003 'King-Hall' Navy History Conference

'The Navy and the Nation'

The third 'King-Hall' Navy History Conference will be held in Canberra on 24-25 July 2003. The conference will run from Thursday 24 July to Friday 25 July at the Telstra Theatre, Australian War Memorial in Canberra.

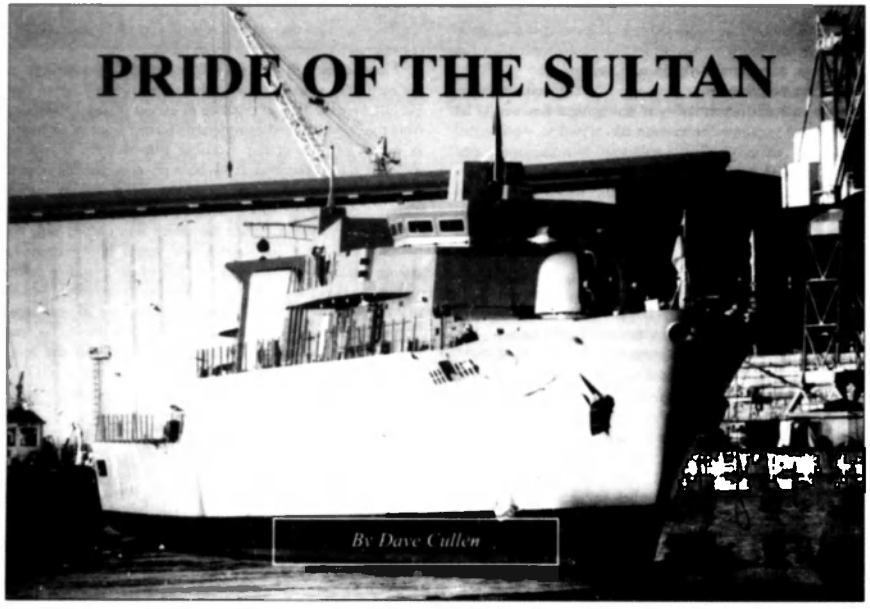
The conference is being jointly sponsored by the Royal Australian Navy's Sea Power Centre, the School of History, University of New South Wales, Australian Defence Force, and the Australian Naval Institute.

The broad theme of the conference is 'The Navy and the Nation'. It's aim is to bring about a wider understanding of the contribution the Navy has made to national development up to the present and the potential it has to do so in the future.

Some International keynote speakers include Professor George Baer from the US Naval War College, Professor Geoffrey Till from the UK Joint Services Staff College and Commander David Hobbs, MBE.RN (Rtd) Curator and Deputy Director of the Fleet Air Arm museum at RNAS Yeovilton, UK.

Contact officer is Mr Dave Griffin on telephone (02) 62662654, Fax (02) 62662782, or on E mail address david.griffin.@cbr.defence.gov.au

PRIDE OF THE SULTAN



NAKHODA RAGAM being towed to her fitting out point at Scotstoun just after her launch (Dave Cullen)

Dave Cullen of the European WARSHIPS IFR magazine(*) profiles three new corvettes built on the Clyde for The Royal Brunei Navy.

BAE SYSTEMS Marine is completing contractor's sea trials of NAKHODA RAGAM, the first of a new class of three 95m Offshore Patrol Vessels (OPVs) being built for the Royal Brunei Navy. She is due to sail from Scotland to the Far East by the end of the year.

The ships names are prefixed KDB (as in Kapal Diraja Brunei, which translates as Ship of the Rajah of Brunei) BENDAHARE SAKAM, the second ship of the class, was launched in June 2001. She has completed diesel generator trials in dry dock at BAE SYSTEMS' Scotstoun yard and is under-going contractor's sea trials with delivery in June 2003.

The third and final vessel, named KDB JERAMBAK, was launched in June 2002 and is scheduled to be delivered in December 2003.

A variant of the generic F2000 series corvette design, Royal Brunei Technical Services Sdn Bhd is procuring the ships under a UK/Brunei government-to-government contract signed in January 1998. The design is a reduced version of the Lekiu Class built by the same yard for Malaysia which cost around US $350 million each. With a displacement of approximately 1,500 tons standard and 2,000 tons full load, the new Brunei OPVs have a maximum speed of 30 knots and a range of 5,000 nautical miles at 12 knots.

Endurance will be 14 days and they will have a crew of 62 (including eight officers) and 24 berths for Flag Staff and

NAKHODA RAGAM bow on and at speed during her recent sea trials. (BAE Systems)

scientists. They are powered by four Paxman diesels turning two controlled-pitch propellers, and their hulls are fitted with fin stabilisers. One generator is able to meet normal loads. The new ships feature a comprehensive combat system based around the hub of an Alenia Marconi Systems (AMS) NAUTIS II command and fire-control system.

AMS is also supplying AWS-9(3D) E/F-band surveillance and target indication radar and two 1802SW radar trackers.

The vessels are armed with:

- Eight MBDA MM40 Block 2 Exocet Surface-to-Surface Missiles (SSMs),
- An MBDA Vertical Launch Sea Wolf installation containing 16 Surface-to-Air-Missiles (SAMs),
- A single Otobreda 76/62 Super Rapid gun,
- Two MSI-Defence DS 30B REMSIG guns, and,
- A Close-In Weapons System (CIWS).

A flight-deck aft provides for the operation of a Seahawk-size helicopter, but there is no hangar facility. Other systems include a Radamec System 2500 electro-optical director and TMS 4130C hull-mounted sonar supplied by Thales Underwater Systems (the sonar incorporates a torpedo warning capability). Thales Sensors is supplying its Cutlass 242 ESM and Scorpion jammer, and Wallop Defence Systems is providing the Super Barricade decoy system.

The Royal Brunei Navy

The three new OPVs will be based at Brunei's main naval base in Muara, in the South China Sea and represent a significant enhancement for a small fleet.

The Royal Brunei Navy has a total personnel strength of 800 staff (including 65 officers) and a Special Combat Squadron of six officers and 114 men for river duties.

The main threat has traditionally come from neighbouring Indonesia, although the Chinese are likely to pose a future concern and Islamic terror groups cannot be discounted as a security headache for the oil-rich sultanate. Britain has strong defence links with Brunei, with a Gurkha infantry battalion and an Army Air Corps helicopter flight permanently stationed there. UK Royal Marines regularly train at the UK's jungle warfare school in Brunei. The advent of the new corvettes will no doubt lead to regular exercises not only with regional allies, such as Singapore and Malaysia, but also with the RAN, Royal Navy and US Navy. Singapore maintains 500 troops and a helicopter detachment in Brunei.

By 2003 the Royal Brunei Navy will consist of:

3 x F2000 corvettes,

3 x Waspada guided-missile Patrol Craft, armed with Exocet Surface-to-Surface Missiles,

3 x Perwira Class inshore Patrol Boats,

2 x Amphibious Warfare Craft,

2 x Landing Craft,

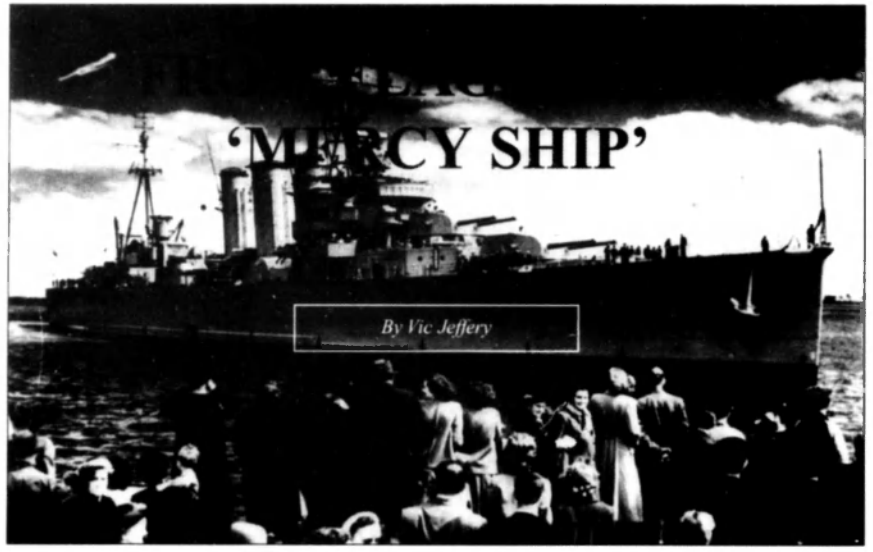
17 x Small Armed River Craft (for the Special Combat Squadron),

1 x Support Launch, and,

23 x Marine Police Patrol Boats.

(*) Reprinted with the permission of the Editor.

A Starboard view of NAKHODA RAGAM on sea trials. These corvettes are well armed but questions are being asked in the naval intelligence world if the Brunei Navy is up to the task of fully exploiting the capabilities of the new ships. (BAE Systems)



The Battle cruiser HMAS AUSTRALIA (II) departing from the wharf

Vic Jeffery looks back at a rather interesting incident in the RAN's history as it was the start of our Navy's interest in the Southern Ocean, which continues today in one form or another.

The last few years have seen the Royal Australian Navy venture south into the bleak and storm swept Southern Ocean on rescue missions and patrolling for illegal fishermen.

It commenced in January, 1996 when the guided-missile frigate HMAS DARWIN, commanded by CMDR Davyd Thomas, was crash-sailed from HMAS STIRLING in Western Australia to rescue French yachtswoman Isabelle Autisier from her disabled yacht.

Virtually 12 months to the day, sister-ship HMAS ADELAIDE, commanded by CAPT Raydon Gates, also crash-sailed from HMAS STIRLING to carry one of the greatest rescues in the annals of maritime history when it successfully rescued two solo yachtsman, Frenchman Thierry Dubois and then Englishman, Tony Bullimore.

Since then the frigate HMAS ANZAC and the guided-missile frigates HMAS NEWCASTLE and HMAS CANBERRA have ventured into the treacherous icy Southern Ocean to patrol, and with some success, apprehend illegal fishermen seeking the highly prized Patagonian Toothfish.

Venturing into these horrendous conditions brings back memories of another era when the veteran heavy cruiser HMAS AUSTRALIA made a mercy dash south in vastly different circumstances in 1950.

Five years after World War Two and in her twilight years, the veteran former RAN flagship HMAS AUSTRALIA (II) had one final battle to fight – against the most powerful adversary of them all – the forces of nature.

HMAS AUSTRALIA had seen more action against the Germans, Japanese and Vichy French than any other RAN ship in World War II. She had sustained numerous kamikaze suicide aircraft strikes and gunfire hits as well as surviving numerous aerial attacks.

The new aircraft carrier HMAS SYDNEY (III) had not long before assumed the role of flagship with AUSTRALIA, now mainly relegated to training duties, wearing the flag on the odd occasion when SYDNEY was away on deployments.

On 26 July, 1950, the 10,000 ton HMAS AUSTRALIA was anchored in Jervis Bay on the southern New South Wales coast, having recently sailed from Sydney on the completion of a refit and long leave period.

The heavy cruiser was a hive of activity as a result of the refit and with an unparalleled long period of rain, the general maintenance and appearance of the ship was in an unsatisfactory shape. Every available man was therefore being employed aloft, on the upper deck and over the side in maintenance work and in painting. The ship was at eight hours' notice for steam.

HMAS AUSTRALIA's commanding officer, CAPT G.C. Oldham, was advised at 1445 local time that the ship may be required for a mercy mission to Heard Island in the Southern Ocean to medevac a scientist, Dr Udovikoff, who was suffering from appendicitis.

Immediately all onboard maintenance work and painting were suspended, steam was ordered and preparations were made to make the ship ready for sea.

Shortly afterwards Naval Board signals were received, detailing the mission and requesting CAPT Oldham to sail his ship for Melbourne. AUSTRALIA weighed anchor at 1810 and proceeded at 22 knots for Port Melbourne, berthing at the Outer Princes Pier at 1730 the following day.

During AUSTRALIA's passage to Melbourne, fresh provisions, arctic and winter clothing and special stores had been hastily ordered and these were taken onboard immediately on arrival.

With the object of clearing the upper deck and reducing top weight, the barge, two motor boats, a whaler, four skiffs, paravanes and various miscellaneous items were deposited ashore whilst the ship was undergoing refuelling.

Already considerable media and public interest had been generated with the ship being besieged by the media as it made hurried preparations, dubbing HMAS AUSTRALIA the "Mercy Ship". Ten men joined the cruiser before she sailed. They were two medical officers, two biologists, a meteorologist and five media representatives consisting of two journalists, two photographers and one Movietone News cameraman.

The news of the ship's intended deployment with thoughts of adventure swept through the ship and led too much onboard excitement, further fuelled by the large crowd, which farewelled the ship as it sailed at 2230 on the night of July 27 to commence its mercy dash.

As AUSTRALIA headed south west, precautions were taken in the provision and training of "lookouts" composed of officers, senior sailors and leading seamen to keep a watchful eye for "growlers" (sections of disintegrating icebergs). It was agreed "that trainees could barely be relied upon to show the fortitude, alertness and concentration necessary for this unpleasant task".

The problem of the ship icing up was of major concern and addressed with teams being organised with suitable chipping tools and shovels to reduce top weight. In addition some sponsons high on the superstructure were "decked in" so that snow would not collect in them and provision was made for the supply of hot sea water on deck to thaw out ice which may form around the boat's davits and slips, etc.

Other than providing additional radiators and ensuing that the water-tightness of all scuttles and other openings was efficient, there was little that could be done in the living quarters. Mopping up water as a result of below decks condensation ("sweating") became a continuous task in some messdecks. Sea boats were turned in to safeguard against heavy seas and gable roofs had been fitted to the motor cutters

The plan was to head to approximate position 40 degrees 00' S. 84 degrees 20' E. at 16 knots and then direct to Heard Island at 12 knots with this considered the best option for fuel margins.

Conditions were not as trying as had been expected as AUSTRALIA encountered a series of "fronts" in a low pressure system with rising steep, short seas, reaching a maximum height of 8.5 metres necessitating reductions in speed, ultimately down to eight knots. Winds of Force 9 were the normal maximum, but squalls of Force 11 were encountered.

On 1 August speed was slowly increased in steps until the following morning the ship was once again steaming at 16 knots on a westerly course. The ship had been in contact with Heard Islands since 31 July receiving weather reports from that station, Marion Island and Amsterdam. The Melbourne Weather Bureau provided daily Antarctic weather reports to HMAS AUSTRALIA.

On 2 August an intense cyclone passed Marion Island and it was hoped that a high-pressure system would follow. With the cyclone estimated to pass Heard Island on 5 August it was estimated that the following weather would ensure that about 7 August would be the best time to lower a boat at Heard Island. Violent weather was expected with Marion Island reporting 11 wind gusts of over 160 kph.

A major problem emerged aboard AUSTRALIA on 4 August when it became impractical to distil anything other than a token amount of feed water, even this proving unsatisfactory. The inboard biologist addressed the problem as an increased prevalence of plankton in the sea, usual in that area during August and September.

The grim prospect of the mercy mission having to be aborted loomed with only three day's feed water held in reserve. Fortunately the ship ran out of this unfavourable belt of seawater in the nick of time and all efforts were then concentrated on building up a reserve feed. The use of ship's water was restricted to essential domestic purposes including drinking and cleaning teeth. No one was allowed to wash.

Cold westerly gale force winds were experienced with bright periods being interspersed with occasional showers of soft hail being the general characteristics of the weather.

Fuel reserves were becoming a concern and were continuously studied as the days progressed. The urgency of the mercy dash precluded calling at Fremantle to refuel and the RAN did not possess a replenishment ship at that time.

Weather concerns and fuel conservation with increases in speed restricted became a major frustration as the ship was confined to a maximum of 13 knots.

Finally Heard Island was reached early on the morning of 7 August with the weather conditions preventing a landing at Atlas Cove that day.

Almost 24 hours later at 0630 on the following day, with the true wind blowing WSW 34 knots, a motor cutter was prepared for turning out and lowering. By 0700 the wind was SE by West at 22 knots with conditions at Atlas Cove appearing satisfactory from seaward despite the visible approach of a cloudbank from which steady snow was falling.

The cutter was slipped at 0735 and the wind decreased further and close in off the cove is was negligible with snow falling. This continued until when the boat returned 0905 during which time two medical officers and some stores had been landed and Dr Udovikoff medevaced.

The heavy cruiser HMAS AUSTRALIA (II) leaving Garden Island in Sydney. Her mercy dash to the Southern Ocean had to be done mindful of the fact that the RAN had no replenishment at sea vessels to help with the rescue operation. (RAN Historical Section)

History shows this proved to be the only opportunity in days where the weather abated long enough to allow the boat transfer.

Despite being weakened from his prolonged ordeal, Dr Udovikoff was able to walk to HMAS AUSTRALIA's sick bay with the assistance of two medical officers.

Mission accomplished, HMAS AUSTRALIA, nursing her fuel reserves, rode out several storms as the ship accomplished moderate speeds on the long voyage north to Fremantle where Dr Udovikoff was safely landed.

It is interesting to compare AUSTRALIA's marathon trip south in those early post-war days when the RAN did not possess a replenishment ship and the availability of helicopters.

In his report CAPT Oldham spoke of a ship the length of HMAS AUSTRALIA, 630 feet (192.02 metres), being "probably too long to weather Antarctic Seas to the best advantage".

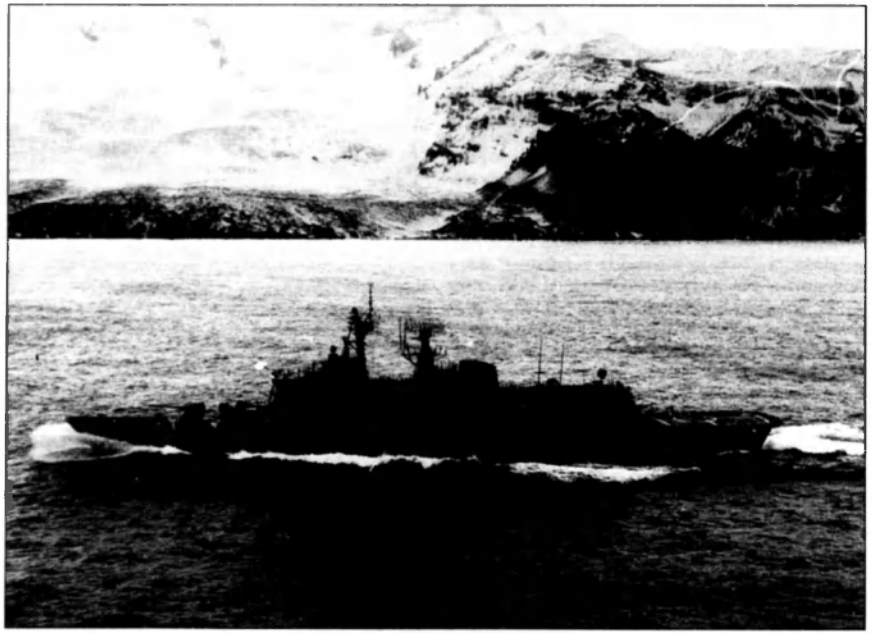
CAPT Oldham's other main concerns were fuel reserves and icing on the ship's superstructure and upper deck, referring to ice forming on the director tower and the top three metres of the non-steaming funnel as well as on the bridge structure, turret faces and guard-rails.

HMAS AUSTRALIA resumed her training role with her last major activity being as part of the Royal Escort for the visit of Queen Elizabeth and Prince Philip in 1954. Fittingly she briefly wore the flag of Rear Admiral R. Dowling for one last time as flagship of the Royal Australian Navy.

HMAS AUSTRALIA (II) at anchor. Whilst in the Southern Ocean the crew had to constantly monitor the amount of ice that built up on the ship and chip it away. (RAN Historical Section)

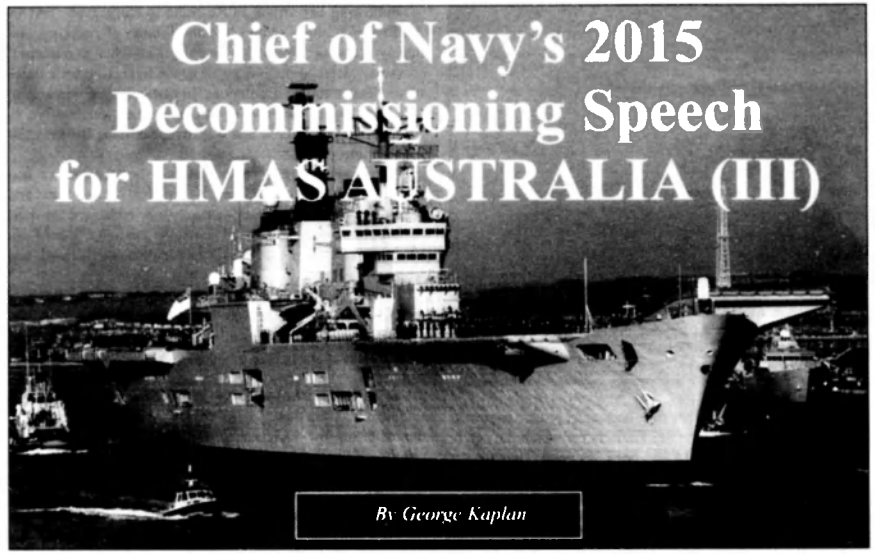
Shortly after HMAS AUSTRALIA paid-off on August 31, 1954 for disposal after a distinguished 26 year career and was sold to British Iron & Steel Corporation (Salvage) Ltd on 25 January, 1955.

Two months later on 26 March, 1955 the former flagship was towed out of Port Jackson by the Dutch tug RODE ZEE. Two other tugs joined the tow and, sailing via the Suez Canal, they reached Barrow in Furness in the UK on 5 July. From there AUSTRALIA was towed to the Clyde where she was broken-up.



The Anzac frigate HMAS ANZAC with snow covered hills of Heard Island in the background. ANZAC is one of the most recent visitors to this lonely Southern Ocean Island. Her mission at the time was to search for and apprehend trawlers fishing illegally in Australia's EEZ around the island. The RAN has been a frequent visitor to in the Southern Ocean in recent years conducting Search and Rescue operations and fisheries patrols. (RAN)

Chief of Navy's 2015 Decommissioning Speech for HMAS AUSTRALIA (III)



By George Kaplan

The Invincible class aircraft carrier HMAS AUSTRALIA leaving Fremantle to participate in the 3rd 'Saddam War' in the Persian Gulf. AUSTRALIA and her AV-8B Harrier II Plus aircraft proved a most valuable capability to the *Coalition of the Willing*.

This year marks the 20th anniversary of the Australian Government's decision not to replace the aircraft carrier HMAS MELBOURNE. To mark the occasion George Kaplan has cast his eye back to the past and forward to the future to see what might have been had the then Hawke Government 'taken the other fork' in the road, and had the Royal Navy decided to sell HMS INVINCIBLE to the RAN. His analysis is in the form of the future Chief of Navy's speech at HMAS AUSTRALIA's (III) decommissioning. Obviously this article contains some fiction.

'Ladies and Gentlemen, Distinguished Guests, Shipmates past and present, honoured colleagues, welcome to this momentous, and sad day.

Today we gather here to decommission a great warship, the pride of the Royal Australian Navy, the fleet flagship and aircraft carrier, HMAS AUSTRALIA.

For 30 years AUSTRALIA has been an integral part of the fleet, through peace and war, in times of national triumph and national disaster.

Looking back today, over three decades of valued service, it is hard to believe that there were dissenting voices raised about the purchase of the then HMS INVINCIBLE following her service in the Falklands conflict.

To put those voices into context I hope you will allow me to take you back to those times and walk you through the history of her career in RAN service.

In the early 1980's the flagship, the aircraft carrier HMAS MELBOURNE was showing her age. A product of the Second World War, the old lady had been extensively upgraded several times to allow her to operate progressively larger, heavier and faster aircraft, but had reached the limits of what could be achieved on a design more than 35 years old.

A search was instituted for a replacement for MELBOURNE, with the Royal Navy's INVINCIBLE class carrier satisfying the criteria of availability and cost.

Despite a vocal minority within and outside of Defence who saw an aircraft carrier as a nothing more than a symbol of ambition and former glories the requirement was seen as a necessary one in Navy. Despite the objections of those advocates of air power, submarines, missile armed gunboats or any number of other competing pet projects who derided the acquisition as an enormous waste of resources, the decision was made to take up the British Governments offer to sell HMS INVINCIBLE to Australia.

Following her participation in the Falklands conflict, and not without some arm-twisting on the part of the Australian government on their English counterparts, HMS INVINCIBLE was handed over to the RAN on a bleak winters day at Portsmouth in 1985. I make note of the weather in particular, as it was also the first sea posting for a wet behind the ear midshipman fresh out of HMAS CRESWELL. I was that midshipman, and it marked my first acquaintance with a ship with which I was to remain intimately involved throughout my career.

With appropriate pomp and ceremony the White Ensign, which had flown for five years, was hauled down on HMS INVINCIBLE and the Australian White Ensign was hoisted on HMAS AUSTRALIA.

The ship that we took delivery of was a different ship in many regards from that which had so triumphantly reclaimed the Falklands three years before. Gone was the Sea Dart missile system, the British radars and ESM, the British messing and berthing systems and most noticeably, the Sea Harrier fighter aircraft that had performed so well in 1982.

HMAS AUSTRALIA leaving Portsmouth in the UK after her modification to Australian requirements. Note the addition of the Mk-15 Phalanx and the deletion of the Sea Dart launcher. This modification proved so successful that the RN converted its three Invincible class carriers to a similar standard.

The defence budget of the time had not been able to stretch to cover the purchase of the Sea Harriers for which the newly commissioned AUSTRALIA had been designed. Thus for the first six years of her RAN service AUSTRALIA operated only helicopters, initially Sea King and Wessex helicopters, the latter eventually replaced by Seahawk helicopters in the late 1980's.

The decision was made that HMAS AUSTRALIA would operate similar equipment to the rest of the existing RAN fleet, hence US radars and electronics replaced the original equipment, while the space made available by the removal of the Sea Dart missile launcher and associated systems allowed additional deck parking space and storage facilities. So successful was this refit that the RN followed suit in the mid-1990's, converting ARK ROYAL, ILLUSTRIOUS and the replacement for INVINCIBLE, INDOMITABLE, to a similar configuration.

Following her arrival in Australia in early 1986, HMAS AUSTRALIA soon settled into the routine of exercises and deployments 'up top' which characterised what in retrospect seems a quieter, simpler age, measured against today's times of challenges and confrontations. In particular she was able to take her place in the Navy's 75th anniversary celebrations as the Fleet Flagship, a role she was to repeat in the Bicentennial Celebrations of 1988.

Numerous RIMPAC and Tandem Thrust exercises had demonstrated the capabilities of a ship of her size and versatility, with up to 600 troops able to be embarked for short periods, and landed in massed helicopter landings, either from her own Sea King helicopters, or embarked Black Hawk and Chinook helicopters.

One lesson that was taken to heart was that no matter how capable AUSTRALIA was as a helicopter carrier, the operation of fixed wing aircraft from AUSTRALIA multiplied her effectiveness and the effectiveness of the fleet many times over.

As a Flag Lieutenant to the then Chief of Naval Staff, I had accompanied him on a visit to AUSTRALIA in company with the Minister for Defence to the waters off Hawaii. The purpose of the trip was to watch a trial in which a squadron of United States Marine Corps AV-8B Harrier aircraft 'cross-decked' and operated from AUSTRALIA during the RIMPAC 2000 exercise.

I note with pleasure the presence within the audience today of US Marine Corp General Chuck Gregson, today the commander of US Marine Corps Aviation, but back then a Marine Corp pilot taking part in the exercise. Chuck and I hit it off rather well, as numerous hangovers acquired during runs ashore in Pearl Harbour will attest. A friendship that I am happy to say continues to this day, as this morning's headache after a late night spent reminiscing will attest.

Chuck succeeded in converting me to the benefits of VSTOL operations from AUSTRALIA, and his squadron's operations made such an impression on both CNS and the

The RAN Flagship HMAS AUSTRALIA (III) being towed into Sydney's Circular Quay to participate in the RAN's 75th Anniversary celebrations. Note the absence of the Harriers. It wasn't until after the 1st 'Saddam War' that the US AV-8B Harrier II Plus was purchased. (Brian Morrison, Warships and Marine Corps Museum Int, Franklin, Tas)

A soon to be familiar sight, HMAS AUSTRALIA transits through Sydney Heads for the first time after her purchase from the UK in 1985. (Brian Morrison, Warships and Marine Corps Museum Int, Franklin, Tas)

Minister that the decision was made to introduce the new AV-8B II "Super-Harrier" into RAAF service for operations from AUSTRALIA. The AV-8B II was more favoured then the British Sea Harrier as it was new, in production and had many parts and systems common to the RAAF's F/A-18 Hornet, such as the APG-65 radar and weapon systems.

In retrospect, what seems a completely common sense decision was anything but, with many elements within the defence establishment opposed to the acquisition. The costs involved in the purchase of AUSTRALIA had already caused delay's in acquiring and bringing into service the new COLLINS class submarines and the ANZAC class light frigates, as well as impacting on Army and Air Force budgets.

The minutes of the meetings of the Service Chiefs of the time barely hint at the at-times acrimonious debates over funding priorities, with each arguing their case passionately and forcefully. Eventually however, priorities were established, and with the backing of then Defence Minister Kim Beazley, Cabinet was persuaded to fund several increases to the defence budget, allowing programs to continue, albeit at a slower rate than first hoped.

The decision to have the RAAF operate the new aircraft was not arrived at without substantial misgivings on both sides, however in retrospect, the decision has paved the way for closer inter-service cooperation. Nowhere is this better demonstrated than by the introduction of both the VSTOL and conventional version of the new F-35 JSF into RAAF service this year. I notice many familiar faces in Air Force blue amongst today's audience, and look forward to catching up with many of you later.

The carefully planned introduction into service of the AV-8B Harrier II plus was completely thrown into disarray by the invasion of Kuwait by its larger neighbour Iraq. The government committed forces to an international coalition to liberate Kuwait, then known as Operation Desert Storm, but today referred to by historians as the First Saddam War.

With no fixed wing component available, AUSTRALIA embarked troops from the Army's SAS, 3 RAR and Air Defence regiment's, together with Army Black Hawk and set sail as flagship of the Australian commitment to the UN operations.

Once on station, AUSTRALIA proved invaluable in maintaining the maritime blockade on Iraq, with her embarked troops taking part in the seizure of several ships that attempted to run the blockade. Once hostilities began, the carrier's embarked helicopters and troops were heavily involved in rescuing downed allied aircrew in Kuwait and southern Iraq.

In total nine-allied aircrew were rescued during operations, which saw AUSTRALIA operating in some of the most Northerly reaches of the Gulf, at times perilously close to Iraq missile batteries.

The actions of the Army helicopter crews and ground troops in these operations were recognised with numerous decorations for gallantry. In addition to Australian recognition the Governments of the US, United Kingdom, France and Saudi Arabia also conferred decorations upon these troops for their at times extraordinary gallantry under fire in rescuing these downed pilots.

AUSTRALIA also provided a mobile 'gas station' to USMC AV-8Bs running low on fuel from combat operations. In this role she saved three AV-8Bs from ditching in to the Persian Gulf.

In addition for her operations in the lead up to the conflict and the actual operations in 1991, HMAS AUSTRALIA was awarded the Presidential Unit Citation, the first such award to a RAN ship since the Vietnam War.

It was certainly a vindication of the decision to acquire AUSTRALIA, and with the initial deployment of AV-8B Harrier II plus aircraft on board in 1993 the Navy returned to a capability it had not had since MELBOURNE decommissioned in 1982.

AUSTRALIA did not have long to wait before her new air wing was in action, with the ship participating in operations in support of UN operations throughout our region.

In Somalia AUSTRALIA alternated with TOBRUK in supplying the forces ashore with a command and control post, as well as a much needed source of rest and relaxation for the members of the Australian forces deployed there to help avert famine.

HMAS AUSTRALIA in company with HMAS NEWCASTLE (right) and HMAS WESTRALIA (aft). The group was on its way to contribute to the 3rd Saddam War' in 2003

In the Solomon Islands the helicopters of the ship's air group were kept busy collecting foreign nationals from throughout the islands for evacuation in the face of sustained civil unrest.

In Bougainville HMAS AUSTRALIA provided a neutral meeting ground for the various warring factions to meet and try to agree to a return to peace on that divided island.

AUSTRALIA returned to the Solomon's again to provide support to peace monitoring forces trying to bridge the gap between hostile segments of the islands populace.

The second Saddam War, popularised by the media as Operation Desert Fox, saw AV-8B Harrier II strike aircraft operating from AUSTRALIA's deck in coalition strikes against Iraqi military targets, in an attempt to force Saddam Hussein to allow UN weapons inspectors free reign to locate and destroy Iraq's weapons of mass destruction.

RAAF aircraft carried out several hundred successful strikes against a wide range of Iraqi military targets during this operation.

In 2000, AUSTRALIA landed her normal air wing to transport large numbers of Army helicopters to East Timor, where they proved invaluable in helping establish the Interfet force. She remained on station off Dili for more than a month, providing a base for maintenance of the Army's Black Hawk and Chinook helicopters, and launched the aerial component of the ADF landing in the enclave of Oecussi, the largest ADF amphibious landing since the Second World War.

Her command and control facilities were first class and proved invaluable to the then Commander of Interfet, MAJ GEN Peter Cosgrove.

AUSTRALIA was judged by Interfet command to have contributed markedly to the success of the UN sanctioned operation and once again had convincingly proven the value of sea power to the success of land operations.

The third and final Saddam War in 2003 saw AUSTRALIA once again despatched to the Persian Gulf. Once hostilities commenced the air group took part in strikes on Iraqi forces in Southern Iraq, and together with the RAAF Hornets deployed to the conflict provided air support to Australian SAS forces engaged in the search for Iraq's weapons of mass destruction.

Such was the benefit of having on call air support familiar with the operating procedures of the SAS that no Australian ground casualties were suffered while Australian aircraft provided support to the SAS operations.

Regrettably, two aircraft were lost to Iraqi air defences during these operations, with Flight Lieutenant Damien Johnson killed in action when his AV-8B II was shot down while supporting allied forces engaged in combat with armoured elements of the Iraqi Republican Guard south of Baghdad.

In late 2005 AUSTRALIA's crew was urgently recalled from leave and the ship was crash-sailed from Sydney to assist in the rescue of sailors participating in the Sydney to Hobart yacht race. Struck by the most ferocious storm ever recorded in a Sydney to Hobart, more than 50% of the races participants were forced to call for assistance and rescue.

AUSTRALIA sailed with a minimum crew, bolstered by transfers from other ships, and embarked her helicopter compliment as she battled her way through mountainous seas past Jervis Bay and south towards the stricken yachtsmen.

Her presence, close to the main area of damaged and sinking yachts, allowed her Seahawk, Sea King and Super Seasprite helicopters to spend more time aloft, responding to mayday calls. Thanks to their actions, more than 130 yachtsmen were rescued from the sea, and from certain drowning.

Several aircrew of these helicopters were recognised for their bravery during these rescues, both by the military and the wider civilian community.

In 2006 the United Nations imposed economic sanctions against North Korea, in response to that nations testing of its first nuclear weapon and subsequent threats to use further nuclear weapons on South Korea if it did not receive substantial economic aid and the withdrawal of US forces stationed in the Peninsular.

Already under limited sanctions regarding travel, cultural and sporting contacts due to its withdrawal from the Nuclear Non Proliferation Treaty in 2003, the UN Security Council supported the imposition of new sanctions unanimously and called upon member states to provide support to implementing effective multinational sanction enforcement.

As part of those sanctions HMAS AUSTRALIA, having recently completed a major refit, led a RAN task force North to assist in enforcing the UN sanctions. While tensions escalated, AUSTRALIA, together with the frigate's SYDNEY, STUART, PARRAMATTA and NEWCASTLE took part in the blockade of North Korea's West Coast.

In fact AUSTRALIA was the first unit to give warning of a more active North Korean response when one of her Seahawk helicopters detected a North Korean submarine aggressively manoeuvring into a possible firing position on the carrier. AUSTRALIA's Seahawks actively tracked the Korean submarine for more than 48 hours, while avoiding its own moves towards the Australian task force.

Following the North Korean government's ultimatum to lift sanctions within 72 hours or risk all out war on the Peninsular, AUSTRALIA's AV-8B II aircraft provided air defence suppression in support of the combined US/ South Korean commando strikes on the North's nuclear weapons storage facilities, Operation 'Imperative Eagle'.

During this mission Squadron Leader Colin Wolfe scored the RAAF's first air-to-air kill since the Korean War when several North Korean MiG-23 aircraft attempted to intercept the Australian aircraft.

Meanwhile, RAN Seahawk helicopters from AUSTRALIA and NEWCASTLE were successful in prosecuting and sinking the North Korean Romeo class submarine GREAT LEADER IV as it approached the RAN task force.

For the remainder of the three-month conflict, AUSTRALIA provided close air support strikes to United Nations forces on the West Coast of the peninsular, until the coup in Pyongyang which brought down the Stalinist regime, bringing the war to a close.

In 2008 AUSTRALIA was despatched to the island of Western Samoa, which had been hit hard by a massive tropical cyclone. Cyclone Nyota had left most of the island's infrastructure in ruins and the islands people in dire peril with no medical facilities or clean drinking water.

Embarking additional medical supplies and personnel, AUSTRALIA's departed within 12 hours of the initial warning order and made her best speed to the islands in company with HMAS SUCCESS. Arriving off the island AUSTRALIA's medical facilities were immediately fully stretched dealing with the large numbers of injured, while the ships helicopters provided the only method of travelling across the island.

In total AUSTRALIA's medical and surgical facilities dealt with more than 5,000 patients requiring different levels of medical treatment, the Navy's largest aid to the civil community tasking since Operation 'Navy Help' following Cyclone Tracy's devastation of Darwin in 1975.

In 2010 the long simmering dispute between the People's Republic of China and numerous other countries over sovereignty of the Spratley island chain boiled over, with Beijing declaring the entire South China Sea to be Chinese territorial waters and threatening ships travelling through the area with unspecified but dire consequences.

The UN Security Council declared that the Chinese action was contrary to international law, and numerous nations despatched naval forces to the area.

AUSTRALIA, leading a major task force, departed for the area and for several months escorted numerous Australian, American and Japanese flagged merchant ships through the area.

This was despite constant and at times dangerous harassment by Chinese submarines, surface ships and aircraft. Several 'near misses' were reported, in a situation which was reminiscent of the Cold War near hostilities at sea between the Soviet Union and the West.

For almost two months the world watched spellbound as naval forces from China on one side, and a host of nations on the other, stared each other down. The embarkation of international television news crews aboard many of the vessels ensured that the world was made aware of the Chinese provocations, and helped ensure that world opinion remained firmly against the Chinese actions.

Together with other task forces from the US, Japan, Singapore, France and the UK, AUSTRALIA and her escorts demonstrated to the Chinese leadership that their actions were not acceptable to the international community.

In late 2010, the Chinese withdrew their ships from the South China Sea, in a signal that they did not want to press the issue.

The use of naval power, carefully employed, had averted a crisis and resulted in a peaceful resolution to the situation. AUSTRALIA and her escorts returned home to news that the Chinese had adopted a more conciliatory tone, indicating that they would accept international arbitration on the Spratley's issue.

Following another refit in 2011, her last, AUSTRALIA triumphantly led the Australian Fleet, and more than 75 ships of 31 other nations into Sydney Harbour for the 100th Anniversary celebrations on the granting of the title 'Royal

Demonstrating the flexibility of a modern carrier, here AUSTRALIA's crew hoist aboard a USN Seal assault boat, lent to the Australian SAS for Combat Search and Rescue duties, during operations in the North of the Persian Gulf during the 1st 'Saddam War'.

A RAAF AV-8B Harrier II Plus accelerates down AUSTRALIA's deck towards the ski jump. The AV-8B Harrier II Plus was chosen for its commonality with the RAAF's F/A-18 Hornet. It took the full array of Hornet weapons including AMRAAM, AGM-65 Maverick TV guided missiles and Harpoon anti-ship missiles

Australian Navy'. For a week she was the centre of a major celebration of the Navy's role in the Nation's history, played out on the worlds television screens.

Following these celebrations AUSTRALIA took part in a major exercise program off the East Coast of Australia with ships from around the world. This culminated in the majestic site of AUSTRALIA leading into Sydney Harbour six aircraft carriers from the United States, Italy, France, Spain, Brazil and the United Kingdom in a triumphant display of naval might.

In January 2012 Australia was engaged in work ups off the Eastern Australian coast when she was urgently despatched to Port Moresby. Following the increasing disintegration of that countries governing institutions, a complete breakdown in law and order had occurred.

With the rioters, which included members of the PNG armed forces and Police, in possession of the main airports, evacuation of foreign nationals by air was not possible, and a sea born response was needed.

AUSTRALIA embarked troops as she steamed past Townsville and upon her arrival at Port Moresby, was able to land the troops and restore some measure of calm to the situation. Her embarked troops were able to capture the main airport and allow shuttle evacuation flights of RAAF Hercules transports from Port Moresby to the mainland.

Unfortunately the situation in Papua New Guinea has not yet been resolved, with Australian forces still on the ground there as part of a UN sanctioned peacekeeping mission.

In mid 2012 it was announced that AUSTRALIA would be decommissioned in 2015, following 30 years of outstanding RAN service. At the same time a decision was made that a replacement would be procured, a sister ship to the United Kingdom's new 60,000 tonne CVF class aircraft carriers would be launched in 2015.

Today we bid farewell to HMAS AUSTRALIA, ringing the curtain down on a illustrious career spanning three and a half decades, one in which she has rendered sterling service to the UK and Australia.

For the many thousands of sailors, soldiers and airmen who served aboard her, there will always be something special about HMAS AUSTRALIA. She had a reputation as a happy ship, and the years I spent aboard during my career I count as exceedingly happy ones.

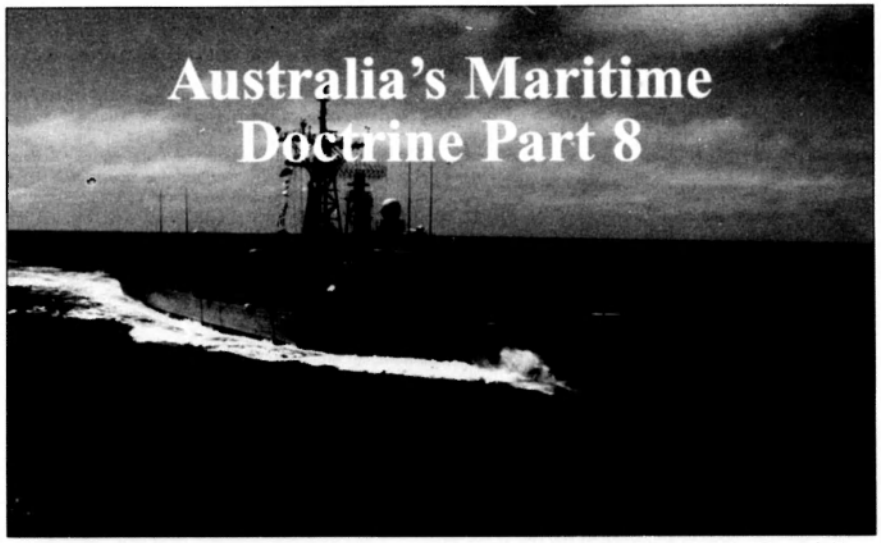
I was fortunate to command AUSTRALIA for two and a half years, from 2005 to 2007, and will always see that time in command as one of the highlights of my naval life.

Tomorrow, we will return here to Fleet Base East to commission the new HMAS AUSTRALIA (IV), fresh from her delivery voyage from the builders in the United Kingdom, but today we pause to give thanks for a ship which has come to symbolise the Royal Australian Navy, both at home and across the world.

In war and peace, in times of natural disaster and celebration, AUSTRALIA (III) has played a central role, and on this, her final day as a commissioned unit of the Royal Australian Navy, we pause to give thanks for the outstanding service she has provided the nation.

Thank you."

Four Army CH-47D Chinook helicopters land on HMAS AUSTRALIA for joint training exercises. The Chinooks were a common visitor to the carrier as the aircraft, unlike the Army's other helicopters, were already marinised as well as having folding blades.



Australia's Maritime Doctrine Part 8

HMAS ADELAIDE at speed. Sea Control is a vital element of any campaign planning and the RAN will increasingly rely on the FFG to supply this capability even though the FFG upgrade program is embarrassingly overdue. (RAN)

In part 8 of our presentation of the RAN's new Maritime Doctrine we detail the final Chapters 11 and 12 on Maritime Campaigning and Future Australian Maritime Forces. The document was written by the Seapower Centre and has been reproduced in *THE NAVY*, with the Centre's approval, given its importance to readers of *THE NAVY*, Australians and to the Navy League in general. We trust it has been informative.

Chapter 11
MARITIME CAMPAIGNING

CAMPAIGN PLANNING

The ADF's definition of a campaign is:

'A controlled series of simultaneous or sequential operations designed to achieve an operational commander's objective, normally within a given time and space'.

Campaign planning will co-ordinate the actions of air, land, maritime and special forces as well as orchestrating the military effort with the other instruments of national power within the theatre. Campaign planners must consider the national strategic end-state and ensure that the method chosen to achieve the military strategic end-state does not negate the over arching national post-conflict objectives. This relation of military actions to political ends is fundamental.

It follows from this that campaign planning is a dynamic and continuous process incorporating all the elements of operational design. Campaign planning requires sweeping vision and understanding of the relationship between strategic ends, operational ways and tactical means. It must account for the adversary's reactions and answer five questions:

- What military end state will achieve the strategic objectives?
- What ways are most likely to establish this end state?
- Are the forces assigned adequate to achieve the desired end state?
- What risks are acceptable?
- How should the assigned forces be applied within given constraints to best achieve the end-state?

Campaign plans must be adaptable. They may be phased to allow for the sequential handling of multiple tasks or resource limitations; may contain a general concept for the entire campaign as well as a specific plan for the campaign's initial phase; and, as a plan never survives contact with the adversary, planning branches and sequels.

All these things must be taken into account when planning a campaign, no matter whether the focus of that campaign is primarily or even wholly maritime in nature or whether it involves land or air operations as well. Environments cannot be isolated from each other nor become wholly bound up in their unique conditions and circumstances. That said, skilful use of the maritime environment and maritime forces affords the campaign commander the opportunity for great flexibility across the whole *spectrum of conflict*.

Maritime operations allow a commander to target an adversary's vulnerabilities, such that they become decisive points in achieving operational objectives and therefore the required end-state. The commander is afforded the opportunity to control the tempo of operations, under certain circumstances, joining or breaking contact with an adversary when and where required, and focusing combat power against the adversary's critical vulnerabilities. Effective intelligence, command, control and communications are essential elements for the optimum employment of maritime forces. The commander can exploit the nature of maritime power in the campaign to get inside an adversary's decision cycle, keeping the adversary off balance and pressing forward to achieve the strategic end state.

There are many factors which need to be considered in the planning process. Military resources and capabilities are finite and must be concentrated to achieve the aim. The operational planning imperative is to define the sustainability requirements and the trade-offs which will be needed in capability. To achieve this focus, clear statements of the mission and the commander's intent are required. Ideally, there should be unity of command over all resources, including logistics, although it is unlikely that the latter will be achieved at the operational level.

Where command and control arrangements are complex - and the reality is that they will be in both joint and combined operations of any scale - there must be close cooperation and co-ordination of activities to achieve the most efficient use of available assets and accomplish the commander's aim. It is the principle of co-operation which is the key essential element. Good will and working together can overcome many difficulties in operations.

CAMPAIGN TEMPO

The tempo of an operation is the rate at which events are driven. Generally forces that can maintain high tempo, with fast decision making cycles, can seize the initiative and take advantage of uncertainty to exploit the weaknesses of the enemy. Maritime forces are ideally suited to support high tempo operations because of their mobility and flexibility.

To achieve this high tempo, keep the initiative and exploit success, an operational commander must be prepared to devolve decision making, allowing subordinate commanders freedom of action. The operational level commander must also be aware that tempo may be limited, not by the endurance, sustainability and survivability of the unit, but by the physical endurance of the crew to maintain it

endurance of human resources, availability of weapon reloads;

- availability of other vital, consumable stores; and
- geography.

It is rarely possible to plan in great detail beyond the first phase of a campaign because the outcome of that phase will shape subsequent phases. Part of the planning process must be the consideration of contingencies. Once the plan has been set in motion, the operational level commander must constantly study the unfolding situation, revise and reorder the plan as necessary. Maintaining flexibility is the key to success. It is essential that concurrent and contingency planning be initiated early in the planning cycle.

OPERATIONAL CONSIDERATIONS

Information

The single most important factor in a maritime operation, especially one involving diverse joint or combined assets, is information flow, which requires suitable communications. Communication is not only having radios on correct and agreed frequencies. It involves procedures that all players can use, allowing compatible message and information exchange. Developments in data links and the use of commercially available systems are rapidly reducing the tyranny of distance and increasing the

speed with which data can be transferred. This has shifted the emphasis from providing the information, which is in most instances achievable, to managing the information efficiently. This is increasing significantly the information available to the commander and to individual units, thus improving their awareness of the battlespace and their ability to operate within it. Furthermore, the same developments are increasing the ability of all units to contribute to the achievement of battlespace awareness. Maritime forces can provide considerable real time and near real time input to a joint commander's operational information and intelligence pictures.

Even the smallest warship has at least some interest in what is occurring within a radius of several hundred miles. The area of interest to a task group commander could and does easily extend to a radius of a thousand miles or more around the force and the requirements for maritime air support and operational intelligence will take that into consideration. The key factors to consider are not just distance, but weather, relative velocity and the engagement ranges of own and enemy forces.

In the event of combined and coalition operations, special equipment fits and the development of agreed procedures may be required to allow the successful integration of all units within a task force. The greater the degree of interoperability, particularly in communications, the less duplication of networks will be required and thus the less demand there will be on the limited bandwidth available.

Intelligence

Intelligence provides fundamental information about the adversary and the operating environment which is essential for the success of the campaign. Assessments of the adversary's capabilities, intentions and decision making mean that they can be worked into the planning process and such factors as the adversary's centres of gravity, objectives and end-states properly understood. Effective mechanisms will be required to ensure that intelligence assessments are developed and communicated to all appropriate levels of command throughout the campaign.

DECISIVE POINTS

In the conduct of a campaign, consideration must be given to identifying an adversary's *critical vulnerabilities* and attacking them while protecting one's own. In the maritime environment, although the loss of a *mission essential unit* such as a transport ship in an amphibious task group may bring with it outright failure to accomplish the mission, the loss of other specific capabilities within the force may create a critical vulnerability and expose its component units to unreasonable risk and warrant aborting the mission. Indeed the loss of any major combatant may prove to be a decisive point and may affect future missions as that ship could represent a significant portion of the overall capability of the force. Awareness of such critical vulnerabilities is crucial to effective offensive and defensive operational planning. Vulnerabilities may include:

- units capable of delivering combat power;
- the willpower and cohesion of the forces and their commanders;
- command, control and communications capability;
- intelligence, surveillance and reconnaissance assets;
- access to ashore support for minor war vessels;
- replenishment ships in a deployed force;
- air warfare assets, including land based air; physical

adversary of just one submarine of relatively limited capability would require an amphibious force to be provided with a comprehensive anti-submarine escort, including surface ships and embarked helicopters, supported by maritime patrol aircraft.

Air Forces

It is important to consider issues relating to air forces alongside the seaborne factors when considering force requirements for campaign planning. They may include:

- Range limitations, the availability of air assets, the endurance of aircrew and the effect of weather - both in the operational area, en route to that area and at the operating base - may affect the availability of air support.
- Prolonged high intensity air operations require large supplies of aviation fuel and ammunition, which may well need to be moved by sea, particularly if the aircraft are working from a forward operating base.
- Fuel used by aircraft in transiting to operating areas reduces the time available for operational tasking - hence a seaborne force's interest in organic air capabilities or, failing that, well located forward operating bases for support aircraft.

Control of the air is an important prerequisite in any maritime operation. Modern aircraft are increasingly multi-role and therefore may be multi tasked, which may result in the campaign commander allocating such scarce resources to higher priority tasking.

Naval Forces

From a naval perspective the following operational characteristics may need to be addressed in developing a maritime campaign concept:

- Units may require several days to deploy to a prospective joint force area of operations (JFAO), depending on distance and readiness.
- Diverse environmental factors require special consideration to deal with the range of bathometric and meteorological conditions which may be encountered, including: suitability of hydrographic data, shallow and confined water operations and climatic variation and meteorological extremes.
- Prolonged, isolated operations will reduce the combat effectiveness of maritime forces through the degradation of personnel and equipment capabilities. Consequently, attention must be given to factors such as forward support, fatigue and weapon and hull endurance.
- Damage sustained by a major naval unit may make it necessary to redeploy that unit to a location with a suitable naval repair infrastructure.
- Limited availability of assets and the complexity of some maritime operations will invariably require direct allocation of scarce resources by the campaign commander. For example, the possession by an

Land Forces

There are also considerations for land forces in relation to maritime campaign planning. The support of Army operations from the sea is affected by the following factors:

- Availability of ships, including naval and commercial vessels, capable of transporting troops and equipment.
- Capacity and configuration of available tonnage-it may not be possible to load Army units such that they can be unloaded in a tactically ready sequence.
- Speed and vulnerability of selected tonnage.
- Availability of resources such as cranage, lighterage, landing craft, helicopters and any other ship-to-shore assets required to embark and disembark troops and equipment.
- The suitability of Army equipment for sea transport and operations from ships.
- Offensive support resources.
- Endurance of embarked personnel and equipment-sending troops to sea and keeping them at sea can have considerable effects on their fitness and battle readiness if matters are not managed carefully.
- Defensive support resources (especially for air warfare).

The newest of the RAN's Anzacs, HMAS STUART while on sea trials off Melbourne. STUART has since been commissioned and is now homeported in WA. (Tenix)

Maritime support to Army operations can also include support to special forces and naval gunfire support as well as land attack in the future. Additionally, in a maritime campaign, the Army may be involved in aspects such as logistics-over-the-shore support and the securing of forward bases, for air or naval forces, or to deny such bases to an adversary.

Areas of Operations

One planning tool that can cause considerable difficulties is that of the *Joint Force Area of Operations (JFAO)*. This is fundamentally a land concept that has moved for many good reasons into the joint and combined environment. If such an area, with its associated boundaries is established, it is vital that it be consistent with the tasks, assets and both primary and secondary roles assigned by the commander. A fundamental consideration in the assignment of Operating Areas is that of sea room – the space necessary to manoeuvre and engage an adversary whose movement may be unrestricted. A balance has to be developed which will not compromise the integrity of the mission or the tactical commander's freedom of action. Maritime Operating Areas will therefore necessarily be large and they must – for both sea and air units – be constructed not to inhibit operations not only in area but also in transit. Maritime operations can be seriously inhibited by constraining sea room.

Rules of Engagement

Rules of Engagement (ROE) are directions to operational and tactical level commanders which delineate the constraints and possible freedoms in the application of force. Consideration of the requirements for ROE must commence at the start of the campaign planning process. They must be established only after a thorough appreciation of the situation has been conducted. The Law of Armed Conflict codifies important principles of international law and national control of military action is a fundamental requirement. At the operational level, that control is exercised through the military chain of command with the promulgation of ROE.

Commanders are not permitted to exceed these levels of delegation without higher command approval, but the right of self-defence remains the implicit prerogative of every commanding officer or individual. ROE offer considerable scope to maritime operations through the ability of maritime forces to employ graduated levels of force and response. Contingent ROE, which can be activated as situations develop, are an important means of providing flexibility in changing circumstances.

Logistics and Maintenance

Maritime logistics are a fundamental and critical part of the conduct of operations and must be planned accordingly. Although maritime units deploy as self-contained units, they do require regular resupply (every few days) of fuel and, every few weeks, of provisions and consumable stores. Ammunition requirements will vary according to consumption rates, but, as an indication, guided missile destroyers on the gunline off Vietnam engaged in near-continuous fire support operations required to reammunition after about three days. Ships endeavour to remain fuelled and stored to the maximum practicable levels to maintain the maximum flexibility for tasking.

Deployed units may be resupplied from an afloat support force, or from a Logistic Support Element (LSE) ashore. Generally, the smaller and less sophisticated the ship, the greater its reliance on external support. Some small vessels, such as landing craft or mine warfare units, may require their own dedicated support ships. In any sustained campaign, the LSE will become vital, particularly as it will include a maintenance unit which can assist with maintaining or repairing the equipment which will inevitably become defective with continuous use over time. If the deployment is distant from maritime forces' normal operating bases, then the LSE will require to be forward deployed.

Although built for the purpose ships normally form the core of an afloat support force, merchant ships can be taken up from trade and adapted very quickly to meet specific naval requirements. The most simple example of this may be the conversion of a freighting oil tanker to include an underway replenishment capability.

Preparations for a Campaign

When mounting the maritime aspects of a campaign, the commander will co-ordinate all activities to ensure the arrival of the force in theatre at a level of preparedness that will enhance the likelihood of a successful outcome. Elements of preparedness include *readiness, response times and sustainability*.

THE CAMPAIGN ITSELF

There are typically eight stages of a maritime campaign:

- identification of a crisis,
- force generation,
- deployment,
- sea control operations,
- power projection,
- support to operations ashore,
- rotation, and
- withdrawal.

Identification of a Crisis

Initial indications that a crisis is developing will probably come from a variety of sources. Intelligence gathering and analysis can provide warning of changes in operating patterns and exercise programmes and allows for strategic level identification and evaluation of potential crises. Maritime forces operating in international waters can gather a wide variety of useful intelligence and provide a significant surveillance capability – sometimes the only reliable source of evidence and thus a critical element in identification and assessment.

Force Generation

The size and composition of the forces required to respond to a crisis will be shaped by:

- government policy objectives and strategic concept,
- understanding of the military conditions for success and end state,
- assessment of the threat,
- the forces available and their readiness,
- the time available to respond, and
- the likely duration of a campaign and the rotation of forces to maintain capability.

A robust command and control system, together with the potential duration of the campaign, the need to sustain or increase force levels and logistic support arrangements will also have a profound influence on force generation.

Deployment

Deployment to a theatre of operations involves:

- mounting, embarking and sailing the force from home bases (although maritime forces can often be diverted directly from their current locations);
- passage to the area of operations; and
- transit and arrival in the theatre of operations in a posture appropriate to the threat and mission.

Coordination of the deployment will require careful planning and liaison with diplomatic posts, other civil authorities and allied organisations. Force protection must be ensured, including the security of the bases from which the deployment is being mounted. Consideration must be given to legal issues, selection of ROE and the use of civil transport. The routeing of forces must be carefully organised to ensure security and force protection during transit.

Sea Control Operations

Wherever the freedom of action of the maritime force is challenged and, in particular, as it approaches the area of operations, there will be a requirement to establish levels of sea control that will be sufficient to ensure its protection and to enable subsequent operations. Without sea control, the ability of maritime forces to manoeuvre, concentrate for offensive action, apply leverage, project power ashore and deny the same to the opponent will be adversely constrained and *battlespce dominance* will not have been achieved.

Power Projection Operations

With the establishment of appropriate levels of sea control, maritime forces are able to project power ashore. Power projection can take a number of forms, including amphibious operations, maritime air support and surface and sub-surface land attack. A robust command and control system that, in the case of amphibious operations, must be capable of deploying ashore, gathering intelligence, concentrating combat power and generating influence over the battlespace, is critical for power projection operations. Co-ordination and synchronisation with land and air operations will be required.

Support of Operations Ashore

Once the focus of an intervention campaign moves ashore, the emphasis of maritime forces will shift from being enabling to being supportive. This is not to say that the tasks assigned to maritime forces will necessarily alter significantly, but the wider purpose to which these tasks contribute will change. Expressed in the most appropriate doctrinal terms, maritime power can contribute to all the components of capability required for the conduct of operations ashore. In particular, the focus will be on enhancing the manoeuvrist characteristics of the land campaign by intelligent application of the principal attributes of maritime power, in particular its ability to enhance manoeuvre and apply force where it is least expected.

Rotation

Forward-deployed maritime forces can mark their effective capability in terms of weeks or months. Nevertheless, despite the considerable inherent powers of endurance of both personnel and systems, operational relief is required at intervals, which will be more frequent in higher intensity operations. Personnel will generally show signs of strain before their ships, provided that the latter have arrived on station at high levels of maintenance readiness, but neither will last indefinitely and longer periods on station will have progressively greater effects. A contingency of any duration will therefore require a well considered programme of rotation to allow rest, maintenance and refresher training. In considering the commitment to operations, such considerations will be key to the determination of force levels if a sustained and consistent presence is required.

Withdrawal

The withdrawal of forces at the end of a successful campaign will need to be planned as carefully as the deployment to the area of operations. Moreover, if conditions for success have not been achieved, and withdrawal is to be made in the face of continuing or escalating conflict, it will be even more problematical. There may be a need to increase combat power ashore to stabilise the situation before withdrawal can take place. Command and control will be difficult and fragmented and a headquarters afloat may provide the most secure and capable communications to assist. There will also be a requirement to provide protection, both for the maritime forces supporting the withdrawal and for the forces being withdrawn. Protection of a withdrawal, like a landing but in reverse, requires the establishment of the necessary levels of sea control.

CONCLUSION

Maritime, air and land campaigns do not and cannot function wholly in isolation, but must be considered according to the contribution which they can make to the required end state. Furthermore, whether a campaign can be considered to be primarily of one environment rather than another, it does not follow-nor will it ever follow in the realities of future warfare-that it will not involve other elements. It is therefore vital for planners to seek to understand all the elements of military force-land, sea, air and others-if they are to become truly expert in their efficient employment.

Chapter 12

FUTURE AUSTRALIAN MARITME FORCES

THE FUTURE OF NAVIES

Maritime forces are sensitive to technological change and quick to exploit the opportunities it offers. Maritime warfare has long been a continual seesaw between offence and defence, particularly since the advent at sea of *asymmetrical*

threats just over a century ago in the form of the self-propelled torpedo and then the submarine. Nevertheless, the thrust of technological development, particularly that related to *network* concepts, appears to be creating just as many opportunities as obstacles for the future employment of maritime forces and the utility of navies. Some aspects have special significance for Australia as a medium power.

BALANCING PRESENT AND FUTURE

One conundrum is the requirement to balance the allocation of resources between present capability and development for the future. Despite the pace of information system advances and the influence of *Moore's Law* (states that computer power will double every 18 months), the development and acquisition of new technology for maritime combat is a relatively protracted process, particularly when compared with the speed at which the strategic environment can change. Furthermore, although platforms (ships) represent a progressively smaller part of the costs of acquisition, their useful lives have been increasing progressively over the past fifty years. This has meant that ships acquired within one strategic context have been utilised under completely different circumstances, often carrying very different weapon and sensor packages than those with which they were first commissioned.

There is no simple division between the force in being, the enhanced force and the 'Navy after next' because at any point, the requirement for the employment of maritime combat power may emerge at short notice, and almost certainly at less notice than is required for the acquisition of maritime combat capabilities from scratch, or from a low readiness base. The amount of time required to achieve real capability in maritime warfare has already been noted in Chapter Ten (*THE NAVY* Vol 65 No.1). Medium power Navies in particular must therefore ensure that they maintain appropriate levels of *contemporary capability for preparedness* while ensuring that they acquire sufficient *future capability*. This effectively means that naval force development must be regarded as a *continuum*, rather than a series of distinct steps.

FUTURE TRENDS

The increased effectiveness of communications networks and of long range surveillance systems presents both opportunities and challenges for maritime forces. At the same time as units in all environments are finding it more difficult to remain *undetected*, they are also more readily able to operate *covertly*. The same types of technology which allow the early detection and tracking of surface, air and subsurface units also mean that the same units can maintain *battlespace awareness* and thus the ability to employ their combat capabilities at short notice without the requirement to transmit. The key issue of maritime combat *knowledge*.

The Revolution in Military Affairs is being driven by the information revolution and related technologies. A high priority is being placed by the ADF on the development of the *knowledge edge*. This relates to the effective exploitation of information technologies to allow Australia to use its relatively small combat forces to maximum effect. The knowledge edge is also about using that knowledge effectively to make and implement faster and better decisions than the adversary. The desired outcome is *decision superiority*. A knowledge edge will exist when there is a comparative advantage in those factors that influence decision making and its effective execution.

The knowledge edge is not only technological but has many influences. It relies upon effective organisation and doctrine, and upon properly trained and educated people who have the confidence to work within a culture which fosters initiative and professional mastery. Collectively, these factors place greater emphasis on the non-technological aspects of the knowledge edge.

PEOPLE

People will thus remain the most important factor. Demographics and social change mean that the competition for talented recruits will become increasingly intense. The ADF and the Navy in particular face great challenges in recruiting and retaining the quality of men and women that will be needed. Meeting those challenges will require a process of continual adaptation and improvement that balances the needs of people against the demands of maritime operations. This will be a vital element of the Navy's plans for the future.

THE SEA, THE LAND AND THE AIR

Technology is rapidly increasing the potential of warships to provide support to operations ashore as well as to project power against the land in their own right. Networking of sensor systems, particularly in conjunction with airborne assets, means that warships are improving their capacity to look over the horizon and around terrain and to cover inland areas with their air warfare weapons. *Co-operative Engagement Capability (CEC)* is one approach which, by directly linking and fusing sensor data, promises significant improvements in detection and engagement, particularly when the target is out of sight of the firing platform. *Precision guided munitions* can be provided on demand and with extreme accuracy many kilometres inland. *Unmanned aerial vehicles*, some of which can be deployed from ships, show great promise for a wide range of uses, as do *unmanned under water vehicles*. Amphibious forces will further exploit the benefits of manoeuvre warfare at sea by conducting amphibious operations from over the horizon, employing organic helicopters and next-generation, high-speed organic and independent landing craft.

All these developments will have effects that will be particularly important for Australia. In terms of maritime conflict, although the tactics may change, the requirement to achieve *sea control will* remain because there will still be the capacity on the part of adversaries to utilise the new technology to interfere with seaborne communications. And, while the indications are that seaborne transport will become, at least in some areas, much *faster*, the physics and economics of transportation will still require an overwhelming proportion of such activity to go by sea rather than by air.

Another effect is that these developments will maximise the potential of seaborne task groups, working in conjunction with air and land forces, to achieve strategic effects. This will make joint operations even more important for the ADF. Air and land power in our maritime environment will benefit even more from what sea borne power can offer. The ADF will accomplish most when all its components work together.

A 127mm shell from HMAS ARUNTA caught in flight. The Mk-45 Mod 2 127mm gun is currently the only firepower means by which the RAN can support land forces ashore. While being very accurate (particularly against air targets) its surface range is limited to 24kms. This range is not sufficient to support land forces that need to venture 'from the beach'. However, the maker of the Mk-45 has recently tested a Mod 4 version with a much longer barrel which can fire a standard 127mm shell to a range of 47kms and a GPS guided round to 110kms. (RAN)

Conversely, developments in networking and in long range precision delivery of munitions mean that traditional linkages between particular platforms and their combat capabilities will become much weaker. A precision weapon can be fired from a surface ship or a submarine, from a manned or an unmanned aircraft, or from fixed or mobile platforms on land. In these circumstances, the inherent capabilities of platforms will be critical in determining which are most suitable in the future.

All this means that the ADF must work towards the integration of warfighting capabilities in all dimensions. The platforms operated by the individual services will contain or be components of joint systems working to achieve integrated effects. At the same time, the enablers for operations, such as C4I, will need to be considered as capabilities which are ubiquitous to all environments and which support the activities of all elements.

THE IMPLICATIONS FOR A MEDIUM POWER

Maintaining and operating an effective Navy is highly demanding of national industrial and technological capabilities. Keeping up with the application of emergent technology is even more difficult, particularly as it brings with it the prospect of risk and failure.

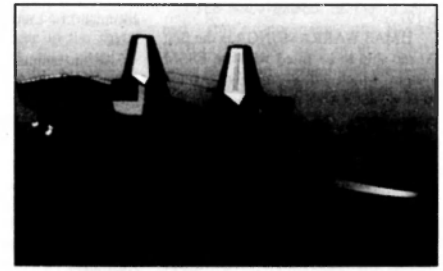
But properly directed expenditure on Naval systems and platforms can itself encourage industrial growth and technological development, creating additional strengths and opportunities for a nation's economy. For a smaller nation with limited resources such as Australia, a careful balance will need to be drawn between the achievement of *combat power* and the development of national industry. This means that choices will need to be made between attempting innovation solely on a national basis, engaging in co-operative development with friendly and allied nations and accepting without substantial modification the systems developed by others. For Australia, this will mean the development of a much more sophisticated approach to the problem of maintaining defence capability than has been required for much of our history: when we were able to rely upon our alliances with the great powers not only at the strategic level, but for much of the infrastructure and innovational effort that modern Navies – and sophisticated combat forces in general - require. This challenge, it should be emphasised, is not only one for the RAN.

NAVY PLANS

The RAN has two plans which together provide the blueprint for the development of the Navy. Both are aligned with higher level Defence Plans and Strategic Guidance.

Plan GREEN provides executive authority for management decision making throughout Navy across the five year financial planning and business cycle. It identifies the issues which must be confronted during this period and their implications for Navy's combat capability and strategic development.

Plan BLUE provides guidance for the directions of Naval development over the next thirty years. It examines a range of issues which will affect the future force. This includes but is not limited to emergent warfighting concepts, new technology and personnel issues. It considers major resource issues, including the ways in which national industry can support the transformation of the Navy. It will be the principal mechanism by which the Navy will manage its own development and contribute to the evolution of the future ADF.



The new MEKO X air warfare destroyer design. The MEKO X would now have to feature prominently in the RAN's SEA 4000 study for its future air warfare requirement. The MEKO X has three banks of vertical launch missile systems totalling 132 tubes. It also has two Mk-45 Mod 4 guns, 16 anti-ship missiles and two NH-90 sized helicopters. The design incorporates stealth features, phased array radar technology and an electric drive system in the form of two podded electric motors with two propellers each in a push-pull configuration. (MEKO)

Flash Traffic

WARRAMUNGA fires ESSM

The RAN has launched its first Evolved Sea Sparrow Missile (ESSM) from the Anzac Class frigate HMAS WARRAMUNGA on 21 January 2003.

The missile was launched against a Kalkara pilotless drone, and was guided to within a lethal range of the target. The test was conducted off the coast of Perth, Western Australia.

"The ESSM Consortium has delivered the most advanced ship defence system available in the world today. BAE SYSTEMS is delighted to be part of such a successful program," said George Milosz, Domain Manager – Missiles & Decoys, BAE SYSTEMS.

BAE SYSTEMS Australia is the lead Australian contractor in the missile program and is the design agent for the ESSM's aerodynamic and thrust vectoring performance. This includes the thrust vector controller, aerodynamic surfaces, body strakes and control fins, and guidance and control algorithms for the initial phases of flight.

In production, BAE SYSTEMS Australia is also responsible for manufacturing the computer and other components of ESSM's guidance section.

This latest missile launch represents a milestone in the evolution of the ESSM program and follows on from the first firing of the ESSM from a US Navy surface combatant, the USS SHOUP in July 2002 (see Vol 65 No.1 *THE NAVY*, p 19).

HMAS WARRAMUNGA is the first Anzac ship to be fitted with the ESSM system, which will eventually be fitted to all of the RAN's Anzac and Adelaide class frigates – 14 ships in total.

All the later ships in the Anzac class will be delivered in the ESSM configuration, and the first two ships of the class – which are currently fitted with the RIM-7P NATO Sea Sparrow system – will be upgraded to take ESSM. The six Adelaide class frigates will be equipped with ESSM under a separate upgrade program (which is approx 18 months behind schedule).

ESSM is the North Atlantic Treaty Organisation's (NATO) largest and most successful co-operative weapons project and is destined to become NATO's next-generation ship self-defence system. Globally, the consortium involves 18 companies across the ten participating nations and is headed by prime contractor, Raytheon Systems Company of Tucson Arizona.

Under the A$4 billion project, more than 4,000 missiles will be delivered to the ten nations of the ESSM consortium. Production of ESSM is underway and delivery of operational missiles to Consortium nations has commenced.

The ESSM provides improved ship self-defence capabilities against faster, lower, smaller and more manoeuvrable anti-ship missile threats as well as increased firepower. The missile has the speed, agility and accuracy to engage threats to the launching vessel at maximum range and in the most challenging conditions.

The ten participating countries are Australia, Canada, Denmark, Germany, Greece, the Netherlands, Norway, Spain, Turkey and the United States of America.

TS STURT doubles up in SA

In another keenly contested year, outstanding diligence and results provided a reward to the South Australian Naval cadet unit TS STURT, selected as the State's most successful and efficient Naval Cadet Unit for 2002, an award sponsored by the Navy League of Australia. Located in the Riverland of South Australia, the unit is under the command of Lieutenant Tanya Daniels ANC.

At the annual trophy presentation ceremony at Port Adelaide, conducted by Senior Officer Cadets SA, CMDR Sandy Coulson RANR, and with all ANC Units within SA represented, the awaited top prize was announced by Senior Naval Officer SA CMDR John Parkin ADC RAN.

Major General Darryl Low Choy, AM, MBE, RFD, Director General Australian Defence Force Cadets, then presented The Navy League of Australia SA Division Annual Efficiency Shield to TS STURT's CO, LEUT Daniels in the presence of NLA State President, CMDR Alan Preskett, who later presented the sponsorship cheque.

Just prior to this presentation, CMDR Parkin announced that Cadet Petty Officer Sarah Gorman from TS STURT had been chosen as the SA 2002 Cadet of the Year. Cadet PO Gorman from Renmark had a very successful year and has decided to join the RAN as a 2003 new entry, and with some very good training and background from the ANC. Significantly both the 2001 and 2002 winners of this award have been female cadets who have gone on to join the RAN ranks.

Major General Darryl Low Choy, AM, MBE, RFD, Director General Australian Defence Force Cadets, (left) presents The Navy League of Australia SA Division Annual Efficiency Shield to TS STURT's CO, LEUT Daniels (centre) in the presence of NLA State President, CMDR Alan Preskett (right).

HMAS DECHAINEUX Incident

On Wednesday 12 February 03 HMAS DECHAINEUX was conducting a routine exercise activity off Perth when a sea water hose burst. As a result flooding occurred.

The crew immediately implemented the appropriate procedures and the submarine surfaced. It returned safely under its own power to HMAS STIRLING.

A most experienced submariner commands HMAS DECHAINEUX and at all times, his main priority was the welfare of the crew and the vessel.

The damaged hose was on the auxiliary Sea Water System, which is a system exposed to sea pressure at all times. This system provides cooling to engineering systems on board the boat.

Some operating restrictions have been imposed on the remainder of the submarines until the cause of the failure is established.

While the initial investigation was under way, submarines at sea were directed to cease operations and return to base.

Proposed Merger of Tenix and ADI shipbuilding capabilities

Defence contractors Thales, joint venture owner of ADI Limited, and Tenix have agreed in principle on a proposal to merge the shipbuilding and ship repair capabilities of Tenix and ADI.

The move follows the release of the Defence Naval Shipbuilding and Repair Sector plan last year, and extensive discussion over the last three years of the need to rationalise the Australian naval shipbuilding industry in the face of reduced demand.

The proposal would bring together all current naval shipbuilding, upgrade and repair businesses of both companies. The proposed new company formed from the merger would be majority owned by Tenix. Full details remain confidential pending talks with the Commonwealth Government and Defence Department.

If the merger proceeds, ADI Limited's other joint venture owner, Transfield Holdings, would retain its 50/50 joint venture ownership in the ongoing business operations of ADI.

Once established, the new company would be a potential bidder for the Australian Submarine Corporation, subject to the requirements of the Commonwealth.

The initiative is the first step in creating a long-term and sustainable naval shipbuilding industry, bringing together and enhancing Australia's significant capability in this strategic industry sector.

It would assist the long-term restructuring of the industry, ensure vital support capabilities are maintained and lead to new investment in capability.

It would bring together the financial, technical and prime contracting strengths the Defence Department requires, in a company with unique experience in understanding and working with Defence and the Royal Australian Navy. The only draw back is that this new company may have a monopoly on the Aust market and thus reduce competition.

Honours, awards, commendations

The following Naval personnel received honours or awards in the Australia Day 2003 Honours list:

Officer of the Order of Australia (AO)
RADM BL Adams, DPE
RADM RE Shalders, VCDF

Member of the order of Australia (AM)
CAPT NS Coates, HQAST
CAPT JAP Graham, DPE

Medal of the Order of Australia (OAM)
CMDR DL McCourt, HQAST
LEUT GF Williams, MHQ
WO MJ Winner, MHQ

Conspicuous Service Cross (CSC)
PRINCHAP ST Hubbard, NHQ
CAPT CW Thomas, MHQ
CMDR DJ Hunter, MHQ
LCDR GW Day, MHQ
WO PJ Moy, Depsec C&S

Conspicuous Service Medal (CSM)
CMDR CJ Churcher, NAVSYSCOM
CMDR KPN Sharp, DPE
PO L Mace, MHQ

Commendation for Distinguished Service
LCDR RJ Cull, HQAST
LCDR LA Curac, HQAST
LEUT DG Hughes, HQAST
CPO MI Harris, HQAST
CPO SK Pokarier, HQAST

The Navy League of Australia would like to congratulate those recognised for their efforts.

Gong gonged for SIEV 10 rescues

A Chief of the Defence Force Unit Commendation has gone to the ship's company of patrol boat HMAS WOLLONGONG for its action in saving 162 people from the burning Indonesian vessel *SUMBAR LESTARI* also known as SIEV 10, in November 2001.

The award, signed by CDF, GEN Peter Cosgrove, was presented recently to the ship's company in Darwin by the Maritime Commander, RADM Raydon Gates.

The commendation also contained praise for the Australian Customs Vessel *ARNHEM BAY*.

The award reads, "I commend the officers and ship's company of HMAS WOLLONGONG for their exceptional professionalism and commitment on November 8, 2001 in the boarding and subsequent rescue of personnel from the *SUMBAR LESTARI* known as SIEV 10.

"On Thursday, November 8, the *SUMBAR LESTARI* with a crew of four Indonesians and 160 asylum seekers was intercepted by HMAS WOLLONGONG and ACV *ARNHEM BAY* in the vicinity of Ashmore Reef.

"Concerns that the vessel was being sabotaged and that a Safety of Life at Sea situation was developing led to a boarding party from HMAS WOLLONGONG being dispatched to the *SUMBAR LESTARI*.

"On arrival in the ship, the boarding party experienced considerable difficulties including fire which ultimately led to an explosion in the forward hold and panic amongst the crew and passengers."

GEN Cosgrove's commendation continued, "the action by the boarding party in taking some time to remove timber boards from the sides of the ship to assist passengers to leave the vessel after it was set on fire, in attempting to calm the passengers and give them advice in jumping into the water and re-directing them within the vessel and in attempting to release water and generally save the vessel, demonstrated considerable courage and concern for those onboard.

"These actions combined with the subsequent rescue, in concert with ACF *ARNHEM BAY* of 162 of the 164 passengers, demonstrated the quick thinking, bravery and dedication of the officers and ship's company of HMAS WOLLONGONG.

"The achievements of the officers and ship's company of HMAS WOLLONGONG were of the highest order and are in keeping with the finest traditions of the Royal Australian Navy and the ADF."

By Graham Davis, *NAVY NEWS*.

GLADSTONE makes mileage milestone

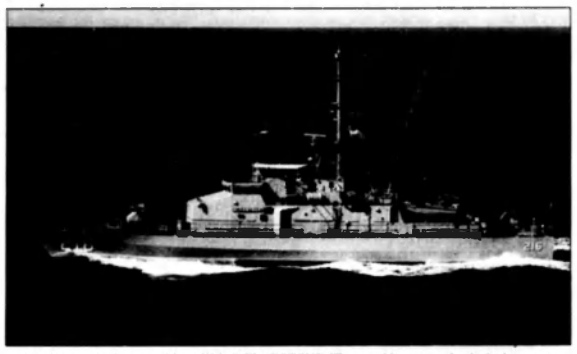
HMAS GLADSTONE (LCDR Chris Smith) has steamed 500,000 nautical miles. The second RAN ship to carry the name clocked half a million miles during her current patrol in northern Australian waters. This equates to 926, 000 kilometres or just over 23 laps of the earth, or to the moon and

back and half way back to the moon again.

Built by NQEA and being one of five patrol boats based in Cairns, GLADSTONE has visited over 50 different ports in 12 countries during her 18 years of faithful service in the RAN. She was the fourteenth of fifteen Fremantle class patrol boats to be completed for the RAN.

Displacing 235 tons, she is 42 metres long and is home to 24 officers and sailors. Her maximum speed is 27 knots and her armament includes one 40mm Bofors gun and two 12.7 millimetre machine guns.

GLADSTONE is programmed to undergo a major maintenance period in the middle of 2003 and is expected to continue living up to her motto and *"Defend the Right"* for many more miles to come.



The Fremantle class patrol boat HMAS GLADSTONE. The patrol boat recently clocked up over 500,000 nautical miles. (RAN)

STUART takes ghost ship in tow

Commander David Greaves and his ship's company in HMAS STUART have found a *MARIE CELESTE* like 'ghost ship' bobbing in the Indian Ocean. Like the ill fated sailing ship found abandoned and drifting in the Atlantic in 1872 there was no-one aboard the 20 metre long, 150 tonne, long line trawler the *HIGH AIM 6*.

It's thought the Taiwanese owned vessel had a crew of about ten made up of a Taiwanese master and engineer and Indonesian fishing crew. Their whereabouts are the subject of intensive world-wide inquiries which have already lead to checks in Taiwan, the Marshall Islands, Indonesia and Australia.

Coastwatch first spotted the ship, flying an Indonesian flag near Rowley Shoals, 150 nautical miles northwest of Broome on January 3.

The craft was under power however, no one was seen on deck.

"No-one came out on the bridge to wave," CMDR Greaves told *Navy News*.

"Just before dawn on Thursday, January 9, 2003 our radar made contact, at the time we were heading into Broome for a logistic port visit.

"We changed course and came up on the ship.

"No lights were showing and no-one could be seen. We first thought the crew might have been asleep.

"The trawler was drifting well within the Australian Fishing Zone."

CMDR Greaves told Northern Command of the discovery and was authorised under Australian Fisheries regulations to board the vessel.

"We launched a RHIB and a boarding party led by LEUT Carl Jordan went across to the ship.

"The boarding party found no-one on board. The trawler was in good condition although its contents were a bit messy.

"There was a 'day-to-day' calendar. The last entry was January 3.

"There was food in the galley. It had started to rot, as had the fish in the hold.

"Personal effects were still there," CMDR Greaves said.

"I know the story of the *MARIE CELESTE*, it was just like it, a ghost ship," he said.

He said the ship's batteries were all flat and one fuel tank was empty while there was plenty of fuel in another.

He suggested the vessel, in the absence of her crew may have motored across the ocean until the fuel in the first tank expired. Asked if there was a davit for a rigid launch, CMDR Greaves said "no", the craft may have carried an inflatable rubber dinghy, which may have been used by the occupants to quit the trawler.

A decision was made to tow the ghost ship to Broome and by 9.30am on the Thursday a line had been secured, a steaming party put aboard, and the 150 mile tow begun.

"We rotated the steaming party and made about seven knots to Willie Creek," he said.

"At Willie Creek (the detention area for vessels detained by Australian officials) we anchored for the rest of the night.

"In daylight the AFP, Customs and others came out to inspect the vessel, it was declared a crime scene," he said.

An AFP spokesman said his officers had spent two days inspecting the trawler and found no evidence of foul play.

His investigators were still to determine how many people had been on board.

HIGH AIM 6 left Taiwan on October 30. On December 13, the ship's master contacted the owners from the Marshall Islands, later they tried unsuccessfully to contact the captain and then asked the US Coast Guard to keep watch.

So what happened in the days from December 13 to January 3 when the vessel was found more than 3,500 kilometres distant?

By Graham Davis, *NAVY NEWS*

The 20 metre long, 150 tonne, long line trawler the HIGH AIM 6 was found adrift in Australian territorial waters by the new Anzac frigate HMAS STUART. What happened to the boat's crew is still a mystery. (RAN)

Taiwan to pay off Gearings for Kidds

The Kidd class destroyer the former USS SCOTT. Taiwan has bought all four Kidds from the US and expects to press all four into service possibly with a VLS in place of its Mk-26 twin arm missile launchers. (USN)

Taiwan is currently planning to decommission its seven remaining Gearing-class (Wu Chin III Conversion) destroyers once four ex-USN Kidd-class destroyers on order from the USA are delivered.

Taiwan has already decommissioned four Gearings, together with seven Fletcher and Allen M Sumner-class destroyers, which date back to the Second World War. The Taiwanese Navy believes that decommissioning additional Gearings would resolve manpower shortages that threaten to arise when the Kidds arrive.

The Taiwanese Navy argued before the Legislative Yuan's Defence Committee that the Kidds were needed to replace the ageing Gearings.

The seven Gearings were converted during the 1980s into air-defence ships under the Wu Chin III programme. When the Kidds arrive they will assume this role.

The Kidds are armed with two twin Mk 26 launchers for SM-2 surface to air missiles but these may be replaced by a vertical launch system for the Raytheon SM-2 Block IIIA Standard surface to air missiles that Taiwan is also receiving as part of the US arms package.

It will be interesting to see if all four Kidds are returned to service. During RAN inspections in 1999 the first of the class, USS KIDD, was deemed uneconomical to return to service given the years of neglect after her early decommissioning. USS KIDD was slated, had the RAN been allowed to proceed with the purchase, to be a floating spare parts shop for the other three Kidds which were in far better condition.

Delta IV back on 'Death Patrol'

The Russian Navy Delta IV nuclear-powered ballistic missile submarine (SSBN) YEKATERINBURG (K-84) has nearly completed its post-refit sea trials in the White Sea after its long overhaul period at the Zvezdochka shipyard in Severomorsk.

One of seven Delta IV SSBNs commissioned between 1985 and 1992, YEKATERINBURG was undocked in April 2002, having begun its refit at the Zvezdochka facility in 1998. It is due to rejoin the Northern Fleet in the middle of this year.

The refit cycle for the Delta IV class SSBNs, which now constitute the mainstay of Russia's strategic submarine deterrent force, has assumed high priority as a result of the lengthy delay in introducing the fourth-generation Project 955 'Borey'-class SSBNs and the progressive retirement of older SSBN classes.

Singaporean patrol vessel damaged

Three female sailors were killed, and a fourth still missing presumed dead, after the Republic of Singapore Navy patrol vessel RSS COURAGEOUS was struck astern by a Dutch-registered merchant ship, *ANL INDONESIA*.

The incident happened off Pedra Branca in the very busy Singapore Straits during the night of 3 January 03. After the ship's crew were able to prevent the very badly damaged vessel from sinking, COURAGEOUS was towed to Changi Naval Base and then craned ashore for a detailed examination of the damage.

The badly damaged RSS COURAGEOUS still afloat after her collision with a merchant ship. The fact that the little ship is still afloat is testimony to the professional damage control procedures of the RSN.

Bridge watch procedures are currently the main focus of an investigation as on the surface it appears the collision may have been COURAGEOUS' fault.

This is the RSN's worst naval tragedy and the first time that female sailors have lost their lives in the RSN.

V-22 completes at-sea period

The Osprey Integrated Test Team has completed another milestone in getting the Bell V-22 Osprey into service. Osprey No. 10 recently completed an at-sea period aboard the LHD USS IWO JIMA. The V-22's initial approach to the USS IWO JIMA demonstrated how the V-22 differs from the platforms it's designed to replace. With the nacelles fully forward, the Osprey flew up the starboard side of the ship at 220 knots before rolling left and performing a 180-degree, three-G level turn. From there any resemblance between a fixed-wing 'break' manoeuvre and the V-22's approach ended as test pilot Lt. Col. Kevin Gross, a Marine who logged combat hours in the AV-8B Harrier during the Gulf War, tilted the engines from airplane to helicopter mode.

Seconds later Osprey No. 10 hovered over Spot Nine and, with the LSE's signal, smoothly touched down on the non-skid deck. With that, the Osprey was back at sea, the environment where the MV-22, the Marine Corps variant of the rotorcraft, will spend much of its operational life.

"It felt very good," Lt. Col. Gross said after logging his fifth landing for the day. "We didn't have any surprises. Even with a lot of wind across the deck the airplane handled with ease."

The Atlantic waters nearly 100 miles east of the Maryland coastline are not the friendliest place to conduct flight tests in January, and the V-22 Integrated Test Team was handed their fair share of challenges from Mother Nature. High winds, rough seas, bitter cold, and sudden snowstorms all forced adjustments to the plan over the five-day test period. But in the end, the ITT's hard work paid off. Along with completing the deck landing qualification for one of the pilots, the team gathered crucial data on both CH-53 and UH-1 rotor downwash characteristics, quantified the effect of a

hovering UH-1 on the V-22 parked behind it, and collected air wake figures for the LHD-class out to 52 knots of wind over the deck.

An MV-22 Osprey hovers over the flight deck, as tests resumed on the aircraft, the first at sea testing of the MV-22 in two years. The V-22 Osprey is a tilt-rotor vertical/short takeoff and landing (VSTOL), multi-mission aircraft developed to fill multi Service combat operational requirements supporting Marine amphibious operations (USN)

USN in Western Australia

On 22 December 2002 after a four month tour in the Persian Gulf, the Nimitz class aircraft carrier USS ABRAHAM LINCOLN (CVN-72) with Carrier Air Wing Fourteen (NK) embarked, along with the Ticonderoga class cruiser USS SHILOH (CG-67) arrived at FREMANTLE. The Los Angeles class submarine USS CHEYENNE (SSN-773) which was also part of the group docked at HMAS STIRLING. What started as a four-day visit to Perth for nearly 6000 sailors stretched into six days as the ships remained over Christmas. Security was tight and there were no public tours on these ships.

With the LINCOLN as part of Carrier Air Wing Fourteen were VFA-115 'Eagles' the first F/A-18E Super Hornet squadron to deploy overseas.

After the group's departure on December 28 the ships were headed home when the threat of war with Iraq grew. Orders arrived from Washington for the LINCOLN group to remain in the region, extending their deployment from six to nine months. Shortly after permission was received from the Australian Government for the LINCOLN and SHILOH to return to Fremantle on 6 January 2003 for a fifteen day visit.

This unprecedented return visit allowed for maintenance work to be conducted on both ships, including resurfacing the LINCOLN'S flight deck, well worn after 4 months of flight operations in the Gulf. This work was done with the help of Western Australian companies. It also gave the 5000 plus sailors more time for R&R after a busy deployment.

Twenty four aircraft from Carrier Air Wing Fourteen were flown to RAAF Pearce to conduct training at the Lancelin exercise area. One F/A-18C Hornet from VFA-25 'Fist of the Fleet' suffered major damage when it ran off the end of a Pearce runway and through bushland, finally stopping in a paddock next to the RAAF base.

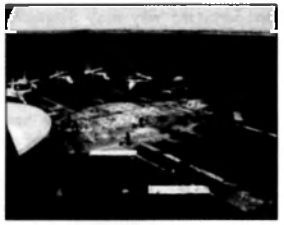
On 16 January 2003 another Los Angeles class submarine, USS HONOLULU (SSN-718) arrived at HMAS STIRLING for a few days of R&R before departing.

On 19 January the USS SHILOH departed Fremantle for the Arabian Sea. As SHILOH sailed out, the Spruance class destroyer USS FLETCHER (DD-992) sailed into Fremantle after time in the Persian Gulf. FLETCHER would be the first ship taking part in the USN's 'Sea Swap' program (see next news item)

On the morning of 20 January the ABRAHAM LINCOLN and her air wing set sail for the Arabian Sea, rendezvousing with other units of the LINCOLN battle group as the threat of war with Iraq grows and the allied military build-up continues.

By Ian Johnson

USN conducts 'Sea Swap' in Fremantle



USS ABRAHAM LINCOLN's landing deck being re-surfaced in WA. (Graeme Fuller)

On 19 January 2003 the Spruance class destroyer USS FLETCHER (DD-992) arrived at H-Berth, Victoria Quay to become the first USN ship to conduct 'Sea Swap', a full crew change over of a surface warship. During FLETCHER S stay several WA companies conducted maintenance on the destroyer.

Waiting for them was the replacement crew of 350 sailors from the recently decommissioned USS KINKAID (DD-965) as well as a replacement SH-60B Seahawk helicopter detachment flown out from Hawaii. The crew were accommodated at Leeuwin Barracks for a few days prior, waiting for FLETCHER'S arrival. When it is time for the FLETCHER'S next Sea Swap, the crew from the then decommissioned USS OLDENDORF (DD-972) will fly in to replace the KINKAID crew.

FLETCHER, or the 'Fighting Jack', as the ship is known by the crew, was commissioned in 1980. The 30th ship of the Spruance class, FLETCHER will be one of the last of the class to remain in service, they began decommissioning the class in 1997.

The architect of the Sea Swap Program, Vice Admiral Timothy LaFleur, Commander Naval Surface Forces US Pacific Fleet, stated in a speech on 21 January that this first use of Sea Swap would save the USN over $86 million (US) and would save one ship from having to be deployed from the United States to the Persian Gulf. VADM LaFleur went on to state that with the limited number of ships and the demands made after September 11, there was a choice of either longer deployments for crews, or programs like Sea Swap to shorten the length of time the crew is at sea by almost two months in transit to and from the Persian Gulf.

On 23 January after four days of transferring crews, the formal crew changeover and Change of Command ceremony took place, with Commander Tom Neal being relieved by Commander Michael Slotsky. As the ceremony finished Commander Slotsky told his crew "Let's go get them" and three days later FLETCHER sailed, returning to the Persian Gulf as part of the CONSTELLATION Carrier Battle Group to continue enforcing United Nation sanctions against Iraq. The relieved FLETCHER crew flew to Hawaii a few days later.

Both the USN and WA Government have declared the first Sea Swap a success. Another ship in the program USS HIGGINS (DDG-76) will conduct her first sea swap within the next few months.

By Ian Johnson

Spain to get second carrier

The Spanish Navy and Izar Construcciones Navales have signed an agreement for a definition study of the project to build a 'Strategic Projection Landing Logistics ship', the biggest in the Spanish Navy's history.

In October 02, Izar started work to define the project according to the Spanish Navy's initial requirements. After this first draft, the Spanish Navy presented the final requirements that have permitted the creation of the ship's definitive design.

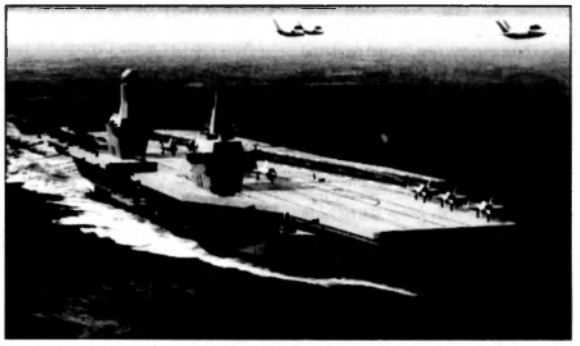
The Strategic Projection LL Ship will be the Spanish Navy's biggest ship, at over 26,000 tons, and a length of 225 meters. It has been conceived to provide a base for amphibious operations of Spain's Marines, strategic projection of the Army's forces to conflict areas, environmental operations, as well as disaster relief.

The ship will have a 185m flight deck, with capacity to operate Harriers or four CH-47 Chinook helicopters or six medium size helicopters. The ship's hanger will be capable of accommodating up to 12 helicopters or eight Harriers and will have an aircraft elevator with a capacity of 25 tons. The carrier will be able to carry up to 1,355 troops, which is more than two times the capacity of the Spanish Navy's current Galicia class Amphibious ships.

Thales wins UK carrier contract

Thales' design for the RN's new aircraft carriers has been selected and the company is set to play a key role in the £2.7 billion future carrier programme, as part of a tripartite alliance with BAE Systems and the UK MoD. The company will, in the coming weeks, be negotiating details of how it will under joint management make a major contribution to the programme. The company's partners in CVF who have provided magnificent support will be consulted about how their contributions can be used.

Alex Dorrian, chief executive officer of Thales Plc, said: "Thales is delighted that its design has been selected in this intensely close-run competition and that we have been identified as the Key Supplier. The project will stretch the resources of industry, the MoD has decided to draw upon Thales' strength in a three way alliance that will clearly mean substantial work for Thales in the UK. This decision represents a major step forward for Thales Plc and cements the company's position as the second largest defence contractor in the UK.



The rather unique design from Thales which has won the RN's CVF carrier project (Thales)

"This decision is a huge success for Thales as a prime contractor. By contributing at the highest level to the most important aircraft carrier programme ever developed in Europe, it confirms our global strategy by enhancing our prime contractor capabilities" said Chairman & CEO Denis Ranque. "We are extremely proud to be chosen as the Key Supplier in this new Alliance and that the Thales' design has been selected as the basis for this key military asset. Our part in this programme will represent one of the most important contracts ever won in the history of Thales, and in particular the most important in the last ten years."

Thales is the major systems supplier to the Royal Navy. Along with electronic warfare, communications and radar, Thales' systems are at the heart of the UK's naval capability. Thales also provides sonar and periscopes for all submarines. The company is the UK's second largest defence contractor, having been a supplier to the MoD since before the First World War.

Austal unveils patrol boat contender

Western Australian shipbuilder Austal Ships has released the first images of the design it has submitted for the tender for the Royal Australian Navy's new Armidale class patrol boats. The high performance vessels form the nucleus of a modern, capable yet affordable solution to Australia's maritime patrol requirements.

This solution draws on the complementary strengths and skills of Austal, Australia's largest shipbuilder, and Defence Maritime Services (DMS), an established provider of logistic and technical support to the RAN with a proven track record and solid corporate backing.

The team's proposal offers substantial savings compared with current Defence procurement budgets and historical in-service support costs, resulting in significantly lower total life-cycle expenditure.

The successful outcomes of the RAN's Port Services and Support Craft (PSSC) contract demonstrates DMS' ability to provide tremendous value in delivering the through-life support required by the patrol boat project. In fact, a review of DMS' performance by the Department of Finance has established that Navy is obtaining 125% of value for 75% of the cost against the previous internal baseline.

The proposed vessel's characteristics also result in substantial savings.

Austal's proposal for the RAN's new Armidale class patrol boats. (Austal)

Recognising that both steel and aluminum have potential benefits in patrol boat construction, Austal produced monohull designs in both materials and compared their relative merits in detail. These studies showed that the two designs have approximately equal build costs, however, the aluminium variant uses 21% less fuel. Combined with lower maintenance costs, these fuel savings result in significantly lower through-life expenditure.

Developed over a two-year period and drawing on the vast accumulated experience of Austal and DMS in vessel design, construction, operation and support, the 56 metre patrol boat has been fully optimized for the RAN's requirements – both operational and budgetary – for long-term performance and reliability.

"Embracing technology that is proven, up-to-date and widely applied, the Austal patrol boat is a thoroughbred naval vessel that is operator friendly, reliable and easy to maintain throughout its life," said Austal Ships' Military Projects Manager, Mr Kim Gillis.

Recognising that crew fatigue and other morale factors are potentially major inhibitors of operational performance, considerable attention has been given to crew comfort issues.

"Extensive testing has proved the design's excellent seakeeping qualities and that the aluminium hull is slightly superior to the steel design in this regard," Mr Gillis said.

The vessel's Australian-designed and manufactured motion control system also contributes to substantially improved ship operability as well as increasing safety and reducing crew fatigue by eliminating excessive ship motion.

All onboard systems conform to Defence quality requirements and are straightforward to operate and maintain. System reliability and supportability is enhanced through carefully planned system back-ups and by maximum use of readily-available commercial equipment.

With Austal's extensive modern shipbuilding facilities and large, skilled workforce and DMS' established presence in all Australian Navy ports including the patrol boat bases in Cairns and Darwin, this commercially focused partnership is ready to respond to the start of the project as soon as the contract is awarded.

Wedgetail gets closer

Northrop Grumman Corporation has completed initial testing of the first production Multirole Electronically Scanned Array (MESA) radar antenna for Australia's Wedgetail airborne early warning and control (AEW&C) aircraft.

The MESA antenna exploits leading-edge technology by combining two side-looking phased arrays with an innovative end-firing 'top hat' antenna that emits and shapes a beam in the fore and aft directions. This combination makes MESA the first airborne surveillance radar that provides a 360-degree azimuth scan without mechanical rotation of a radar dish.

Designed under contract to The Boeing Company for the Australian Defence Force (ADF), the MESA will be integrated into a modified Boeing 737-700 aircraft. The first of these platforms rolled off the factory line in October 2002 at the company's Renton, Wash., facility in the U.S. The ADF has purchased a total of four aircraft.

Attached to the top aft section of the fuselage, the MESA antenna is constructed of ultralight material.

It enables state-of-the-art performance at a fraction of current system weights, thereby allowing additional time on station for the aircraft.

MESA will provide multiple surveillance applications, using pulse doppler radar forms for air search and pulse forms for maritime surface search. It also will provide in the same aperture an integrated civil and military identification friend-or-foe (IFF) capability.

The RAAF's first Wedgetail airframe seen coming out of Boeing's Washington facility. The phased array radar has been successfully tested and will be integrated onto the aircraft later this year. (RAAF)

The first production MESA antenna was rolled out of Northrop Grumman's Baltimore, Md., facility, where it is also undergoing initial system testing. A second antenna will be delivered later this spring. Main system integration testing will begin in late 2003 and continue through 2006. The first flight of a MESA-equipped 737-700 is scheduled for early 2004, with major integration flight testing to follow.

Northrop Grumman will also supply prime contractor Boeing with the electronics for the MESA radar and IFF, the power supply systems, and the radar software, parts of which are supplied by its Australian industry partners, Tenix Pty Ltd., Adelaide; Cablex Pty Ltd., East Bentleigh, Victoria; and Thycon Pty Ltd., Melbourne.

The amphibious transport dock ship SAN ANTONIO (LPD-17) is under construction at Northrop Grumman Ship Systems Avondale in New Orleans. SAN ANTONIO is scheduled for launching in July of this year and should be commissioned in 2005. (USN)

Observations

By Geoffrey Evans

AN UNUSUAL APPROACH TO WAR

It must be assumed the purpose of publicity given to the massing of armed forces close to Iraq has been to persuade President Saddam Hussein of the futility of resisting demands that he should surrender the weapons of mass destruction he is believed to possess.

Even so the publicity at times seems to have been carried to an unusual extent, especially to anyone who has lived through or taken part in 20th century wars. Formal 'farewell' ceremonies for sailors, soldiers and airmen as they depart for the scene of potential hostilities, details of ships and various defence force units, media illustrations of the likely battle-field, conjecture about probable tactics and casualties for attackers and attacked alike, endless debate on what happens afterwards, the effect on the United Nations Organization – a matter of vital importance so far as the future is concerned – all regrettably to no avail as this column goes to press.

To this observer it seems that too many national leaders have painted themselves – and their countries – into a corner and extrication without loss of face by one or another will be difficult if war is to be averted.

FOREIGN POLICY, TRADE AND DEFENCE

It hardly needs to be stated that foreign, trade and defence policies are closely linked and so this writer was pleased to receive from the Department of Foreign Affairs and Trade a copy of "Advancing the National Interest", the Government's second White Paper on foreign and trade policy. Defence policy was outlined in the Defence 2000 White Paper and is currently under review as a consequence of terrorist activities during the last eighteen months and rather surprisingly, a Parliamentary committee is conducting a public examination of a cornerstone of defence policy – a maritime strategy – at the same time.

Advancing the National Interest is a comprehensive document detailing Australia's relations with countries, large and small, in every part of the world. The United States is seen as the most powerful military and economic power and assured of pre-eminence into the foreseeable future; with an economy accounting for 33% of global GDP and defence expenditure more than five times greater than any other nation (in fact more than the next ten defence spending nations combined), this is not surprising and has no doubt strengthened the resolve of successive governments to seek the closest possible relations with that country.

While stressing the pre-eminence of the United States, the White Paper by no means overlooks Australia's geographical situation and the importance of its relations with the diverse range of countries that constitute Asia. Australia now has a major economic interest in Asia and its markets in 2002 accounted for some 56% of Australia's total merchandise exports: Japan remains the largest export market while those of China, SE Asia and India have grown.

Australia's links with other regions – the Middle East, Europe, the Americas and with neighbouring PNG and Pacific island states – some historical and nearly all involving trade in goods or services, are fully reported in the White Paper together with global security implications and the threat posed by terrorism.

The writer has some reservations about a section asserting the stability of great power relations: At the time of writing it does not seem an appropriate word to use in connection with major power relations.

As a final observation, the writer has noted the importance Advancing the National Interest attaches to trade. Most of Australia's trade in the form of goods must cross the seas in vulnerable merchant ships; protecting the ships is a maritime task and a part of the nation's maritime security strategy, and as mentioned above, in process of review by a committee of the Parliament. One would expect the policy to be confirmed and the planned means of implementation undertaken without delay.

PRODUCT REVIEW

Sailors in Slouch Hats.

From a sea of memories recorded by the Men of 42 Australian Landing Craft Company, RAE, AIF.

Edited by W W Rice
Published by Hesperian Press WA.
Price $22.00
168pp, illustrated.
Reviewed by Ian Johnson

Sailors in Slouch Hats is the wartime reminiscences of the men of 42 Australian Landing Craft Company, RAE, AIF during World War II. From their role in Operation Porton in June 1945, *Sailors in Slouch Hats* tells of the battle of Bougainville from a soldier's point of view as well as the unit's beginnings in 1943 as the Army hurriedly formed the 42 Australian Landing Craft Company for use in amphibious landing operations in the Pacific.

More a collection of personal stories than an official history, General Peter Cosgrove AC MC said of *Sailors in Slouch Hats* "...a stirring and fitting tribute to the magnificent soldiers who risked and often gave their lives in Operation Porton in 1945."

An interesting read and an insight into an Army Water unit during WWII.

Available from Hesperian Press at www.hesperianpress.com or PO Box 317 Victoria Park WA 6979. Ph (08) 9362 5955

Naval Weapons Of World War Two

By John Campbell
Published by Conway Maritime Press, 9 Blenheim Court, Brewery Road, London N7 9NY, England.
E-mail: sales@chrysalisbooks.co.uk. Price 45 pounds.
Published October, 2002.
Reviewed by Vic Jeffery.

Whilst there have been countless reference books produced relating to the naval history of World War II, there has been precious little relating to the massive array of weapons carried and used by the surface ships, submarines and aircraft of the world's Navies.

This large 404 page book is absolutely crammed with information and can only be described as an encyclopaedia. It contains more than 500 illustrations including 223 good quality photographs and detailed plans and drawings along with more that 350 specification tables.

The author, the late renowned author John Campbell, was a recognised authority on naval weaponry and this book is the culmination of a lifetime's research and is a fitting and lasting memory to his lifetime of research on the subject.

Principal Navies featured in *Naval Weapons* are: Great Britain, United States of America, Japan, Germany, France, Italy and Soviet Union. Also included and divided by country (including minor powers not directly involved in the war), are: Argentina, Brazil, Chile, Denmark, Finland, Greece, Netherlands, Norway, Peru, Poland, Portugal, Romania, Spain, Sweden, Thailand, Turkey and Yugoslavia.

Covered are every aspect of naval guns; torpedoes; anti-submarine weapons; mines; and bombs; rockets and missiles. For example the variety of torpedoes mentioned includes wet-heaters for destroyers, wet-heaters for submarines, airborne wet-heaters, electric non-homing varieties for surface ships or submarines, hydrogen peroxide types, airborne homing, and even obsolete torpedoes still in naval service at that time.

All major weaponry of the period and weapons of earlier vintage that were still employed during the war, and those that were at an experimental, trial or design stage in 1945 are also included.

This explains the presence of the twin *Mk VI** mount fitted in postwar Royal Australian Navy *Daring-class* and *Battle-class* destroyers and the *River-class* destroyer escorts which is included in the Great Britain section. It was the last type of twin-turret in RAN service.

Naval guns include the gigantic Japanese Type 94 18.1-inch/46cm which were fitted on the world's largest battleships, YAMATO and MUSHASI, a vast contrast, for example, to the Browning 0.50-inch/12.7mm Browning M2 water cooled machine guns carried aboard United States Navy units early in the war.

The British battleship HMS RODNEY provides and interesting table during her action with the German battleship BISMARCK in 1941. With her nine 16-inch/406mm guns located in triple turrets, A, B, and C turrets mounted forward, she fired some 384 shells from her main armament, each weighing 2048lb/929 kg, at the enemy juggernaut.

Where I expected the break-up of the huge shells fired by Rodney's guns to be reasonably evenly dispersed, it was not so. The three guns of A turret (left, centre and right) fired 36, 50 and 22 shells (total 108) respectively. B turret fired 45, 47 and 52 (144) and C turret, 44, 42 and 44 (130) in a more even spread during the action. Obviously the weather could have been a factor in the performance by A turret.

Another interesting comparison is in the United States Navy section in the table titled *'Ammunition Performance with Kamikaze Actions and Non-Kamikaze Actions Between 1 October, 1944 – 31 January, 1945'*.

The highest tally of 'kills' for that three month period was the 114 Kamikaze aircraft which fell to 40mm Bofors guns with an average of 2,272 rounds per aircraft. It was interesting to note that the normal 5-inch/127mm shell averaged 1,162 rounds per aircraft whilst the VT (variable time fuze) 5-inch/127mm round averaged 310 rounds per aircraft. There was certainly a message there!

There is an 'Aussie' presence in the Great Britain section with a photo of one of the Tribal-class destroyer HMAS WARRAMUNGA'S 4.7-inch/120mm twin CPXIX mountings which were powered by a 140hp steam turbine and oil hydraulic pump.

The much-feared Japanese 24-inch/61cm Type 93 'Long Lance' torpedo developed in 1933 and entering production in 1935 was a far superior torpedo to anything else in the world at that time. The devastation it caused with its range early in the Pacific War is well documented.

The Allied forces had nothing to compare with these powerful weapons which basically doubled their torpedoes in all aspects of capability; speed, range and warhead.

Japanese 'Long Lance' torpedoes had an incredible range of 43,700 yards/40,000 metres at a speed of 36-38 knots or alternatively a range of 21,900 yards/20,000 metres at 48-50 knots and carried an explosive warhead of 1,080 lb/490 kg. The 1943 Model 3 version had a much larger and heavier warhead of 1,720 lb/780 kg with a maximum range of 32,800 yards/30,000 metres at a speed of 36-38 knots.

One can only marvel at the many hundreds of hours which went into compiling a book of this magnitude which is a fitting memory to the late John Campbell. Most highly recommended.

Lost Subs: From the Hunley to the Kursk, The greatest submarines ever lost – and found.

By Spencer Dunmore
Allen and Unwin
Hardcover, 176pp
Reviewed by Doug Steele
$49.95

In August 2000, the fates of two very different submarines made headlines around the world. While the Confederate Army's H.L. HUNLEY was being raised in South Carolina, the Russian nuclear submarine KURSK was on the verge of disaster in the Barents Sea. In his latest book, *Lost Subs*, Spencer Dunmore follows the course of submarine history between these two famous subs. As its title suggests, Lost Subs focuses particularly on the sinking, rescue, discovery and salvaging of over a century and a half of submarines – and a selection of their victims – that have been lost in both peace and war.

Lost Subs is a lavishly illustrated publication combining military and maritime history with marine archaeology. After an introduction to the birth and development of the submarine, Dunmore covers its first use as a weapon in the American Civil War and the enduring mysteries surrounding the HUNLEY; the U-boat campaign and the daring feat of the AE2 in the First World War; selected German, American and Japanese submarine losses in the Second World War; a selection of Cold War casualties (including the US Navy's nuclear submarine SCORPION, which imploded after encountering a hot-running torpedo), and of course, the loss of the KURSK under the Barents Sea.

This is unmistakably a 'coffee-table book' in both format and content. As such, the real gem in this publication is the artwork and photography, from cutaway profile drawings and period photographs to computer-generated artwork and impressive underwater photography. Unfortunately, those wishing to find a detailed account of submarine operations and losses may need to look elsewhere. However, the combination of excellent illustrations and compelling tales of daring-do under treacherous, suffocating circumstances makes *Lost Subs* an engaging example of this 'coffee-table' format.

Ordeal By Exorcet HMS GLAMORGAN and the Falklands War 1982

By Ian Inskip
Chatham Publishing
Available from:
Crusader Trading
9 Townsville st
Fyshwick ACT 2609
Ph: (02) 6239 2332
Price: $45 +pp

Ordeal by Exocet is the harrowing tale of Type 12 County class destroyer HMS GLAMORGAN, the only ship to survive a hit by an Exocet anti-ship missile during the Falklands Conflict in 1982, told by her Navigating Officer.

HMS GLAMORGAN, Admiral Woodward's Flagship until HERMES' arrival in Ascension, was in the thick of the fighting throughout the conflict. Her role for most of the time was that of an expendable escort, and she was to face the full wrath of the enemy – and the elements – in the South Atlantic.

Incorporating vivid firsthand accounts written at the time, and illustrated with many previously unpublished photographs, the book also portrays the daily life of an escort under wartime conditions and describes only too clearly the tension, fear, storm, cold, disaster and sorrow which were so close at hand, though incidents of humour and moments of elation were certainly not uncommon.

An interesting fact arising from the book was the use of the RN's Lynx helicopters off Port Stanley. These aircraft were fitted with large radar reflectors and would approach the coast at around 15-20 knots to try and lure the Argentines into believing this was a ship about to conduct shore bombardment and entice the Argentines to fire their land based Exocets, which the Fleet knew to be deployed to the islands.

Another tale details the intelligence gained on an Argentine plan to mingle one of its British made Type 42 destroyers within the RN Task Force on a suicide mission to get the carriers. However, during the conflict Argentine ships transited along their coast so close to avoid RN nuclear powered submarines that the ship earmarked for the mission ran aground and was unable to proceed.

While attacking the enemy, GLAMORGAN faced missiles, bombs, shells and rockets. Personal accounts recall these attacks, and other operations including the Pebble Island raid which GLAMORGAN supported. All the Exocet attacks on the Battle Group are included, culminating with the desperate fight to save the ship, which came perilously close to sinking. The aftermath and the traumatic stress experienced by those who lost shipmates brings home the gruesome reality of war.

Written by one who experienced at first hand that reality, *Ordeal by Exocet* vividly recalls the war in the South Atlantic twenty years on and brings to light many aspects which were then unknown to an unsuspecting public. A gripping read for historian, enthusiast and general reader alike. While being expensive for a paperback this book will make a valuable addition to any Falklands War library or history of modern naval warfare.

STATEMENT of POLICY

Navy League of Australia

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 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 a close relationship with the nearer ASEAN countries, PNG and the Island States of the South Pacific.
- Advocates a defence capability which is knowledge-based with a prime consideration given to intelligence, surveillance and reconnaissance.
- Advocates the acquisition of the most modern armaments and sensors to ensure that the ADF maintains some technological advantages over forces in our general area.
- Believes there must be a significant deterrent element in the Australian Defence Force (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 highly mobile Army, capable of island and jungle warfare as well as the defence of Northern Australia.
- Supports the development of amphibious forces to ensure the security of our offshore territories and to enable assistance to be provided by sea as well as by air to friendly island states in our area.
- Endorses the transfer of responsibility for the co-ordination of Coastal Surveillance to the defence force and the development of the capability for patrol and surveillance 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 ensure the carriage of essential cargoes in war.
- Advocates the development of a defence industry supported by strong research and design organisations capable of constructing all needed types of warships and support vessels and of providing systems and sensor integration with through-life support.

As to the RAN, the League:

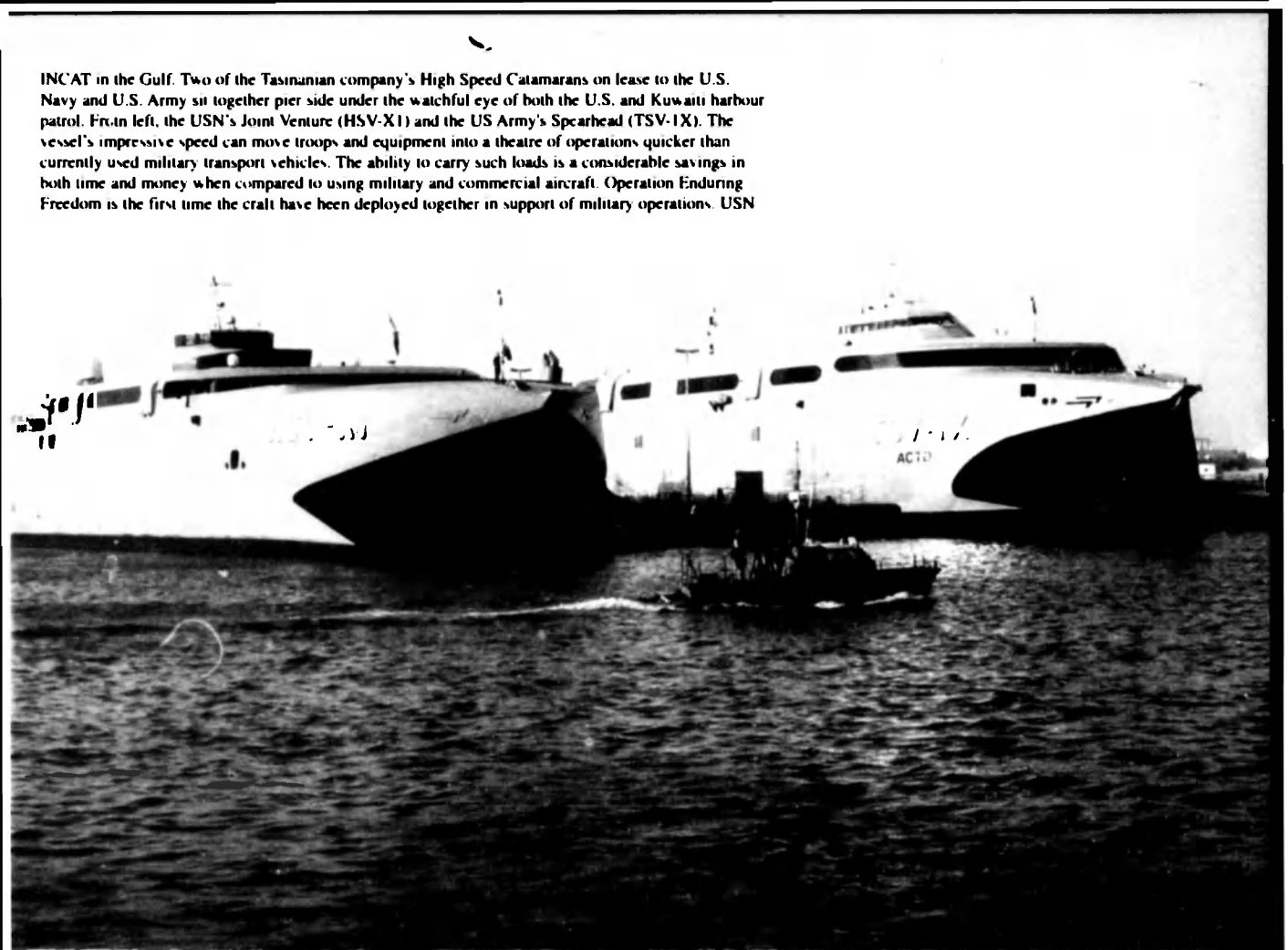
- Supports the concept of a Navy capable of effective action off both East and West coasts simultaneously and advocates a gradual build up of the Fleet to ensure that, in conjunction with the RAAF, this can be achieved against any force which could be deployed in our general area.
- Is concerned that the offensive and defensive capability of the RAN has decreased markedly in recent decades and that with the paying-off of the DDGs, the Fleet will lack air defence and have a reduced capability for support of ground forces.
- Advocates the very early acquisition of the new destroyers as foreshadowed in the Defence White Paper 2.
- Advocates the acquisition of long-range precision weapons to increase the present limited power projection, support and deterrent capability of the RAN.
- Advocates the acquisition of the GLOBAL HAWK unmanned surveillance aircraft primarily for offshore surveillance.
- Advocates the acquisition of sufficient Australian-built afloat support ships to support two naval task forces with such ships having design flexibility and commonality of build.
- Advocates the acquisition at an early date of integrated air power in the fleet to ensure that ADF deployments can be fully defended and supported from the sea.
- Advocates that all Australian warships should be equipped with some form of defence against missiles.
- Advocates that in any future submarine construction program all forms of propulsion be examined with a view to selecting the most advantageous operationally.
- Advocates the acquisition of an additional 2 or 3 updated Collins class submarines.
- Supports the maintenance and continuing development of the mine-countermeasures force and a modern hydrographic/oceanographic capability.
- Supports the maintenance of an enlarged, flexible patrol boat fleet capable of operating in severe sea states.
- 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 in reserve, or taken up for service, and for specialised tasks in time of defence emergency.
- Supports the maintenance of a strong Australian Navy Cadets organisation.

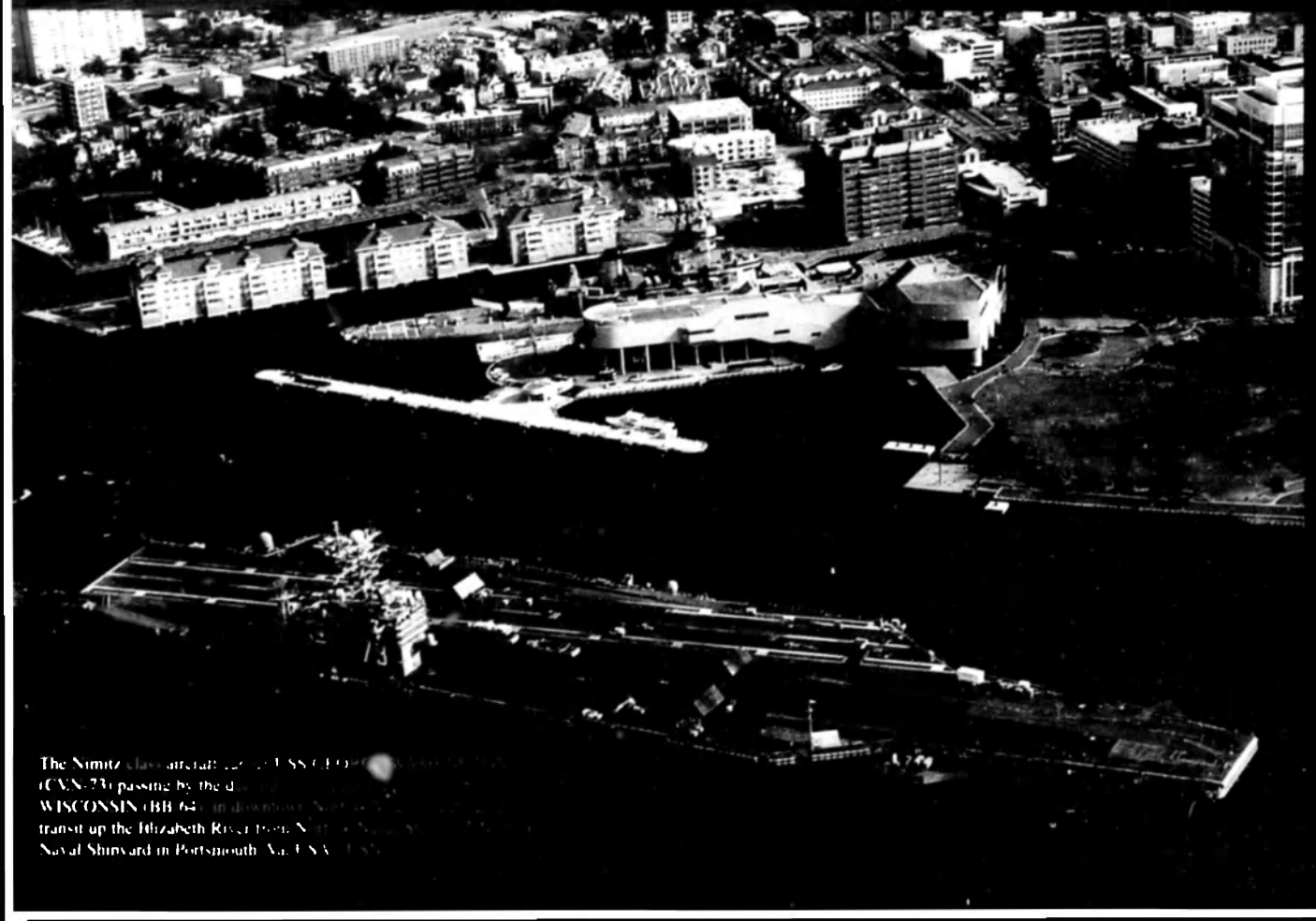
The League:

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 current economic problems and budgetary constraints, believes that, given leadership by successive governments, Australia can defend itself in the longer term within acceptable financial, economic and manpower parameters.

INCAT in the Gulf. Two of the Tasmanian company's High Speed Catamarans on lease to the U.S. Navy and U.S. Army sit together pier side under the watchful eye of both the U.S. and Kuwaiti harbour patrol. From left, the USN's Joint Venture (HSV-X1) and the US Army's Spearhead (TSV-1X). The vessel's impressive speed can move troops and equipment into a theatre of operations quicker than currently used military transport vehicles. The ability to carry such loads is a considerable savings in both time and money when compared to using military and commercial aircraft. Operation Enduring Freedom is the first time the craft have been deployed together in support of military operations. USN





The Nimitz class aircraft [illegible] USS (CVN-73) passing by the d[illegible] WISCONSIN (BB 64) [illegible] transit up the Elizabeth River [illegible] Naval Shipyard in Portsmouth, Va. USN

An aerial photo of the UN Security Council Coalition ships (from left to right) HMAS DARWIN, the USS Arleigh Burke class destroyer USS PAUL HAMILTON, the Spruance class destroyer USS FLETCHER, HMAS ANZAC and the British Royal Navy Type 42 destroyer HMS CARDIFF. The Security Council Coalition ships are conducting Maritime Interdiction Operations (MIO) against Iraq to not only stop Iraq selling more oil than it is allowed (although it is allowed to sell as much oil as it likes in exchange for food and medicine) but to also stop banned goods from entering Iraq that it could use for weapons manufacturing. (USN)