

# THE NAVY

THE MAGAZINE OF THE NAVY LEAGUE OF AUSTRALIA



**SEA KING IN  
RAN SERVICE**

**BRAZILIAN NAVAL  
EXPANSION**

**PACIFIC 2012**

**NO WRITING THE WHITE;  
THE UK 2010 SDSR**

ISSN 1322-6231



9 771322 623000

AUSTRALIA'S LEADING NAVAL MAGAZINE SINCE 1938

**\$5.95**  
INCL. GST



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

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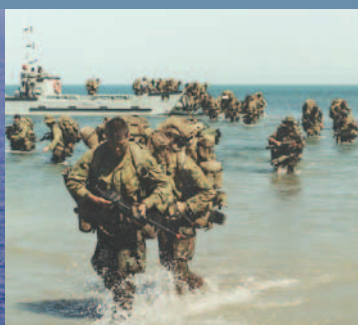
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or emailed to [editorthenavy@hotmail.com](mailto:editorthenavy@hotmail.com).

Submissions should include the writer's name, address, telephone and email contacts, and the nominated entry category.

*THE NAVY* reserves the right to reprint all essays in the magazine, together with the right to edit them as considered appropriate for publication.







## Volume 74 No.2

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### All Subscriptions, Membership and Advertising enquiries to:

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Navy League of Australia, NSW Division

GPO Box 1719, Sydney NSW 2001

### Deadline for next edition 5 May 2012

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**Front cover:** LCDR Scott Palmer, Executive Officer of 817 Squadron at the decommissioning ceremony of the Sea King (background) and 817 Squadron at HMAS ALBATROSS. The RAN's Sea King helicopters have been retired after 35 years of remarkable service to Australia in times of conflict, peacekeeping, natural disaster, search and rescue and national celebration. As well as retiring its current aircraft, 817 Squadron also decommissioned at the Naval Air Station on Friday 16 December 2011 after 48 years of continual service, during which time it has operated the Wessex and Sea King helicopters. (ABIS Hayley Clarke)



## 1982 REVISITED – OPPORTUNITIES FOR AUSTRALIA

If the Government of Argentina's recent actions are anything to go by then a 'Cold War' is currently being fought in the waters of the South Atlantic over the Falkland Islands.

During the last seven years Argentina has been ramping up the diplomatic language and backing it up with actions, coincidentally ever since oil was discovered with estimates of nearly 60 billion barrels (as a comparison the North Sea oil fields are thought to contain 21 billion barrels).

Argentine President Cristina Fernández de Kirchner seems to be the driving force behind Argentina's actions over the Falklands issue. This has included lobbying nations in and outside South America – a recent complaint to the UN by the Argentine Foreign Minister was thankfully met with deafening silence by the entire assembly. However, many South American countries have acquiesced to Argentina's lobbying and have banned vessels flying the Falkland Islands Flag in an effort to economically isolate and intimidate the people on the islands.

British sovereignty over the Falkland Islands dates back to 1765, ironically years before the Republic of Argentina even existed. The only time the Argentine Flag has flown over the Falklands was in 1982 after they were invaded by Argentina's military. The Falklands had no indigenous peoples and the UK has never implanted any civilian population; all civilians have voluntarily migrated to, or been born in, the Falkland Islands (nearly seven generations now). Civilian migrants voluntarily came from a number of diverse countries, as they did throughout the whole Americas region during the nineteenth century.

The UK thus believes, quite rightly, that its claim of sovereignty is legal and absolute. However, in recent years the Argentine government has become quite belligerent with its actions. Its intimidation has included:

- Withdrawing from cooperation on the South Atlantic Fisheries Commission and extending its fishing seasons in Argentine waters, thus impacting the long-term sustainable management of straddling fish stocks in the South Atlantic, in contravention of article 63 of the Convention on the Law of the Sea;
- Repudiating the 1995 Joint Declaration on Hydrocarbons, which had provided for cooperation in a Special Cooperation Area that straddled both Argentine and Falkland Islands waters for oil exploration and exploitation;
- Placing a ban on charter flights travelling through Argentine airspace to the islands in 2003;



Argentine President Cristina Fernández de Kirchner deliberately whipping up support in Argentina at a rally with a map of the Falklands overlaid with an Argentine Flag in the background. Her and her government's public intimidation of the Islanders has the potential for a miscalculation at a local level with potentially deadly results.

- Introducing domestic legislation to penalise companies that wish to do business in or with the Falkland Islands (This particular point is why a state of war was not declared during 1982 so trade could continue. However, times seem to have changed);
- Introducing a presidential decree in 2010 that banned ships not seeking permission from the Argentine government to transit its waters to the Falklands. This action does not comply with the freedom of navigation or the right of innocent passage provided for by international law, including the Convention on the Law of the Sea;
- Threatening at the United Nations in September 2011 to withdraw from the 1999 United Kingdom - Argentina Joint Statement, which had allowed Argentine passport holders to enter the Falkland Islands for the first time since the 1982 conflict and had provided for the resumption of the Falkland Islands' only commercial air link with South America through Chile;
- Asking the South American region, in December 2011, to support a declaration denying access to their ports to Falkland Islands-flagged vessels, thus explicitly attempting to restrict trade and threatening and intimidating the people of the Falkland Islands with economic isolation, which is already having the effect of driving up the cost of living in the Falklands and directly affecting the 3,000 plus inhabitants.

Argentina's intimidation of the Falklands population must call into question its commitment to peaceful cooperation in the South Atlantic and its adherence to international law (echoes of 1982).

The most recent escalatory actions have involved the Minister for Industry and two cruise ships.

During March it was reported that the Argentine Minister for Industry personally contacted the CEOs of the top 20 Argentine companies to lobby, and in some cases threaten, them to ban all trading and imports from the UK.

During February two civilian cruise ships, the P&O Cruise ship *Adonia* and the Princess Cruises' vessel *Star Princess*, were banned from a popular Argentine tourist port in the south of the country. The cruise ships only transgression was that they had stopped off at the Falklands as part of a three month cruise of South America. While it was later put down to a case of 'mis-understood policy' at a local official level it does show how confusing and thus volatile the situation is becoming. It may only be a matter of time before another miscalculation takes place and a war is inadvertently started.

To highlight this further there are some disturbing similarities with the current Argentine government and that of the military dictatorship under General Galtieri. For a start Argentina is not a fully functioning democracy. It has been reported by opposition sources in Argentina that the President is surrounded by a small clique of unquestioning ministers and officials supported by sectors of the media that the government controls, and a praetorian guard of young nationalistic neo-Marxist Peronist activists called La Campora who have taken key positions in government departments and state companies. A new anti-terrorism law has been drafted to curb opposition in the media, which is increasing as the economy deteriorates and the government becomes less popular. This government, like the military dictatorship of 1982, is looking to the Falklands for a political distraction.

To add fuel to the fire, last year US Secretary of State Hilary Clinton bumbled into the situation with the statement at a press conference that Argentina and the UK need to sit down to discuss sovereignty. This was viewed in the non-Western world as a distinct lack of support for the UK



An iconic scene of the 1982 Falklands Conflict, the Type 42 destroyer HMS SHEFFIELD on fire after being hit by an Exocet missile. The hysteria being whipped up by the current Argentine government over the Falklands issue could inadvertently force a miscalculation on either side resulting in the current Cold War turning hot. (RN)

and its position. Many in the UK, and the Falklands, were repulsed by the remark. It was also quite at odds with the previous US position adopted by the Reagan administration which gave total and unequivocal support to the UK during the 1982 conflict. So much so that the then US Secretary of Defense Casper Weinberger was later knighted by Queen Elizabeth II for services to the UK.

At no point has the Argentine government taken into account the people of the Falklands and their basic human right to self-determination. In fact, the Argentine Constitution demands sovereignty over the Falkland Islands without any consideration for the wishes of the inhabitants.

To this end the United Kingdom has stated it has no intention of imposing a change in sovereign status against the will of the people concerned. It has further stated that should the clear and constitutionally expressed wish of the Falkland Islands people be a change to its sovereign status,

the United Kingdom will help the Falkland Islands achieve this.

Australia should seriously look to being more involved in the Falklands issue not only to demonstrate our national belief in basic human rights but from an economic and cyber security perspective.

For too long Australia has looked to its north for security issues and prosperity. But perhaps now it should also start to look south. A secure oil supply from the Falklands is closer to Australia than the Middle East and would thus have a positive impact on the Australian economy. Australia could take on the role of oil refining gateway for oil/petroleum supplies to North Asia, which has indicated in the past that it is 'uncomfortable' with the turbulent nature of Middle East oil supply.

Australia can be rightly proud of its record of defending human rights against military oppression. A new Falkland's War would test that resolve. Support for the UK's position on the Falklands before any conflict could in fact have a stabilising effect on the situation. Australia's developing links with the UK Military would also mean that the closest UK defence assets with which to exercise and further those links are in fact in the Falkland Islands (much closer than the UK). The RAN would play a key role in this endeavour with ship visits and joint exercises.

From a cyber security point of view, plans exist in academia to install a large fibre optic communication cable from Australia, through New Zealand to the Falklands and then to South America and on to Europe. This would allow Australia and the Falklands to be the Southern Hemisphere anchors for a new international broadband connection linking this Hemisphere for the first time. Having such a link provides for increased security as Australia's current sea bedded cables run to the North through busy shipping lanes, fishing grounds and potential conflict zones. A Southern Hemisphere link avoids those issues.

The RAN could play a key role in the South Atlantic, as it has done in the Southern Ocean in the past. Frequent visits by RAN ships to the Falklands would have a stabilising effect with Argentina witnessing the Islands and their people have powerful friends, making intimidation and conflict the least attractive of all of President Cristina Fernández de Kirchner's alternatives. Warships tend to make the best ambassadors for peace. ■

## FROM OUR READERS



### Dear Editor, NGS on target

Your last 'From the Crow's Nest' was spot on, again. As a former Army Artillery man with an eye for things nautical I can say that it certainly looks like our navy is living in a single service inside the box thinking comfort zone mid set. The consequences of wanting to be Joint obviously haven't hit home.

The Mk-45 127mm gun is very accurate but its sustained rate of fire is a woeful four rounds per minute. That's hardy in the ball park of suppression fire for an infantry platoon or company in an assault or in defence.

I note that the USN is in essence bringing back the Iowa capability in the form of the Zumwalt destroyers 155mm guns. These 200 tonne gun mounts carry 300 rounds each and have a water cooled barrel for a sustained rate of

fire of 10 rounds per minute for the life of the magazine.

That's 30 minutes of continuous 155mm/6.1-inch fire. The Zumwalts also carry two guns so either way the ship could double that rate or sustained time of fire on the fire mission. The ships also carry an extra 320 rounds in store. So your point about the need for NGS is essentially been confirmed by the USN.

With the RAN now having the capability to transport most of the Army to an enemy's shore outside of RAAF's coverage (and care) the NGS question needs to be asked...and answered by Navy sooner rather than later.

BZ for bringing it up.

**Mr David Barrow**  
(via e-mail)

### Dear Editor,

During WWII when shore bombardment was an issue for the many amphibious operations to be conducted, the RN resurrected the concept of the large gun Monitor. This ship could put down very destructive fire and yet was quick and cheap to build.

Perhaps the RAN's finest could look at a cheap NGS Monitor type solution to the problem the LHDs have inadvertently given them? Just Google HMS ROBERTS or ABERCROMBIE.

Alternatively, in the Vietnam War US used converted landing ships as fire support platforms. They were fitted with a 5" gun and numerous rocket launchers. Again, Google IFS, Inshore Fire Support Ship, and/or LSM(R), Landing Ship Medium Rocket.

**Dr Roger Thornhill**  
Canberra ACT



**Dear Editor,**

## **History Assistance Sought**

I am writing to elicit the assistance of readers in my efforts to write the story of the inaugural Entry to the Royal Australian Naval College. In the time of their joining in 1913 they were known as the 'Pioneer Class'. That remarkable class included three famous admirals John Collins, Harold Farncomb and Harry Showers. But also included among others Rupert Long the father of RAN's naval intelligence service and Eric Feldt who led the Coastwatchers.

The late Commander Tony Grazebrook commenced this project in the 1990s. This was at the suggestion of Vice Admiral Ian MacDougall and myself on the passing of Rear Admiral Showers. Tony undertook assiduous and extensive research until his untimely death a decade ago. Indeed, a high point for Tony was finding Captain James Esdaile still alive. He was able to conduct an interview with this fine officer. After Tony's death I took over the project in his memory and have become as equally gripped by the lives of these twenty eight Australians class as Tony had been.

To date I established contact with many family members and have been fortunate through the power of the internet to find some of the family that had eluded Tony. Indeed, the pervasive reach of the internet has meant the book will be quite different from the one Tony originally envisaged.

My writing of the draft thus far has led me to the 1930s. As I near World War II, I would like to enrich my understanding of the class and their deeds by interviewing anyone who served with them or may have mentioned them in their papers. The complete list of the class is:

- Otto Albert who died in 1914 but who is best remembered by the Otto Albert Prize for Seamanship,
- George Armitage who left the Navy in 1931 but conducted amphibious training in World War II,
- Joseph Burnett who commanded and was lost in HMAS SYDNEY;
- Norman Calder who commanded HMAS BUNGAREE;
- John Collins who commanded the Australian Fleet, HMA Ships ANZAC, SYDNEY and SHROPSHIRE;
- Alfred Conder who was a talented Hydrographer but died in 1932;
- Ernest Cunningham who was lost in HM Submarine K17 in 1918;
- James Esdaile who commanded HMAS ADELAIDE and was NOIC New Guinea;
- Harold Farncomb who commanded the Australian Fleet, HMA Ships YARRA, PERTH, CANBERRA and HMS ATTACKER;
- Eric Feldt who left the Navy in 1922 and served in the new Guinea Civil service until he lead the Coastwatchers in World War II;
- Frank Getting who was lost in HMAS CANBERRA but had previously commanded HMA Submarine OXLEY and HMAS KANIMBLA;
- Lloyd Gilling who specialised in navigation but died in 1944 in UK;
- Paul Hirst who commanded HMA Ships TASMANIA and TOOWOOMBA;
- Ben Howells who left the Navy in 1916 and became a teacher;
- Peyton Kimlin who left the Navy in 1921 and also became a teacher;
- Frank Larkins who was lost off HMA Submarine J2 in 1919;
- John Lecky who left the Navy in 1915 and became farmer;
- Rupert Long who led Naval Intelligence in World War II;
- Hugh MacKenzie who was a New Guinea planter between the wars was a Coastwater during World War II;
- Jack Newman who was a communications specialist and served at Fleet Radio Unit, Melbourne (FRUMEL) in World War II;
- Edwin Nurse who became Inspector of Naval Ordnance;
- Winn Reilly who was the King's Medallist and left the Navy in 1922. He was involved in the coordination of mine countermeasures efforts in SW Pacific during World War II;
- Cyril Sadlier left the service in 1926 and was involved in naval training during World War II;
- Harry Showers who commanded HMA Ships ADELAIDE, HOBART and SHROPSHIRE;
- Horace Thompson left the Navy in 1929 but rejoined in World War II and served in the Examination Service;
- Harry Vallentine left the Navy in 1914 but subsequently served in the British and Australian armies;
- Llewellyn Watkins left the Navy in 1922 but rejoined in World War II and was lost in HMAS PERTH.
- Adrian Watts left the Navy in 1914 but subsequently served in the Army in World War I and the RAAF in World War II.

In addition to people who served with the Pioneer Class I am still trying to establish contact with family of Eric Feldt, Frank Getting, Lloyd Gilling, Hugh MacKenzie, Winn Reilly Cyril Sadlier, Llewellyn Watkins and Adrian Watts. I would appreciate any leads readers may have in that regard. The work Tony and I have done to date has revealed that the Pioneer Class were quite remarkable.

I would be grateful to any assistance to this project which I hope will bring the Pioneer class to national prominence.

My contact details are through the Navy League

PO Box 832, Fyshwick ACT 2609

email: editorthenavy@hotmail.com

**Best Regards**

**Vice Admiral Peter Jones**

## THE SEAPOWER CONFERENCE

The Royal Australian Navy Seapower Conference 2012 was held at the Sydney Convention and Exhibition Centre on 31 January to 2 February.

The Seapower Conference formed part of the biennial Pacific Maritime Congress which, in addition to the Navy Conference, included the Pacific International Maritime Exposition, conducted by Maritime Australia Limited and the Pacific International Maritime Conference run by Engineers Australia, The Royal Institution of Naval Architects and the Institute of Marine Engineering, Science and Technology.

The Royal Australian Navy and each of the other organisations involved deserve congratulations for putting together such a comprehensive and well presented event. All in all there was much to see, a lot to listen to and many people to talk to.

Save for one matter I will not trespass on Rear Admiral Robertson's report on the Seapower Conference which appears elsewhere in this edition of *THE NAVY*.

## THE FUTURE SUBMARINE

Rear Admiral Rowan Moffitt, head of the future submarine project, gave an excellent presentation to the Seapower Conference. It was in many respects quite sobering.

According to the Admiral "For a submarine of completely new design it would take around 20 years from starting the definition process to having the first one of the new class ready for operational use". It was not clear when the definition phase might begin. It seemed to depend on Government clarifying what it wanted in a future submarine.

The only conclusion one could draw from the Admiral's remarks was that an Australian designed and built boat could not be operational until 2030 at the earliest. There must be real doubt as to whether any of the Collins class will still be operational at that date.

There are of course alternatives to an Australian design and build.

First, we could obtain a design off the shelf from an established overseas constructor and build locally. Rear Admiral Moffitt has been reported as saying that it would only take 10 years for a locally constructed submarine of an off shelf design to be operational.

Second, Australia could purchase submarines off the shelf from one of the overseas constructors. By employing this option Australia could obtain submarines in only a few years.

Quite apart from the question of delivery dates, it seems clear that submarines obtained using either of these two options would cost appreciably less than the cost quoted for an Australian designed and built submarine.

It seems that Government is as yet undecided as to the course it should adopt.

One option the Government has rejected is the nuclear option. Readers of this magazine will know that The Navy League regrets the Government's dismissal of nuclear propulsion. Given the ambitious role intended for the 12 future submarines the League believes that nuclear propulsion is an obvious option to consider.

Both the United States and the United Kingdom have established production lines of nuclear submarines of proven design. It appears that the cost of these boats is less than the presently forecast price of the yet to be Australian designed and built future submarine.

Now that the Government is having to consider broader options than just local design and build, it is to be hoped that the prohibition on consideration of nuclear propulsion is removed.

## AE1

The story of HMAS AE1 is well known to many. Australia's first submarine, it was lost off New Britain on the 14 September 1914. The circumstances of the loss of the submarine remain unexplained to this day.

It is not just a question of what happened – but where. The location of the AE1 remains unresolved. If AE1 can be located it is likely that the circumstances occasioning its loss will be able to be understood.

AE1 Incorporated has been established with the aim of locating the AE1. A great deal of work has been done to try and calculate where the submarine went down and where it might now be. Interested readers might care to look at [www.ae1.org.au](http://www.ae1.org.au)

It is the ambition of AE1 Incorporated to be able to locate the boat prior to the centenary of its loss. While the work done by AE1 Incorporated has narrowed the search area such a search will be not inexpensive. It is to be hoped that the government can be persuaded to fund the search.

The government is planning to fund the commemoration of World War I. It would be appropriate to begin at the beginning and help find HMAS AE1.

## LEAGUE HISTORY

The Navy League began in Australia at Launceston in 1900.

The Federal Council of the League is planning to produce a history of the organization, dating from the time its first branches were formed in Tasmania in 1900 up to the present day.

In this regard the League has commissioned Mr Malcolm Longstaff, a member since 1970 of the New South Wales Division Executive Committee, to undertake the necessary research as a prelude to the production of the history in a form that is yet to be decided.

If any reader, especially those who may have been office-bearers in a Division, has any personal reminiscences or memorabilia relating to their involvement with the League that they believe may assist the research, it would be appreciated if they could as a first step contact Malcolm Longstaff.

### Malcolm can be contacted as follows:

Phone: (02) 9988 3563

Email: [nla.history@iinet.net.au](mailto:nla.history@iinet.net.au)

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# THE SEA KING IN RAN SERVICE

By CDR David Hobbs MBE, RN (Retd)

**CDR David Hobbs takes a look at the career in RAN service of the mighty Sea King Helicopter. The first and last truly naval helicopter to serve in the RAN. Its capability will be sorely missed.**

In 1957 the US Navy issued a far-sighted requirement for a twin turboshaft powered, all-weather, anti-submarine helicopter able to combine both search and attack roles in a single sortie with long endurance. The resulting Sikorsky Type S-61, designated the HSS-2 by the USN, flew for the first time in March 1959 and entered front-line service in 1961. The name Sea King was entirely appropriate for this large and very capable helicopter which offered a quantum leap in capability over its predecessors. Re-designated the SH-3A in 1962 it was an immediate success but development continued and in 1966 the USN introduced the improved SH-3D version powered by two General Electric T58 turbo-shafts each delivering 1400shp with improved sonar and doppler systems. Endurance was over four hours with a full outfit of sensors and weapons.

Westland helicopters, based at Yeovil in the UK, had a history of building Sikorsky designs under licence and signed an agreement in 1959 that allowed the construction of the S-61. At the time the Royal Navy was concentrating on the development of the smaller Westland Wessex, a turboshaft-powered derivative of the Sikorsky S-58, and regarded the Sea King as too big for operation from the limited decks of its relatively small aircraft carriers. By the early 1960s, however, it was obvious that when the Wessex was fitted with the radar, all-weather flight control system and dipping sonar it needed to be effective, it was too heavy to carry weapons and its endurance, especially in the Far East, would be

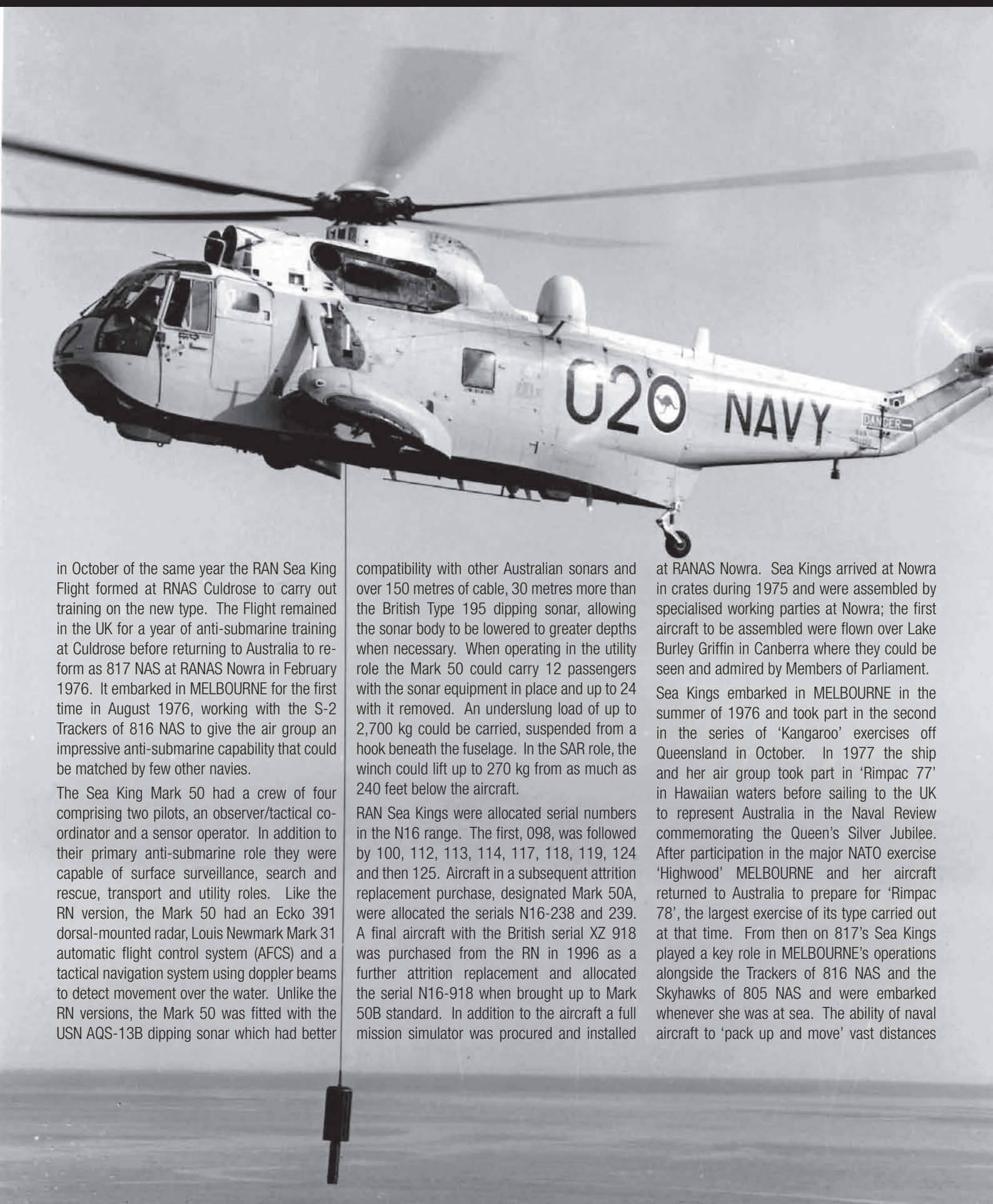
measured in minutes rather than hours. Its development was terminated and the RN ordered a version of the Sea King from Westland based on the SH-3D. To speed development four SH-3Ds were purchased from Sikorsky and assembled with British equipment, including 1500shp Rolls-Royce Gnome engines, sonar, doppler, radar and a flight control system that could be used throughout an anti-submarine sortie by day or night in any weather. The first production examples, designated the Sea King HAS 1, equipped 700S Naval Air Squadron (NAS) in 1969 at RNAS Culdrose in Cornwall for intensive flying trials and the first front-line unit, 824 NAS, formed in 1970 for service in HMS ARK ROYAL, replacing Wessex.

The Royal Australian Navy also operated the Wessex and had similar frustrations with its limited endurance. The Sea King was an obvious replacement and the RAN ordered 10 in 1972 to equip 817 NAS for service from HMAS MELBOURNE. Designated the Sea King HAS 50, these benefited from continued development by Westland and featured engine performance increased to 1535 shp which allowed an increase in all up weight by 454 kg to 9,526 kg. To absorb the extra power these aircraft had a strengthened transmission system and a new six-bladed tail rotor. The improvements gave a better performance and the ability to carry more weapons or fuel than the basic RN version. Subsequently the RN brought all its Sea Kings up this standard. The first Mark 50, N16-098, given the side number 901, flew 30 June 1974 and

A Squadron march past complete with Sea King at the decommissioning ceremony. The Sea King notched up 36 years of service in the RAN. Of the 13 acquired seven were lost with only one of those losses involving fatalities. (RAN)







in October of the same year the RAN Sea King Flight formed at RNAS Culdrose to carry out training on the new type. The Flight remained in the UK for a year of anti-submarine training at Culdrose before returning to Australia to reform as 817 NAS at RANAS Nowra in February 1976. It embarked in MELBOURNE for the first time in August 1976, working with the S-2 Trackers of 816 NAS to give the air group an impressive anti-submarine capability that could be matched by few other navies.

The Sea King Mark 50 had a crew of four comprising two pilots, an observer/tactical co-ordinator and a sensor operator. In addition to their primary anti-submarine role they were capable of surface surveillance, search and rescue, transport and utility roles. Like the RN version, the Mark 50 had an Ecko 391 dorsal-mounted radar, Louis Newmark Mark 31 automatic flight control system (AFCS) and a tactical navigation system using doppler beams to detect movement over the water. Unlike the RN versions, the Mark 50 was fitted with the USN AQS-13B dipping sonar which had better

compatibility with other Australian sonars and over 150 metres of cable, 30 metres more than the British Type 195 dipping sonar, allowing the sonar body to be lowered to greater depths when necessary. When operating in the utility role the Mark 50 could carry 12 passengers with the sonar equipment in place and up to 24 with it removed. An underslung load of up to 2,700 kg could be carried, suspended from a hook beneath the fuselage. In the SAR role, the winch could lift up to 270 kg from as much as 240 feet below the aircraft.

RAN Sea Kings were allocated serial numbers in the N16 range. The first, 098, was followed by 100, 112, 113, 114, 117, 118, 119, 124 and then 125. Aircraft in a subsequent attrition replacement purchase, designated Mark 50A, were allocated the serials N16-238 and 239. A final aircraft with the British serial XZ 918 was purchased from the RN in 1996 as a further attrition replacement and allocated the serial N16-918 when brought up to Mark 50B standard. In addition to the aircraft a full mission simulator was procured and installed

at RANAS Nowra. Sea Kings arrived at Nowra in crates during 1975 and were assembled by specialised working parties at Nowra; the first aircraft to be assembled were flown over Lake Burley Griffin in Canberra where they could be seen and admired by Members of Parliament.

Sea Kings embarked in MELBOURNE in the summer of 1976 and took part in the second in the series of 'Kangaroo' exercises off Queensland in October. In 1977 the ship and her air group took part in 'Rimpac 77' in Hawaiian waters before sailing to the UK to represent Australia in the Naval Review commemorating the Queen's Silver Jubilee. After participation in the major NATO exercise 'Highwood' MELBOURNE and her aircraft returned to Australia to prepare for 'Rimpac 78', the largest exercise of its type carried out at that time. From then on 817's Sea Kings played a key role in MELBOURNE's operations alongside the Trackers of 816 NAS and the Skyhawks of 805 NAS and were embarked whenever she was at sea. The ability of naval aircraft to 'pack up and move' vast distances

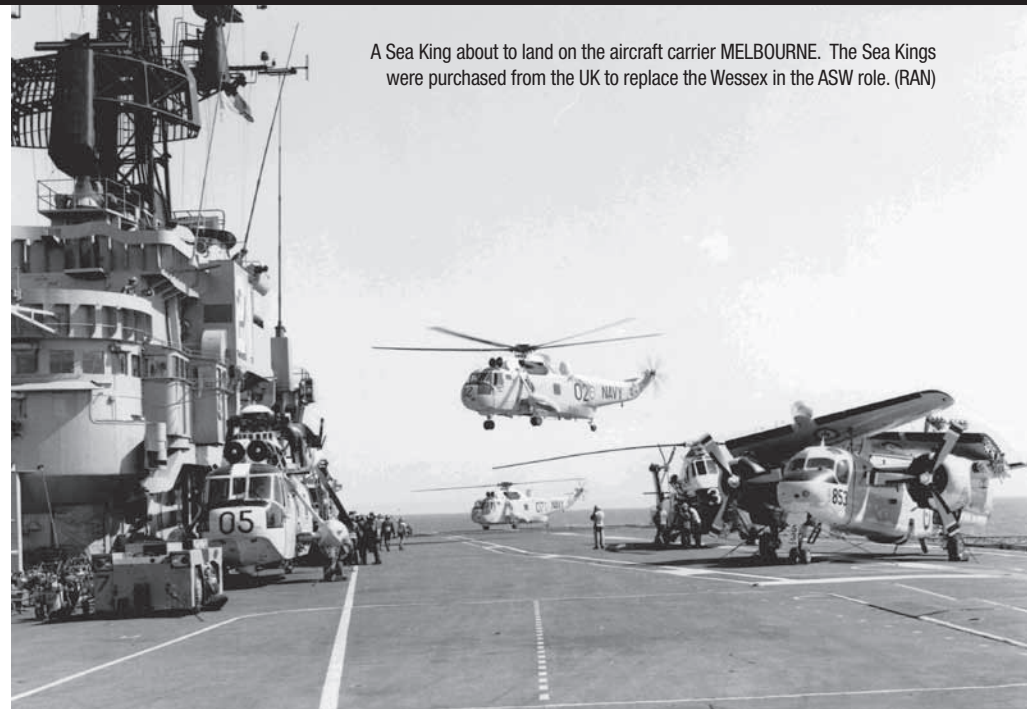
Shark 02 'in the dip'. A dipping sonar is an invaluable anti-submarine warfare tool which enables the aircraft to locate submarines much faster and with greater accuracy. The first RAN Sea Kings used the US AQS-13B dipping sonar which had over 150m of cable to get the sonar deep and below thermal layers which can hide submarines. (RAN)



and change between several roles while doing so is impressive and comes as a surprise to land-based airmen.

After MELBOURNE was taken out of service in 1982 the Trackers and Skyhawks were sold out of service but the Sea Kings were retained to begin a new era operating as single aircraft detachments on smaller warships. 817 NAS retained its shore base at Nowra and developed techniques to carry out shallow-water anti-submarine operations in the coastal waters off eastern Australia when aircraft were not embarked. First of Class flying trials were carried out in HMAS TOBRUK in September 1984 proving that a single aircraft could be effective in a wide range of roles. The type was evaluated in an ADELAIDE class FFG but found to be too large for the relatively small warship and S-70 Seahawks were procured which gradually took over the Fleet's anti-submarine tasking. In Exercise 'Kangaroo 92' four Sea Kings and four Army Blackhawks worked together to deploy 800 troops onto Melville Island in four and a half hours demonstrating the increasing importance given to amphibious warfare. Sea Kings subsequently landed their anti-submarine equipment and were used exclusively for amphibious and utility tasks.

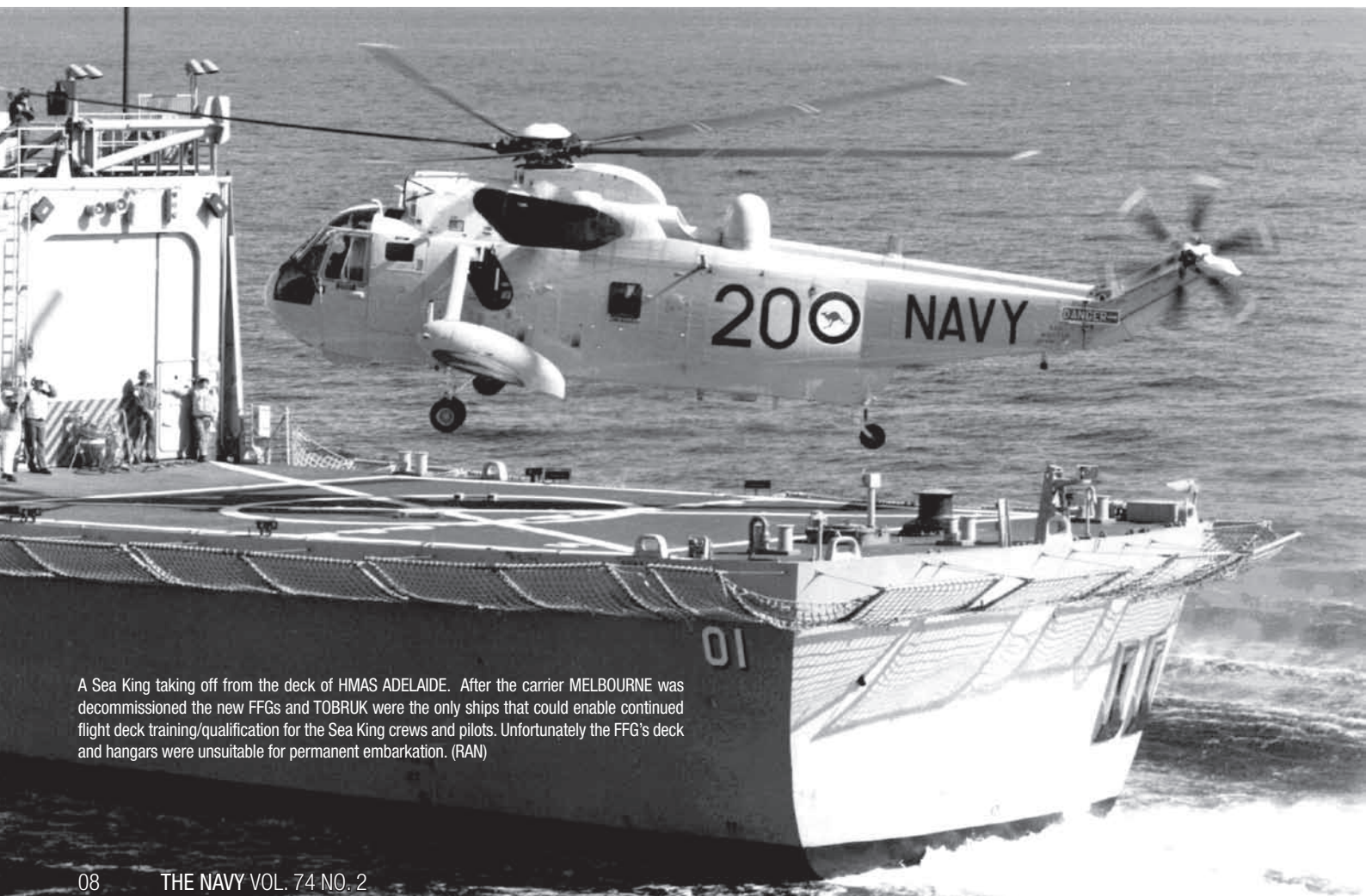
In December 1992 a Sea King embarked in TOBRUK for Operation 'Solace' to provide



A Sea King about to land on the aircraft carrier MELBOURNE. The Sea Kings were purchased from the UK to replace the Wessex in the ASW role. (RAN)

famine relief for Somalia. The deployment eventually lasted for six months and demonstrated the effectiveness of the support 'package' embarked with each aircraft to keep it operational for an extended period. The Sea King had evolved into an effective maritime utility helicopter but the remaining airframes were approaching twenty years old and they were put through a Life of Type

Extension (LOTE) programme from 1995 that was intended to keep them in service into the twenty-first century. During 'Kangaroo 95' two aircraft were embarked in TOBRUK and one of these disembarked to the North Queensland airfield at Bamaga to carry out the night medical evacuation of an injured sailor. Taking off from the unlit airfield in low cloud N16-124, coded 909, hit trees and crashed. Amazingly



A Sea King taking off from the deck of HMAS ADELAIDE. After the carrier MELBOURNE was decommissioned the new FFGs and TOBRUK were the only ships that could enable continued flight deck training/qualification for the Sea King crews and pilots. Unfortunately the FFG's deck and hangars were unsuitable for permanent embarkation. (RAN)



the crew survived but an RAAF nursing sister suffered back trauma. Removal of the sonar enabled the Sea King to lift some impressive external loads. In July 1996 a Sea King lifted an RNZN Wasp from HMNZS CANTERBURY and flew it ashore for repairs. A year earlier another Sea King lifted a damaged Army Squirrel helicopter from the Canberra range area to RAAF Fairbairn for repairs. To show their versatility Sea Kings have also been used to help fire-fighters tackle bush fires, notably in 1998 in the New South Wales/Victoria border area and again in 2003 in the southern New South Wales/Australian Capital Territory area.

The Sea King accumulated thirty-six years in service, longer than any other front-line type operated to date by the RAN. Several were lost in accidents but in only one of these was the result fatal. N16-117, coded 906, ditched in Shoalhaven Bight on 21 October 1975 and rolled over during an acceptance test flight before it was even allocated to 817 NAS. N16-098, coded 901, developed a severe vibration during an anti-submarine exercise east of Jervis bay in May 1979. The pilot attempted to return to MELBOURNE but as the aircraft came to the hover alongside the landing spot on the flight deck, tail rotor control was lost and it crashed into the sea, turned upside down and sank. In both these cases the crew were wet but unharmed. The boat-shaped hull was intended to keep the Sea King afloat if it ditched but the panels were not completely water-tight, allowing a steady inflow of water and the high-mounted engines and gear-box gave a high centre of gravity which made the helicopter unstable in anything but a calm sea state. In 1989 N16-100, coded 902, had a single engine failure caused by an electrical fault; it ditched but remained upright allowing the pilot to lighten it by jettisoning fuel and he was able to take off on one engine and land on HMAS DARWIN. On the other hand N16-112, coded 903, suffered a transmission oil failure and ditched off Port Kembla in July 1986 in a heavy swell; it capsized but remained afloat for seven hours but an attempt at salvage by HMAS ADELAIDE failed. A transmission oil failure also caused N16-113, coded 904, to ditch off Kiama in 1976 with similar results when a salvage attempt failed. In both cases the crews were wet but safe and were quickly rescued.

One of the most dramatic incidents involving a Sea King happened during the Second Gulf War in 2003 when N16-118, coded 907 and using the 817 Squadron callsign 'Shark-07' flew from HMAS KANIMBLA for a reconnaissance of the Iraqi Al Faw Peninsula. It suffered an input coupling bearing failure but the crew managed to nurse it to the RN Air Base at Az Zubayr



A Sea King lifting an army Land Rover ashore in 2003 in its new post modernisation role of utility helicopter. It had an impressive slung load capability for amphibious operations, which was also used extensively by the fleet for vertical replenishment at sea. (RAN)



where they made an emergency landing. The aircraft subsequently had both engines and the main rotor gearbox changed in Iraq. It was also fitted with a 7.62 mm machine-gun with 1,000 rounds of ammunition and armoured seats for the crew. It flew for another 112 hours in the Gulf Theatre before returning to Australia.

In their later years of service 817 NAS Sea Kings carried out a number of high-visibility rescue and humanitarian missions. In 1998 Sea Kings helped rescue sailors during the disastrous Sydney to Hobart Yacht Race. Two Sea Kings, N16-100, coded 902 using the callsign 'Shark-02', and N16-239, coded 921 and using the callsign 'Shark-21' were embarked in KANIMBLA for humanitarian operations after the Indian Ocean Tsunami on Boxing day 2004. The same two aircraft embarked in her again for Operation 'Sumatra Assist 2' after the Sumatran earthquakes of March 2005. 'Shark-02', was launched with an RAN/RAAF medical team following a report that villagers in Amadraya on the island of Nias were in urgent need of medical attention. It subsequently crashed on the island with nine dead and only two survivors, the only fatal accident involving an RAN Sea King in the type's long history. 'Shark-21' was also airborne, saw smoke rising from the crash-site and flew to the scene where it was able to evacuate the survivors to KANIMBLA.

In 2011 the RAN deployed Sharks 21 and 22 to Queensland during humanitarian operations during the extensive flooding. They operated from Oakey Air Base and rescued 200 people. The last exercise involving Sea Kings was 'Talisman sabre 2011' in which 817 NAS acted as part of the logistic support force in July 2011. The Squadron disbanded in December 2011 and the role of fleet utility helicopter will be undertaken in future by the new MRH-90 helicopter built by Australian Aerospace in Brisbane. The same type will be operated by the Army Air Corps and will have a considerable part to play in the operation of the new Canberra class LHDs.

The Sea King will be remembered as an outstanding helicopter that has served the RAN and the Nation well for 36 years in a variety of roles. Carrier-borne anti-submarine warfare, amphibious warfare aircraft, utility transport and humanitarian relief platform; it has excelled as all these things but few people would have predicted in 1976 how long it would remain in service or how useful it would prove to be. It is most



A Sea King formation over the Nowra area.

appropriate that one should be preserved and N16-118, 'Shark-07', has been presented to the Fleet Air Arm Museum at RANAS Nowra. It was selected as "it has the most operational history of all the Sea Kings, having served in the Middle East and East Timor". The RAN is rightly proud of the service given by the Sea King and the men and women who flew it; it will be a difficult act to follow. ■

A Sea King operating from the deck of HMAS WARRAMUNGA. The helicopter deck of the Anzac version of the MEKO 200 class was enlarged to operate the RAN's Sea Kings. Regrettably the hangar was not, so the aircraft could only land and take off. (RAN)





# BRAZILIAN NAVAL EXPANSION

By Paul Johnstone

**Brazil's naval expansion has for the most part been overlooked by many commentators. This is due in the most part to the perception of Brazil being a benign non-aligned country posing no threat to anyone. However, the naval forces she has and plans to have means she is positioning herself to be a player on the world stage. Brazil's interests will thus need to be considered in most international foreign policy decisions in the future.**

The oft made mistake regarding the perception of the world economic stage is that of a declining USA, a damaged Europe, a resurgent Russia and an emerging China and India. Many underestimate the importance of Brazil.

Brazil has the world's 5th largest population and is the 6th largest global economy (recently taking this position from the United Kingdom in particular). It is an emerging economic and technological giant. However, it has a little recognised voice or influences on the world stage, something that their last two nationalist Presidents have been keen to change. Such is the emergence of Brazil that there are even calls for Brazil to have a permanent place on the United Nations Security Council at the expense of the UK - as a consequence of the recent savage defence cuts in Britain and its now limited ability to project military power.

Further, Brazil's ambition to project military power has been cemented with the announcement of a nuclear powered submarine (SSN) building programme for the Marinha do Brasil or Brazilian Navy.

The Brazilian Navy is the largest in Latin America with over 100 ships and an ambitious modernisation programme. The ongoing retirement of 21 older less capable ships is slowly releasing funds for her modernisation and expansion programmes. Brazil states that its long-term plan is to keep on raising defence spending from the current 1.5% of its gross domestic product to 2% by 2030. Brazil's nominal GDP in 2010 was estimated to be US\$2.181 trillion. That indicates that yearly defence spending estimates could be as high as US\$35 billion or more.

Brazil is the only nation, with the exception of Russia and China, that has land borders with 10 or more nations. As a nation Brazil has a 7,437 kilometre long front to the Atlantic (the world's 16th longest national coastline) and a patrol area responsibility of 4 million square kilometres. The recent discovery of oil and natural gas within its territorial waters (known as the blue Amazon) located 193 kms offshore has made maritime border protection an urgent new priority for the government. Significant work is required for the development of these hydrocarbon deposits deep under the seabed via specialised giant drilling platforms and related services, which has heightened Brazil's perception of vulnerability in an exposed environment away from the shore.

This is an interesting step for a nation that as a consequence of the oil shocks during the 1970s sought to embrace the mandatory use of ethanol fuel through utilising its well established sugar cane industry. Brazil is also the second largest user and the largest exporter of ethanol in the world.

Nuclear power has not dominated domestic power production which has continued to rely upon coal fired options. However, the recent offshore oil discoveries are used as one reason to justify the requirement for a growing navy and the establishment of nuclear power in the submarine fleet.

For a nation that has not been at war since it sent troops to fight alongside Allied Forces in Italy during the Second World War, no real internal security concerns and does not have any neighbours with real or threatening capabilities the move to nuclear powered

Brazil's aircraft carrier SÃO PAULO exercising with the USS RONALD REGAN in the South Atlantic. SÃO PAULO has capacity for 39 aircraft. She currently embarks the A-4KU Skyhawk however, a decision on the Air Force's new fighter may see the navy benefit from a naval version, either the Rafale M or possibly the USN Super Hornet. (USN)





The Brazilian Niteroi frigate CONSTITUICAO.



The Brazilian Greenhalgh class frigate RADEMAKER, former HMS BATTLEAXE of the Type 22 class. (USN)

submarines (SSNs) it is an interesting step. It is highly unlikely that the instability and challenges within the Socialist governments of Chile and Venezuela have had any impact upon this decision to modernise its military.

## THE FRENCH CONNECTION

Brazil and France have in the last few years demonstrated a great willingness to work together on military programmes. One area of Franco-Brazilian cooperation is with Embraer S.A. (the Brazilian State Aircraft manufacturer) and French Companies EADS Dassault. Both countries are keen to collaborate and build the proposed KC-390 military transport/tanker airlifter - to provide scope of the Brazilian aircraft industry Embraer is the third largest aircraft manufacturer globally.

The KC-390 will be 21 tonne jet powered medium sized airlifter in the class of a Lockheed Martin C-130 Hercules and Antonov An-12 transport. Whilst targeted at export it is also expected to equip the Brazilian Air Force, Navy and Army. France, Argentina, Chile, Colombia and Portugal have all expressed their interest in acquiring and/or assisting with the manufacture of this aircraft.

Closer ties with France also promises technical transfers and licence builds of the Dassault Rafale, if chosen as the winner of the Brazilian F-X2 fighter replacement competition. The F-X2 competition is for at least 34 4+ generation aircraft for the Força Aera Brasileira (Brazilian Airforce) and is currently being fought out between Boeing's F/A-18 E/F Super Hornet, Dassault's Rafale, EADS' Eurofighter, Lockheed Martin's F-16 Block 60, Saab's JAS-39 Gripen NG, and Sukhoi's SU-35.

Interestingly, the Brazilian aircraft carrier, SÃO PAULO (A12) - the former French 32,800 tonne Clemenceau class aircraft carrier Foch (R 99) - is capable of operating the Dassault Rafael M multi role fighter. Currently, refurbished ex-Kuwaiti A-4KU Skyhawks operate from its deck. But these could be replaced by the Rafale in the future to allow standardisation across the services.

Brazil is currently upgrading its 12 Skyhawks and recently bought eight decommissioned Grumman C-1A Trader aircraft for modification to perform carrier on-board delivery/cargo and air-air refuelling roles. The last C-1A was retired from US Navy service in 1988. The eight purchased by Brazil will initially undergo overhaul in the USA to restore them to an airworthiness state.

Local sources indicate that Embraer will replace the C-1As' original Wright R-1820 piston engines with Honeywell TP331-14GR turboprops and Hartzell five-bladed propellers. Embraer is also expected to receive a contract covering airframe overhaul and

installation of updated avionics for all eight aircraft.

The Brazilian Navy's prime concern however, remains finding airborne early warning assets for the aircraft carrier SÃO PAULO. The navy intends to inspect four stored Uruguayan Navy Grumman S-2G Trackers, in the hope of obtaining the aircraft and again having Embraer fit them with airborne long range radar. These aircraft would also need three mission stations, a Link 11 data link, electronic surveillance systems, plus new avionics and communications/navigation suites.

In 2009 Brazil purchased four enlarged Scorpène class diesel electric submarines from France for US\$9.9 billion with an extensive technology transfer agreement. A second agreement to assist in developing a French/Brazilian nuclear powered submarine was also signed. The hull of the first Scorpène (S35) was laid down at Cherbourg on 27 May 2010 and is to be enlarged at a Brazilian Navy Shipyard in Sepetiba late 2012. The latter three submarines will be entirely built in Brazil and are planned to be commissioned in 2018, 2020 and 2021. The nuclear powered submarine could be a variant of the Scorpène class (which would make it similar in concept to the Rubis-class submarine).

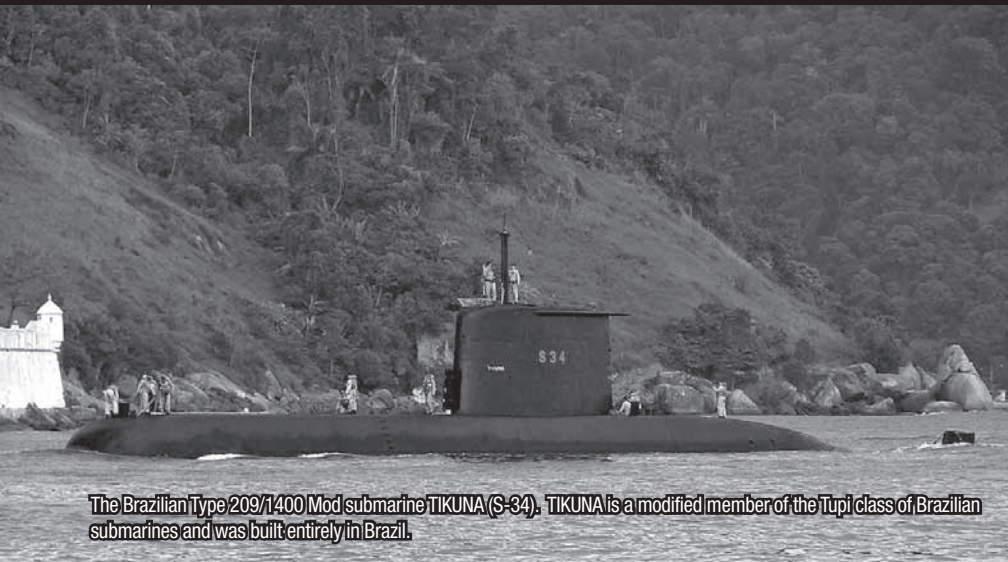
## TODAY

For many Latin American nations the transfer from dictatorships has seen a significant decline in once generous military spending and equipment purchases. Democracy has also seen a rise in cross nation military exercises. Regional Naval exercises include DRAGAO (Brazil, Argentina, Uruguay, and South Africa), ARAEX (Brazil and Argentina naval air), and IBEREX (Brazil, Argentina, and Spain) and are held regularly.

Brazil, through exercise ARAEX, regularly embarks Argentinean aircraft on their aircraft carrier SÃO PAULO. This is to assist Argentinian pilots maintain currency given the decommissioning of Argentina's aircraft carrier capability nearly 20 years ago.

Brazil's submarine force is based at Almirante Castro e Silva on Mocangue Island across the bay from Rio de Janerio and consists of four Tupi class SSKs (German Type 209/1400) and one Tikuna class (a local derivative of the Type 209/1400). The domestically built and modified 1,400 tonne Tupi class are claimed to have significant improvements in signature reduction and endurance over the German boats. Brazil built three of the four Tupi boats under a policy known as 'Design, Construction and Repair' to best position its local industry to not only embrace advanced ship building technologies but to sustain them for the future, while simultaneously incorporating local content within the design. The follow on Tikuna class is a realisation of that policy.





The Brazilian Type 209/1400 Mod submarine TIKUNA (S-34). TIKUNA is a modified member of the Tupi class of Brazilian submarines and was built entirely in Brazil.

The scope of domestic research and design in Brazil is such that the Instituto de Pesquisas da Marinha (IPqM) or Naval Research Institute of the Brazilian Navy designed an anti submarine torpedo for the Tupi class with a range of 18 km and speed of 45 knots. IPqM also designed the MCF-01/100 acoustic magnetic mines for use by the submarines.

Working with Avibras Indústria Aeroespacial the Brazilian Navy is undertaking the development of an Anti-Shipping Missile. Formally known as the Missil Anti-Navio or MAN-1 it is now known as the RE40 with a reported range of 70 km/38 nm. The design is largely based and has similar in performance to the French MM-40 Block II Exocet already in Brazilian service, which it is hoped to substitute. Brazil has long been a producer of missiles for anti-tank, air to ground, anti-aircraft and anti-shipping missions and recently undertook the refurbishment of its stock of Exocet missiles. The RE40 will be the first anti-ship missile designed and built in Brazil. The Scorpène submarines being built for Brazil incorporate the Exocet missile and

could potentially use the RE40 in its place.

More recently the Tupi class SS TAPAJÓ was successfully updated with a Lockheed Martin Integrated Combat System, which will now be fitted to the remaining three boats in the class and the single Tikuna submarine. This upgrade project also saw the replacement of the BAE Systems Tigerfish torpedo with the Raytheon Mk-48 Mod 6AT heavyweight torpedo. Wider modernisation efforts include, replacement of batteries, mechanical and electrical work, new flank arrays and sonar processing suite, new communications systems, upgrade of the Atlas Elektronik CSU083/sonar, Thales ESM system and electronic chart displays, sound velocity equipment and the inertial navigation system. It is expected that all five boats will have completed their modernisation package by 2015.

## THE NUCLEAR OPTION

The design of the proposed Brazilian SSN is believed to be a derivative of the French/ Spanish Scorpène class, rather than the

French Barracuda SSN class, of which the first of six are currently under construction for the French Navy.

The DCNS contract with France also covered assistance with the design and construction of the non-nuclear portions of Brazil's first SSN, and support for the construction of a naval base and shipyard.

Construction of the first SSN is planned to begin at Itaguaí in 2016. It will be fitted with a Brazilian-made nuclear power plant and is scheduled to enter service in 2021, with two further boats expected to follow by 2025. The preliminary design suggests a boat 96 m long, with a 4,000-ton submerged displacement and a maximum speed of 24kts.

The Brazilian Navy had previously begun a programme in 1979 to construct a dual-use nuclear reactor suitable to provide propulsion for a submarine and in turn generate electricity for civilian consumers. At the same time, the Navy undertook a fuel cycle project to provide Brazil autonomy in the enrichment of uranium, which it produces domestically. Currently the construction of a naval nuclear reactor is under way. The Brazilian government has committed some US\$525 million to be spent in instalments over an eight year period for a prototype land based reactor known as RENAP-11 or Reator Naval de Portena de 11 Megawatts. The intent of this experiment is to produce a modified reactor producing 48 megawatts. Over the next ten years the Brazilian Government will provide approximately US\$977 million to complete the construction of the RENAP-11, which will form the prototype for the 48 MW Pressurised Water Reactor to provide the propulsion for the new SSN.

As an offshoot of its nuclear programme Brazil has begun the move towards becoming an international uranium supplier given its abundance of natural uranium, its continuing



A model of the proposed Brazilian SSN using technology and assistance from the French Scorpène class SSK.



A computer graphic of the proposed KC-390 transport/tanker aircraft being developed by Embraer.



uranium enrichment capability and the increased global demand for enrichment services. This technology however, of the nuclear fuel cycle, is a sensitive issue as it can also be used to produce fissile material for nuclear weapons. A nation with an indigenous uranium enrichment capability theoretically has the ability in place to produce nuclear weapons. Whilst there appears to be no clear policy for Brazil's current nuclear activities to be diverted towards weapons production the potential to achieve this outcome is well within its reach. Within Latin America it is the only nation with these advanced capabilities and one of only 13 or so countries globally with an indigenous capability to enrich uranium. Brazil has as a nation been unwilling to sign the International Atomic Energy Agency's Additional Protocol and has a growing relationship with Iran.

## FUTURE SHIPS

The United Kingdom via BAE Systems is hoping to develop the future Type 26 frigate with the assistance and financial support of Brazil. The Type 26 frigate is known as Global Combat Ship. The first ships of the Type 26 class are planned to enter service in the early 2020s.

The Type 26 frigate will replace the RN's Type 23 frigates and provide anti-submarine (ASW), Anti-Aircraft (AAW) and General Purpose tasks in the one hull. The design incorporates a large hangar deck which permits the landing of CH-47 Chinook sized helicopters and has a modular design concept similar to that used in Meko designs such as the ANZAC Frigates. The total deal could be worth about US\$5 billion but BAE Systems also pinned hopes on long-term delivery and maintenance contracts. So far, countries that have expressed some level of interest or seen as target markets have included Australia, Brazil, Canada, India, Malaysia, New Zealand, and Turkey.

BAE Systems is also coming round to Brazil's insistence on technology transfer and may offer, as part of the deal, second-phase manufacturing or assembly of a part of the order for naval vessels after first-phase manufacture and assembly in Britain.

## BRAZILIAN NAVY ORDER OF BATTLE

- 1 Aircraft Carrier; SÃO PAULO (39 aircraft)
- 6 Niterói class frigates
- 3 Greenhalgh class (ex RN Type 22 Batch 1)
- 4 Inhaúma class corvettes
- 5 Submarines (4 Type 209/1400, 1 Type 209/1400 Mod)
- 1 Barroso class corvette
- 6 Aratu class minesweepers
- 5 Amphibious ships (1 Newport class LST, 2 British LSH Sir Bevidere/Galahad class, 2 LSD USN Thomaston class)
- 36 patrol vessels (ranging from river to Offshore)
- 2 fleet tankers
- 1 Niterói class training frigate

Apart from the Type 26, Brazil and Britain have for some time been engaged in negotiation for the purchase of up to six patrol vessels. As part of this, January 2012 saw two Ocean Patrol Vessels constructed on the Clyde and the other in Portsmouth, originally for the Government of Trinidad and Tobago known as the Port of Spain class, were sold to Brazil. The £133 million contract also contained a manufacturing licence to enable further vessels of the same class to be constructed in Brazil. These 90 metre vessels are based upon the Royal Navy's River class and displace 2,200 tonnes, have a speed of 25 knots with a crew of up to 70.

In the meantime Brazil is currently building eight small landing craft and six 500 tonne patrol boats.

Brazil's future naval expansion will be interesting to watch. ■



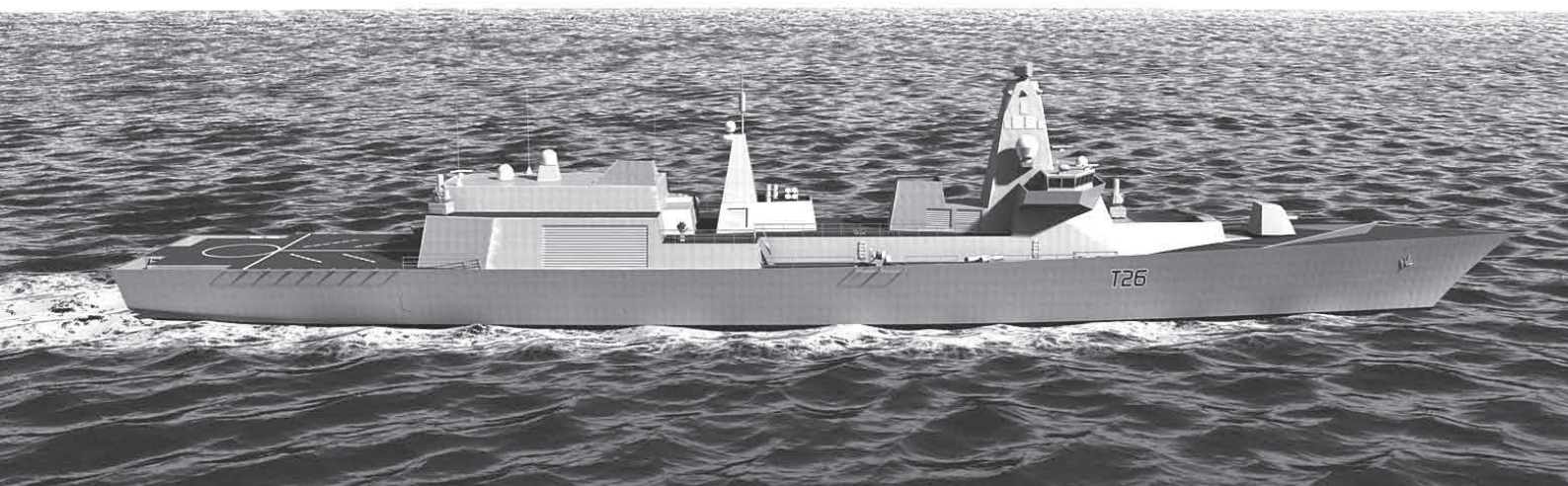


An ex-Kuwaiti A-4KU Skyhawk being prepared for launch from the Brazilian aircraft carrier SÃO PAULO.



A former USN Grumman C-1A Trader. Brazil has recently bought eight of these aircraft and will restore them to flying condition for use as tankers and carrier on board delivery/cargo aircraft.

A computer generated graphic of the British Type 26 Global Combat Ship. BAE Systems is hoping Brazil will be a buyer of the design. (BAE Systems)



The Inhaúma class corvette JÚLIO DE NORONHA. This class of four escort vessels were built in Brazil and designed with assistance from the German company Marine Technik.







## 01 ARLEIGH-BURKES GO GREEN

The US Navy (USN) is preparing to install a hybrid electric drive (HED) proof of concept (POC) system in an Arleigh Burke-class Flight IIA destroyer.

It has been reported that sea trials planned for later this year are expected to demonstrate reductions in fuel consumption of up to 9%.

The HED machinery, jointly produced by DRS Technologies and General Atomics, is slated to be installed on USS TRUXTUN 's port shaft (103) in the next few months.

DRS Technologies and General Atomics joined forces to provide a 1.5 MW POC system under a contract awarded by US Naval Sea Systems Command (NAVSEA) in July 2009. The HED uses a compact, permanent synchronous motor/generator system that integrates onto the main reduction gear with minimum impact on the engine room, according to clutch manufacturer SSS, which supplies the 120T clutch for the system.

The POC unit was recently tested at full power and has completed testing at the USN's Land Based Engineering Site in Philadelphia, Pennsylvania, in March. Installation and checkout onboard TRUXTUN will take place from April to September while the ship is undergoing planned maintenance.

At the heart of the Flight IIA destroyer's power and propulsion system are four General Electric LM2500-30 gas turbines, providing a total of 74.6 MW sustained power, and three Rolls-Royce AG9140 auxiliary generator sets, the latter powered by 501K gas turbines and providing 9 MW for the combat system and hotel services.

However, the ships spend considerable periods operating at low speeds: typical loitering speeds

- which account for around 50 per cent of the ship's operating profile are 9-14kt and this regime is not fuel efficient.

Typically, two AG9140s are online at any one time, producing 6 MW of electrical power, of which about 2.7 MW is used for ship services. NAVSEA aims to harness the excess 3.3 MW to power the HED and propel the ship at low speeds without using the LM2500 turbines.

Several studies by different agencies have estimated potential fuel savings with HED of 8,000 to 12,000 barrels of oil per ship per year. Actual figures would depend on speed regimes, operating tempo and a host of other factors, but when the cost of transporting fuel to the ships is taken into account - typically about US\$200-300 per barrel and up to US\$400 per barrel in a combat zone - the cost savings are substantial.

## 02 MORE ZUMWALTS?

The US Government Accountability Office (GAO) has issued a scathing report chastising the USN's planned procurement of a Flight III variant of the Arleigh Burke-class (DDG-51) destroyer optimised for the ballistic missile defence (BMD) role.

In a report published on 24 January, the GAO warned that a 22-ship programme would cost between US\$58.5 billion and US\$64.1 billion, compared with USN estimates of US\$50.5 billion.

The GAO also said that extensive modifications would be required to adapt the Arleigh Burke hullform to accommodate the next-generation sensors required for the BMD mission and that these design changes could result in a lead ship costing US\$3 billion to US\$3.6 billion.

Furthermore, said the GAO, the proposed new Air and Missile Defence Radar (AMDR) would not meet the USN's BMD requirements.

The GAO also questioned the conclusions of the USN's 2009 Radar/Hull Study (RHS), which suggested that a Flight III ship fitted with an AMDR would be a more cost-effective solution for the BMD requirement than a modified Zumwalt-class (DDG-1000) destroyer. However, the navy did not divulge the methodology used in the study, details of any trade-offs or the costs of alternatives.

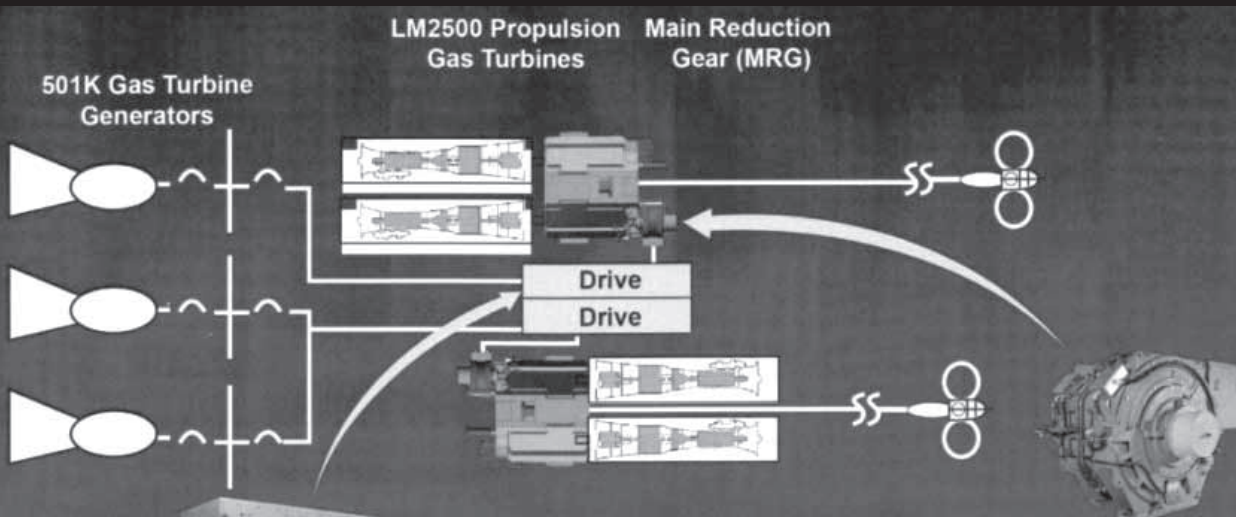
The RHS compared 16 combinations of DDG-1000 and DDG-51 hullforms equipped with variations of Lockheed Martin's Aegis combat system and Raytheon's Total Ship Computing Environment (TSCE), two S-band radars (AMDR-S and Volume Search Radar+ (VSR+) with 12 ft (3.66 m) or 14 ft (4.27 m) apertures) and two X-band radars (SPY-3 and SPQ-9B).

Only four options were priced in the RHS, for low-end and high-end versions of a lead ship with each hullform. A DDG-51 with the VSR+ and SPQ-9B radars was costed at US\$2.31 billion, rising to US\$2.95 billion with AMDR-S and SPY-3; a DDG 1000 with VSR+ and SPY-3 was estimated at US\$3.2 billion, with the AMDR-S and SPY-3 variant at US\$3.37 billion.

According to the US GAO the USN ignored the power requirements of additional systems. "Navy officials told us that electrical power was a major concern for future destroyers, but the considerable difference in available power between DDG 51 and DDG-1000 (approximately 9MW for DDG-51 through its three 501K gas turbines, compared to 78MW for DDG-1000 with no additional generators required) was not compared in a trade-off analysis," the GAO report stated.

"Additionally all DDG-1000 variants offer more excess cooling and service-life allowance, meaning the Zumwalt hull can accommodate new technologies over the life of the ship

**01** A diagram of the hybrid electric drive (HED) proof of concept (POC) system for the Arleigh Burke-class Flight IIA destroyer fleet. The HED uses a compact, permanent synchronous motor/generator system that integrates onto the main reduction gear taking its power from surplus hotel load produced by two auxiliary gas turbines. (USN)



without major costly overhauls."

The evaluation of the RHS study has prompted the GAO to recommend the USN begins a new analysis of alternatives process for its future surface combatant: a call that is likely to be echoed in Congress which could see the number of DDG-1000 Zumwalt class destroyers rise considerably.

### ISRAEL TO ACQUIRE SIXTH DOLPHIN SUB

Israel and Germany recently signed a contract finalising the sale of a sixth Type 800 Dolphin-class diesel-electric attack submarine for Israel. The contract was signed in late December 2011 with Berlin agreeing to heavily subsidise the cost.

The Israel Navy already operates three Batch 1 Dolphin-class submarines, which were commissioned in 1999 and 2000.

Another two boats (Batch 2) are under construction in Germany by ThyssenKrupp Marine Systems. These are 10m longer than their predecessors to incorporate an air-independent propulsion system for enhanced submerged endurance. Under this contract, signed in 2006, Israel is paying two-thirds of the cost of the three boats and Germany is funding the remaining third of the project.

The first of the Batch 2 Dolphin-class (Type 800) boats with air-independent propulsion (AIP)-was launched by German shipbuilder Howaldtswerke-Deutsche Werft (HDW) on 19 February.

The 2,050-ton (surfaced), 68.6 m-long submarine is the largest built in Germany since the Second World War.

Harbour tests are now underway and sea trials are expected to start in the third quarter of 2012. An ambitious delivery schedule will see

the lead boat handed over to the IN by the end of the year, with the second hull following in late 2013.

The third Batch 2 unit is planned to be built entirely at HDW, after parent company ThyssenKrupp Marine Systems closed the submarine production facilities at Emden in late 2011 and relocated these activities to Kiel.

The AIP-equipped Dolphins are fitted with 10 weapons tubes and can achieve a speed of 20kt when submerged. Their complement is 35 persons.

While the Batch 1 trio - INS DOLPHIN, INS LEVIATHAN and INS TEKUMA - were painted green at the time of their delivery, the latest boat has a medium blue sail and dark blue upper casing, with areas below the waterline coloured brown to aid visual/optical concealment.

Each of the Batch 2 submarines is reported to cost EUR550 million.

### INDIA COMMISSIONS SSN

After years of delays, rising costs and a fatal accident India has finally commissioned the Akula-class (Project 971) nuclear-powered attack submarine (SSN) INS CHAKRA on 23 January in a ceremony in the Primorye region in Russia's Far East.

CHAKRA recently completed sea trials three years behind schedule - a delay caused by an onboard accident during trials in the Sea of Japan in November 2008 in which 20 sailors and technicians died and 21 others were injured following a freon gas leak and differences over the lease cost, revised up to US\$920 million from the earlier US\$700 million.

CHAKRA is the second nuclear-powered boat to be leased by India from Russia: a Soviet Charlie I-class submarine, also named CHAKRA, was

leased for three years in 1988.

The Indian Navy (IN) took possession of the 9,246 tonne (dived) ex- NERPA , which it is leasing from Russia for 10 years, on 29 December 2011. It will be based at Rambilli on India's east coast.

### 03 SEA CEPTOR FOR RN

On 30 January 2012, European defence company MBDA announced that it had received an award for the Future Local Area Air Defence System (FLAADS) demonstration phase for the UK Ministry of Defence (MoD).

The £483M (US\$767.3M) contract will develop the SEA CEPTOR air defence system as the replacement for the Vertical Launch Seawolf on the Royal Navy's (RN) Type 23 frigates as well as the planned Type 26 Global Combat Ship.

MBDA will begin testing the SEA CEPTOR system in late 2012 or early 2013 and will enter service on the Type 23s around 2015. Utilising the Common Anti-Air Modular Missile (CAMM), the SEA CEPTOR is capable of being installed on a variety of vessels as small as 50 metres (164 ft) in length due to the CAMM's cold-launch capability. This allows for both below and above deck installations.

CAMM also interfaces with the ship's existing 3-D surveillance radars and does not require a dedicated fire control radar due to its onboard active radar seeker. It has a range of over 25km (15.5 mi) and can utilise third party targeting via a two way data link for launching in an electronic warfare environment.

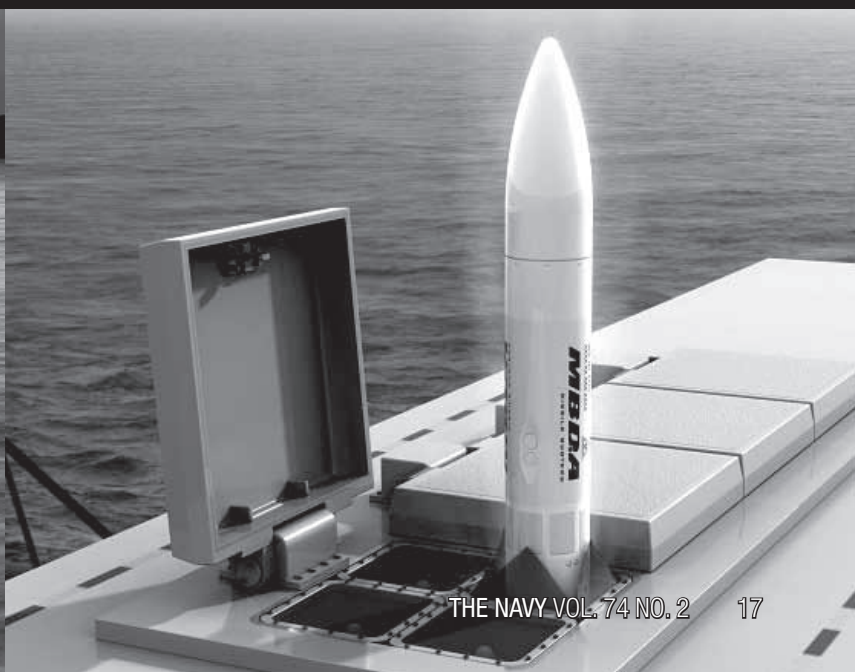
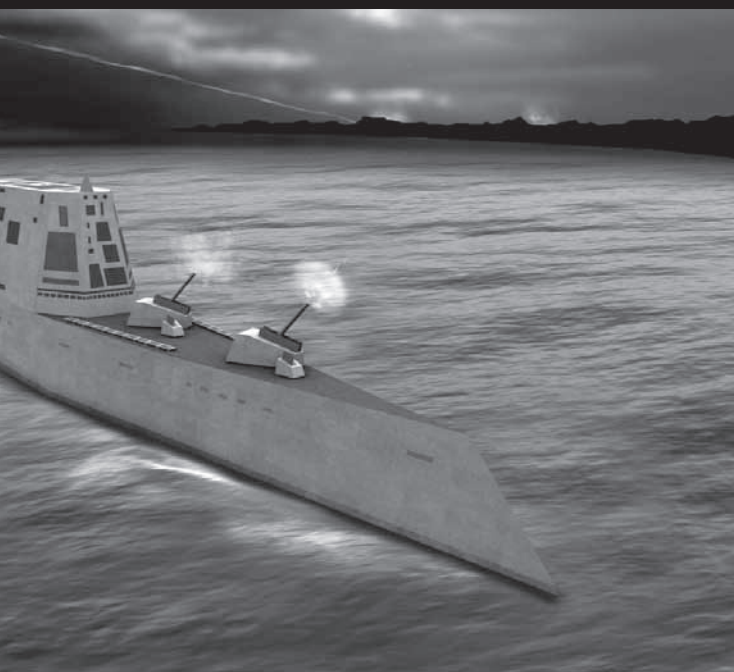
Additionally, the ground-based CEPTOR system will replace the current Rapier system within the same time frame. There are also plans to adapt the CAMM for launch from aircraft.

02

A computer generated image of a Zumwalt class destroyer. The US GAO is 'pushing the door open' for more Zumwalt class destroyers rather than the proposed Flight III Arleigh Burke class destroyer.

03

A computer generated image of the new MBDA SEA CEPTOR missile due to replace vertical launched Sea Wolf and to be fitted to the new Type 26 class frigate.







## 04 HII TARGETS RAN SEA1180 PROJECT

Huntington Ingalls Industries (HII) is making an effort to market a naval variant of the US Coast Guard's Legend-class National Security Cutter (NSC) to the RAN's SEA 1180 Offshore Combatant Vessel project, the shipbuilder told THE NAVY at the Pacific 2012 Naval Exhibition in Sydney's Darling Harbour.

The 'Patrol Frigate' concept combines the hull and machinery of the successful 4,178-tonne NSC design with enhanced sensor and weapons capabilities.

The variant for the RAN's SEA 1180 project is known as the Patrol Frigate 4921.

The 4921 version incorporates systems to expand the current US Coast Guard NSC mission set to potentially include mine countermeasures, anti-surface warfare, anti-submarine warfare and anti-air warfare tasks. Enhanced armament options include a 12 cell Mk-56 vertical launch system (located forward) for RIM-162 Evolved SeaSparrow Missiles, a surface-to-surface missile system, 76 mm gun, towed sonar array, stern-mounted torpedo tubes and a torpedo decoy system.

In terms of sensors, the 4921 frigate replaces the NSC's bow thrusters with a hull-mounted sonar and also features a 3D active phased array radar - in the offer to the RAN this includes an Australian made CEA Technologies CEAFAR system - for air search/fire control, as fitted to HMAS PERTH and soon to be fitted to the other seven Anzac class frigates. This set up was on display as a ship model at the Pacific 2012 exhibition.

Displacing 4,600 tonnes, the ship retains the hull dimensions of the 127.4 m NSC and adopts the existing ship's propulsion system, which consists of a single LM2500 gas turbine and

two MTU20V 1163 diesels in combined diesel and gas (CODAG) configuration.

The CODAG configuration "offers a tremendous amount of flexibility to the customer", according to HII, as any one of the three engines through the combining gear can drive both controllable reversible pitch propellers. The ship has a maximum speed of 18kts on one diesel, 24kts on two diesels and 28+kts with the two diesels and gas turbine.

The 4921 frigate has a range of about 8,000nm at a cruising speed of 9-11kts with an endurance of 60 days.

Like the NSC, the ship has a large flight deck with ASIST helicopter handling gear and two hangars for one Seahawk Romeo sized helicopter and two rotary-wing unmanned aircraft such as the MQ-8B Fire Scout.

### FIRST STEEL CUT FOR RUSSIAN MISTRAL

Building of the first of two 22,000-ton Mistral-class LHDs (Landing Helicopter Docks) for the Russian Federation Navy have commenced at STX France's shipyard in Saint-Nazaire, western France.

A steel cutting ceremony was held on 1 February to mark the start of production and to formally open the office space assigned to the Russian overseeing team that will work on site throughout the construction programme.

The contract between France and Russia includes provisions for initial logistic support, training and technology transfer with the four Mistral-class LHDs on order.

DCNS is prime contractor for the programme and is also responsible for the integration of the command and communications suite. Construction of the ship platform is subcontracted to STX France, which is being supported (under a separate subcontract) by

Russia's United Shipbuilding Corporation (OSK). Studies to modify the French LHDs to meet the specific requirements of the Russian Navy were started by DCNS in late 2011. The first ship is due for handover in 2014, with the second following in 2015.

## 05 USN TAKES A HIT

On 14 February, President Barack Obama sent to Congress a proposed defence budget of US\$613.9B for FY 2013. The request for the US Department of Defense (DoD) includes US\$525.4B (US\$1.6B more than the defence-only top line numbers announced by Leon Panetta on 26 January) in discretionary budget authority to fund base defence programmes and US\$88.5B to support Overseas Contingency Operations (OCO).

Total defence spending from 2012-2021 is US\$5.652T (Trillion) with Budget Control Act-mandated defence cuts of US\$488B, or around 8.5% total decrease over the same time period.

In summation, the US has developed a new defence strategy that transitions today's emphasis on land wars to that of a force lighter and more expeditionary in nature preparing for future challenges while protecting a broad range of US national security interests.

Geographically, the highest priority for US forces will be the Asia-Pacific region and the Middle East while maintaining historical defence commitments to Europe and other allies and partners. These significant changes will occur while the US DoD participates in Congressional-mandated reductions in the defence budget over the next five years.

Highlights for the USN from 2013 through 2017 include:

- Maintain the aircraft carrier fleet at eleven hulls and ten airwings.

04

The Patrol Frigate 4921 that US company Huntington Ingalls Industries (HII) is hoping to sell to the RAN. The ship carries almost as much firepower as an Anzac frigate. (HII)



- Maintain the big deck amphibious fleet.
- Forward deploy LCS to Singapore and patrol vessels to Bahrain.
- Funded development of a new afloat forward staging base that can be dedicated to support missions in areas where round-based access is not available, such as counter-mine operations.

For the USN, this means the following procurement programme changes, decommissioning and modernisation efforts:

- Design changes for Virginia class submarines for increased cruise missile capacity in future hulls.
- Slipping one planned Virginia class submarine (originally two per year) past FY 2017.
- Delaying the Ohio SSBN replacement (SSBN(X)) for two years from FY 2019 to 2021.
- Reducing LCS by two ships through FY 2017, from 18 to 16.
- Reducing JHSV by 8 through FY 2017. This would stop JHSV construction at ten units (Final unit funded in FY 2013).
- Slipping the construction schedule of the first America class LHA by 12 months.
- Decommission seven Ticonderoga class cruisers, of which six had not been converted to BMD.
- Decommission two Whidbey Island class LSDs early and moving their replacements past FY 2017. This refers to the LSD(X) programme that was originally scheduled to start in 2021 but moved forward to 2017.

It appears the US Navy fared well under the new strategic plan and its first instalment, the proposed FY 2013 defence budget. The FY 2013 budget proposal calls for US\$13.57B

in Shipbuilding and Conversion (SCN), which includes the funding of ten ships for the year as follows:

- US\$3.5B for two Arleigh Burke FLT IIA destroyers.
- US\$4.2B for two Virginia class submarines.
- US\$1.8B for four Littoral Combat Ships (LCS).
- US\$608.2M first year funding for CVN-79.
- US\$189.2M for one Joint High Speed Vessel (JHSV).

## SOUTH KOREAN TYPE 209 SELECTED FOR INDONESIA

On 23 December 2011, Daewoo Shipbuilding Marine and Engineering (DSME) won a US\$1.1B contract for the construction of three Type 209 submarines for the Indonesian Navy (TNI-AL).

DSME bested its French, German, Turkish and Russian competitors for the programme. One of the keys to the win was the technology transfer agreements that will allow Indonesia to develop its submarine building capabilities at PAL Shipbuilding.

The first two units will be built entirely at South Korea's DSME with assistance from Indonesia's shipbuilding industry personnel. Indonesia expects to supply up to 30 personnel to DSME for the construction of the first unit and 130 for the second unit with the intent of acquiring enough experience to build the third unit at Indonesia's PAL Surabaya with South Korean assistance only.

The first unit is scheduled to be delivered to the TNI-AL in 2015 and 2016 and the third unit (Indonesian-built) in 2017. The two South Korean units will probably be delivered on schedule. However, the Indonesian unit will probably face at least a two-year delay as it is the first attempt to build a submarine in country.

The construction of the third Type 209 will give Indonesia the experience to build additional units if it desires or move forward with other submarine designs. Additionally, the TNI-AL will be able to better maintain its submarine force in the future without outside assistance.

## 06 SM-6 FLIGHT-TEST FAILURES

Flight test failures experienced during July 2011 may mean the US Navy's (USN's) new Standard Missile-6 (SM-6) Extended Range Active Missile (ERAM) is neither operationally effective or suitable, according to the Pentagon's Director of Operational Test & Evaluation (DOT&E) Dr Michael Gilmore.

Gilmore also criticised the USN for not fully rectifying technical issues previously identified from failures experienced during Development Test/Operational Test (DT/OT) firings in 2010. The Pentagon's deputy assistant secretary of defence developmental test & evaluation (DT&E), Edward R Greer, had separately recommended to the USN that SM-6 was not at an acceptable level of maturity to transition into operational testing.

Developed by Raytheon Missile Systems, SM-6 is the latest iteration of the Standard Missile family of shipborne air-defence missiles. Conceived as a new over-the-horizon anti-air warfare (AAW) missile for a new anti-air network known as Naval Integrated Fire Control - Counter Air (NIFC-CA) and designed to be employed from Aegis cruisers and destroyers, SM-6 is an evolutionary development that in essence combines the SM-2 Block IV missile with the Phase 3 active radar seeker of the AIM-120 AMRAAM air-to-air missile to provide an extended-range AAW capability (> 100 miles, 161 km) over sea and over land.

In flight SM-6 receives midcourse flight instructions from a ship's Aegis combat system

05

The Ticonderoga class cruiser USS ANZIO arriving home after a deployment to the Middle East. ANZIO is one of seven Ticonderoga class cruisers destined for decommissioning under the Obama administration's new defence budget. (USN)

06

An SM-6 during recent operational testing. The programme has been delayed due to failures highlighted during the most recent testing phase. (Raytheon)







via the SPY-1 radar; terminal guidance can be effected autonomously using the missile's active seeker, or supported by the Aegis combat system (via the ship's illuminator) in semi-active mode.

An initial operating capability is currently scheduled for 2012. Raytheon is already on contract for three low-rate initial production lots, totalling 159 all-up rounds, with the first production SM-6 missile having been delivered in April 2011 after final assembly at the company's plant in Camden, Arkansas. However, full-rate production has already been delayed by one year because of development delays.

According to the latest DOT&E annual report, the USN completed SM-6 Initial Operational Test and Evaluation (IOT&E) Phase 1 at-sea live testing at the Pacific Missile Range Facility (PMRF), Hawaii, in July 2011. A total of 12 intercepts were attempted; a thirteenth mission was aborted before interception due to a target failure.

In his executive summary, Gilmore wrote: "SM-6 demonstrated significant new capabilities against manoeuvring targets, low-altitude targets, and targets with electronic countermeasures, successfully completing seven of 12 intercept attempts. SM-6 also demonstrated the longest engagement range for a Standard Missile to-date.

"Nonetheless, the results of testing currently available do not yet demonstrate the SM-6 is operationally effective or suitable."

According to DOT&E, two of the five failures experienced during the 12 IOT&E test firings were attributed to fuze-related anomalies, two failed due to in-flight material (hardware) failures, and another mission failed due to improper functioning of the missile navigation

system. The USN is conducting failure analysis and determining the corrective action needed to address the failures.

Gilmore also noted that the USN has yet to test SM-6 in its objective operational environment. "Because of employment limitations of the current Aegis 'legacy' baseline, the testing did not address the full capability of SM-6 as outlined in its validated requirements; the NIFC-CA capability will be required to fully demonstrate SM-6 requirements."

In 'legacy' mode, SM-6 engagements are limited to the firing ship's radar horizon. The full over-the-horizon capability of SM-6 will not be demonstrated until Aegis Capability Baseline 12 and the full NIFC-CA sensor suite (exploiting the integrated air picture of the Cooperative Engagement Capability and the surveillance volume of the E-2D Advanced Hawkeye's AN/APY-9 radar) are fielded after FY14.

## 07 NEW SOUTH KOREAN MINI-SUB

South Korea's Agency for Defence Development (ADD) is currently nearing completion of the development of a new and novel mini-submarine to be known as the KSS-500A.

The KSS-500A will be 37-metres (121.3ft) long and displace 510-tonnes. It will be the replacement for the Dolgorae class mini-submarines that are currently being phased out of ROKN service.

ADD is currently selecting key systems suppliers. Construction is expected to begin in 2012. At least six of the submarines will be built under this programme.

The KSS-500A pressure hull is divided into four compartments consisting of a combat information centre (CIC), machinery room, a special operations forces area and an

accommodations area.

The sail is streamlined and houses five non-hull penetrating masts including one electro-optical, one radar, one for satellite communications and the last for electronic support measures (ESM). The fifth mast will be able to handle a modular payload for the launching of small unmanned aerial vehicles (UAVs).

The KSS-500A will have an endurance of up to 21 days and a range of 2,000 nautical miles with power provided by two banks of lithium-ion batteries rather than the traditional diesel-electrical generators and lead acid batteries. The submarine can propel itself at over 20kts.

It will have a crew of 10 and can carry an additional 14 special operations forces personnel. Its armament will consist of two heavyweight and four lightweight torpedoes. A payload interface module will enable the submarine to carry two box launchers for vertical launch missiles and mines.

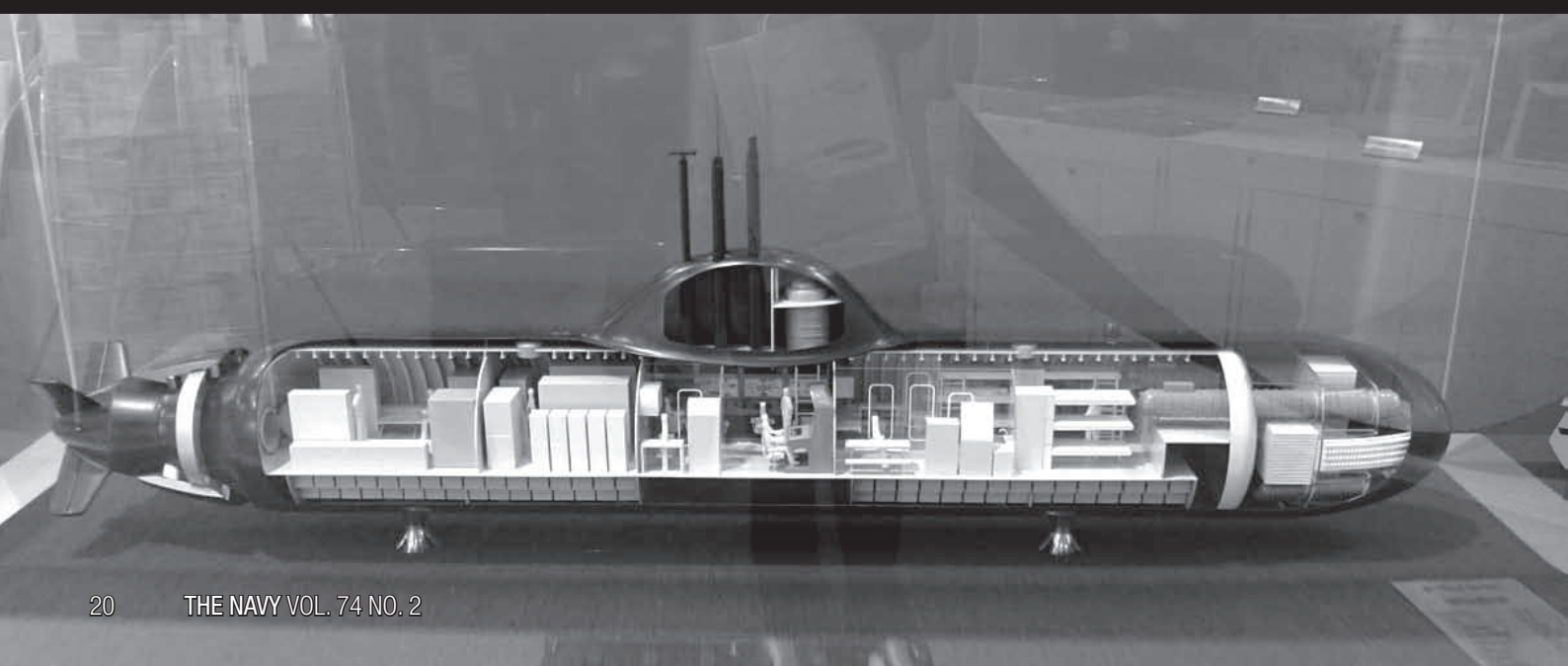
## SAUDI SUBMARINE FORCE?

It is widely speculated that the Royal Saudi Naval Force (RSNF) has a keen interest in acquiring medium-sized submarines to operate in the shallow waters of the Arabian Gulf and the deeper waters of the Red Sea.

Indications from the Saudi Defence Ministry suggest initial moves on the submarine acquisition programme in the coming year—first by establishing a special committee to begin examining the submarine project. The RSNF is interested in consulting with US experts prior to making any procurement decision, although Saudi officials have clearly indicated no decision has been made on suppliers.

The RSNF is calling for a minimum of two units; although the requirement could be for as many as four units in order to have at least one

**07** A model of the South Korean new and novel mini-submarine the KSS-500A. At only 37-metres long and only using of lithium-ion batteries for power this small submarine will be difficult to detect and track - to say the least.



submarine available to operate on each coast at any given time.

Although the US may be in a position to advise, it has not built conventional submarines in over 40 years. The Saudi's will have several new European designs that are available including the ThyssenKrupp Marine Type 214 or Type 212, the DCNS/Navantia Scorpene and the Navantia S 80.

There could be an opportunity with the Type 209 through Turkey or South Korea. Initial acquisition may also include used submarines as European navies continue to downsize due to the continuing fiscal crisis in the Eurozone.

## ESSM SUPPORT AND FUTURE STUDY FOR RN

On 6 February 2012, BAE Systems Australia was awarded a contract worth \$30m with Raytheon Missile Systems (RMS) for the continued production of Evolved Sea Sparrow Missile (ESSM) components through to the end of 2014.

BAE Systems Australia's Weapons Systems in Melbourne is the lead sub-contractor in Australia to RMS for ESSM. Other supporting companies in the nation include ADI Limited and Hawker De Havilland.

Additionally, preliminary development work on the Evolved Sea Sparrow Missile (ESSM) Block II missile programme has begun, with an in-service date set for 2020. The Block II upgrade will include a new dual-mode seeker head allowing for follow-on kinematic upgrades to increase range.

## 08 SOUTH KOREA WINS RN MARS

The RN has chosen South Korean firm Daewoo for a £452m deal to build four new fuel tankers.

The 37,000 tonne Military Afloat Reach and Sustainability (MARS) tankers will allow the RN to refuel at sea.

The tankers, which are due to enter service in 2016, will each measure 200 metres in length and replace models that date back to the 1970s.

UK firms took part in the tender, but the UK Ministry of Defence (MoD) said none made a final bid to take part.

Despite being built in Korea, the UK has won £150m of associated contracts to assist the project.

These include £90m on UK contracts for equipment, systems, design and support services.

There will be a further £60m investment in the UK to be spent on customising the ships for the RN, trials and specialist engineering help.

The winning design of the four tankers has been completed by UK company BMT Defence Services, based in Bath.

Each will be able to fill the equivalent of two Olympic-sized swimming pools in an hour.

Minister for Defence Equipment, Support and Technology, Peter Luff, said: "Over the next decade, the government will be investing billions of pounds in our maritime capabilities to ensure that our RN remains a formidable fighting force.

"This project will inject up to £150m into UK industry and support and maintenance will also be carried out in the UK.

"The government remains committed to building complex warships in UK shipyards."

Chief of Defence Materiel, Bernard Gray, said: "The MARS tanker is an exceptionally versatile platform; able to simultaneously refuel an aircraft carrier and destroyer whilst undertaking helicopter resupply of other vessels".

## 09 ITALIAN AEW&C HELICOPTER READY

The Italian Navy's airborne early warning and control (AEW&C) version of the AgustaWestland AW101 maritime helicopter will enter operational service shortly, having completed development and testing of its radar systems.

Speaking at the Defence IQ AEW and Battle Management Conference in London in January, Commander Maurizio Loi, head of the Italian Navy's flight operations support office, provided details of the capabilities and employment of the helicopter, the service entry date of which was delayed to allow integration of inverse synthetic aperture radar (ISAR) functionality for long-range detection of vessels at sea.

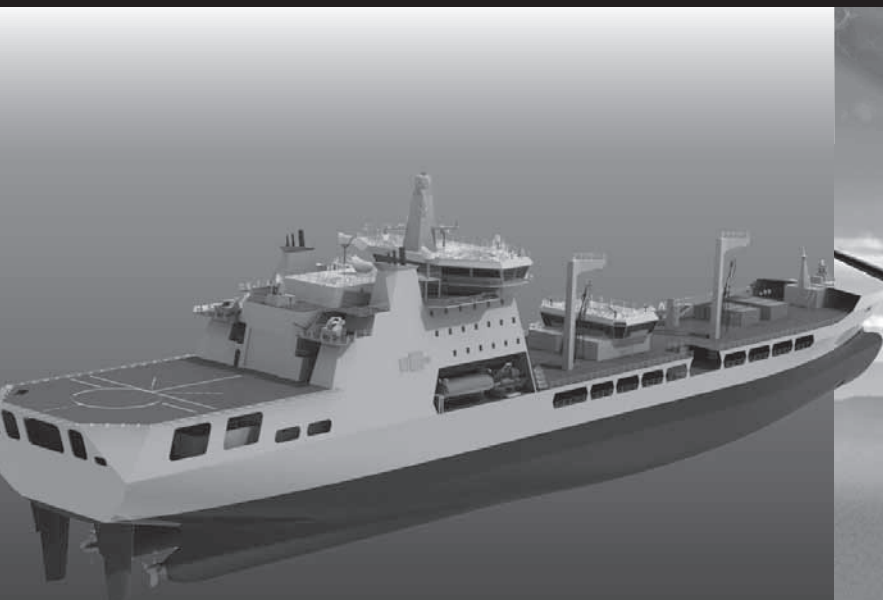
The main sensor is Selex Galileo's HEW-784 radar, characterised by an enlarged antenna radome and the rear and under the aircraft. This has a look-up, look-down facility with an Alarm mode to counter high-speed sea-skimming contacts. Other modes include look-down air-to-air moving target indicator and 'clear' for long-range look-up.

The system incorporates high-resolution Inverse Synthetic Aperture Radar (ISAR) imaging for stand-off classification and identification of non-co-operative surface maritime targets. To identify surface contacts at sea imaged by the ISAR, the platform can access a library of ISAR co-operative targets and compare them using Automatic Target Recognition algorithms. This enables automatic target feature extraction such as sub-metric resolution of the vessel's length and the position of the main mast. The operator can also add to the library by assigning a level of quality to the imagery obtained.

The radar has already demonstrated its ability to detect surface vessels out to a range of 300 km (162 n miles).

08 The winning contender for the UK's MARS contract.

09 The Italian Navy's airborne early warning and control (AEW&C) version of the AgustaWestland AW101 maritime helicopter will enter operational service shortly. The radar has already demonstrated its ability to detect surface vessels out to a range of 300 km (162 n miles).





# RAN SEA POWER CONFERENCE 2012

RADM Andrew Robertson, DSC, AO, RAN (Rtd)  
Navy League of Australia

**The Navy League's own RADM Andrew Robertson reports on the proceedings of the recent Pacific 2012 Sea Power Conference. The largest of its type so far.**

'The Naval Contribution to National Security and Prosperity' was the theme for the seventh Sea Power Conference held at Darling Harbour, Sydney, from 31 January to 2 February.

It was conducted in conjunction with the International Maritime Exposition hosted by Engineers Australia, The Royal Institute of Naval Architects, and the Institute of Marine Engineering Science and Technology.

Included in the Exposition were conferences on Maritime Logistics, Maritime Unmanned Systems, Sustainable Maritime Fuels, Science and Technology for Amphibious Capability, and Emergencies in the Maritime Environment. Some 411 companies/organisations provided displays in the Exhibition Hall.

There were some 1,500 delegates to the Sea Power Conference from 31 countries. These included the Chiefs of Navy of 8 countries and 5 Fleet Commanders, including the Commanders of the US Pacific Fleet and the world's biggest, the US 7th Fleet.

The opening ceremony introduced Vice-Admiral Ray Griggs AM CSC, the Chief of Navy, Mr John Jeremy the chairman of the International Maritime Conference organising committee, Vice-Admiral Chris Ritchie AO, the Chairman of Maritime Australia and the Hon Andrew Stoner, Deputy Premier of NSW.

The Minister for Defence, the Hon Stephen Smith MP, spoke of the relevance of the conference, particularly as maritime security moves

to the forefront of strategic considerations in our region and beyond, as political, economic, military and maritime weight shifts to the Asia-Pacific and the Indian Ocean.

The Minister spoke of the rise of China and India, of the combined ASEAN economics; the enduring economic strengths of Japan and South Korea; the great potential of Indonesia; and the military strengths of the US, Russia, China, India, (including their navies), and North Korea

Australia's view was that an ongoing United States presence in the Asia Pacific is essential to peace and stability and for a range of humanitarian assistance.

Regarding the Indian Ocean Rim, which has almost 40% of the world's population, he stated that the security of its waters goes to the heart of global regional and Australian interests. Crucial trading routes, the presence of large and growing naval capabilities, as well as transnational security issues such as piracy, drive Australia to put the Indian Ocean alongside the Pacific Ocean at the heart of our maritime strategic and defence planning.

Amphibious operations with HMAS CHOULES and the two LHDs will be further strengthened by a major restructure of the Australian Army (Plan BEERSHEBA). The 2nd Battalion, Royal Australian Regiment will form the core of Army's contribution. New destroyers, manned and unmanned long range surveillance aircraft, naval weapons and



communication systems and 24 MH-60R Seahawk 'Romeo' naval combat helicopters equipped with Hellfire missiles and torpedoes will add to maritime capabilities. ANZAC Class frigates are being upgraded with an advanced Anti-Ship Missile Defence system. An additional humanitarian and disaster relief ship will be purchased.

The Government is committed to acquiring 12 new Future Submarines, and will consider the project early this year. Options range (other than nuclear propulsion which the government has ruled out) from a proven fully Military Off-the-Shelf design through to a completely new boat.

The Rizzo report has made 24 recommendations to improve operational availability and the technical integrity of Navy's ships and the Coles Review is examining complex engineering issues associated with submarine sustainment.

The Minister noted that the US considers its engagement in the region to be an increasingly important strategic priority given its location, its proximity to vital strategic sea lanes, and increased great power interest.

One of the United States key priorities is to increase engagement with Australia and its partners in Southeast Asia, and to strengthen regional confidence in US engagement. This was reinforced during the President's visit to Australia when new force posture initiatives significantly enhanced defence co-operation. Starting this year, there will be a rotational deployment of US Marines to the Darwin area for around six months at a time. An initial liaison element and a company of 250 US Marines will expand over the coming five/six years to up to a 2,500 person Marine Air Ground Task Force. The possibility of increased US access HMAS STIRLING, will also be examined.

The Australian Defence Force Posture Review, to be reviewed by Govt. in March, will feed into the 2014 Defence White Paper. An early progress report examined possible basing options in the North and North West of Australia including enhanced access to commercial ports. The potential for greater wharf capacity and support facilities at HMAS STIRLING to support operations including home-porting at least one Air Warfare Destroyer and the future Frigate class, - thus

enabling deployments by US Navy major surface combatants and aircraft carriers, - and home-porting for the future Submarine Fleet while providing facilities that are also able to be used by US Navy nuclear-powered submarines, was also examined.

The Panel also concluded that Defence should develop a long term option for establishing an additional east coast fleet base for the LHDs and/or Future Submarines. Brisbane has industry capacity; is closer for embarkation and likely operating areas; is out of the 'cyclone belt'; and is located in a Nuclear Powered Warship-rated port which facilitates US Navy visits.

Defence should also plan to expand bases at Darwin and Cairns to accommodate the projected Offshore Combatant Vessel (OCV) and replacement Heavy Landing Craft (HLC); for 2030 basing requirements including the implications of increased US presence; and options for loading facilities for embarking Army at Darwin, Brisbane, and Adelaide as well as currently planned at Townsville.

The Review is also examining logistics support requirements, training areas, demographic and economic factors, public communications, strategies, and engagement with industry, particularly the minerals and petroleum resources industries in Australia's North and West.

Future encroachment pressures on Navy's presence in Sydney could present increasing challenges and an additional fleet base in a location like Brisbane could relieve that pressure. Dr Allan Hawke is examining the future use of the naval docks at Garden Island in Sydney by visiting cruise ships, without adversely impacting on its priority role of supporting Navy.

In conclusion the Minister stated that Australia sees the continued and enhanced presence of the United States as fundamental to ensuring the continuation of the security and stability in our region that has underpinned the economic growth and prosperity in the post World War II period.

Australia would continue to play a role in ensuring the security and stability of the region, fundamental to which is the need to have strong, modern and capable naval and maritime capabilities able to



(from L-R) Vice Admiral Chris Ritchie AO, RANR, Chairman Maritime Australia Limited; Mr John Jeremy, Chairman International Maritime Conference Organising Committee; The Hon Andrew Stoner MP, Deputy Premier New South Wales; Vice Admiral Ray Griggs AM, CSC, RAN, Chief of Navy and The Hon Stephen Smith MP, Minister for Defence, during the opening ceremony for the RAN Sea Power Conference and Pacific 2012 Exposition. (Defence)



respond to the full range of challenges ahead.

The Hon Andrew Stoner, NSW Deputy Premier and Minister for Trade and Investment spoke of NSW's strong support of defence bases in the state and was keen to support maritime industries. The major defence company, Thales, would now establish a new headquarters in Sydney.

Vice-Admiral Ray Griggs AM, CSC, the Chief of Navy, noted that Australia, like other countries, suffers from "Sea Blindness" – a lamentable lack of understanding by the public of the sea and the importance of the Navy. Many Australians observed an array of merchant ships off Australian ports like Newcastle, but did not instinctively make the connection to our national wealth. Much of our high value merchant traffic operated in our sparsely populated north-west coast or other regional areas, largely unseen by the public, as were the oil tankers that bring the petroleum on which our internal economy depends. The relationship between the assured use of the oceans and our national prosperity – indeed our national survival – is not something that penetrates the consciousness of most.

Admiral Griggs called for a new term to replace the traditional sea lines of communication (SLOCs) which is no longer understood by youth (by Ed.—maybe "Sea Routes Of Commerce?"). He outlined the three key maritime activities.

Sea control was the primary naval task in the security of the sea lines of communication whether major trading routes, maritime choke points, or around our critical offshore resources. This required a balanced force structure for the ADF, noting the key roles of the Air Force.

Sea denial was an important strategic option but alone could not guarantee the use of our sea lines of communication. Navy, Air Force and Army all had distinct roles.

Maritime power projection involved all three services but Army and Navy in particular must operate hand in glove. The arrival of the large landing ships (LHDs) in 2014 together with HMAS CHOULES would see a quantum leap in Australia's capability. The introduction of the Air Warfare Destroyers will bring the Navy back into the area air defence game and interaction with the Air force's airborne early warning and control (AEW&C) and F-35 fighter capability will be critical.

Great effort was being devoted to rebuilding and re-invigorating the RAN's engineering capabilities and its technical workforce.

Admiral Griggs felt that many navies and services represented at the conference faced similar challenges and that the best way to maintain collective security and prosperity was to understand each other's needs and interests by talking, exercising, and operating together.

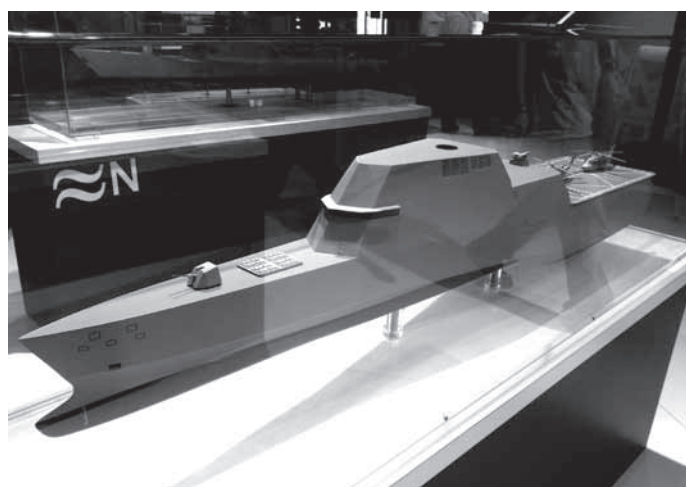
The Chief of Army, Lt General David Morrison, AO fully supported Australia's need for a joint force and that the foundation of Australia's national security was a maritime strategy. Army had an essential role to play and needed to be able to deploy force elements, by air and by sea, to rotate forces, then to redeploy to home locations. The Australian Army's reputation and identity was forged at Gallipoli – which while bold in conception lacked much in execution. Australia's grand strategic practice since Federation has involved contributing joint military forces to coalition operations maintained by the dominant maritime power of the day – in turn Britain, then the United States. For much of history the three services developed much closer ties with the equivalent services of our allies than they did with the other elements of the ADF.

East Timor in 1999 threw Australian forces back together. Great strides had been made in developing joint concepts, joint doctrine and – a truly joint mindset and culture. He was concerned that Army had

become mired in a belief that the RAN and RAAF only provide strategic lift. The ADF cannot afford to think of the LHDs as merely a transport capability. Rather they are an integral part of a combat system with unique, and unprecedented, command and control and sustainment challenges. The acquisition of the LHD will introduce a far greater complexity into the joint training scheduling and integration across and between services than ever needed to be achieved in the past.

General Morrison quoted Lord Edward Grey who once eloquently argued that the British Army needed to be treated like a projectile and fired at the shore by the Navy. The weapon system of the new LHD is in fact the embarked force, and the true capability is the joint effect delivered through Army, Navy and Air force within the Amphibious Task Group

Plan BEERSHEBA will develop multi-role combat brigades ensuring that the ADF will be able to undertake sustained joint operations in the approaches to Australia and throughout the immediate neighbourhood. An Army Battle Group, based on the Second Battalion



One of the futuristic warship models on display at the accompanying exhibition from Navantia. The model is of a proposed stealthy frigate.

and including a cross section of combat and enabling capabilities, will be trained and committed to the development of a truly amphibious capability. This rapidly deployable Battle Group will be reinforced by a follow-on Multi-Role Combat Brigade supported by Special Force Operations. Future generations of Army officers would be trained in amphibious operations.

Air Marshal Geoff Brown AO, Chief of Air Force, supported fully Australia's Maritime Strategy, noting that the nation was surrounded not only by sea but by air, and that the Navy's ability to secure our maritime approaches and sea lines of communication continues to be fundamental to the maintenance of our way of life.

Air Force's contribution to Naval operations continues to be realised through the four key air power roles of Intelligence, Surveillance and Reconnaissance; Strike; Air Mobility; and Control of the Air. They complement the principle sea power roles. Air Force was committed to supporting the full range of Australian Naval activities. The Air Warfare Destroyer will provide the inner core of the defensive perimeter, with air power through the Joint Strike Fighter, Super Hornet, Wedgetail AEW&C, and the P-8, providing combat teeth to neutralise any potential airborne attacks. Protection of the navy was a major role for Air Force. He also outlined the contribution of the long-range detection system Jindalee; the projected high altitude long range multi-role unmanned aerial system (UAV), and the airlift support capability of the RAAF.

Anti-submarine warfare was a truly joint mission which needed to be at the forefront of military priorities. Air lift worked in harmony with sea lift, and control of the air was vital.

In answers to questions the Chief of Navy stated that there was a lot more work to be done before unmanned aerial vehicles (UAVs) would be with the fleet. It was not Government policy to include fixed wing short take-off and vertical landing (STOVL) aircraft in the LHDs.

Chief of Army was also unequivocal in his stance on artillery support for troops going ashore from the RAN's new LHDs, particularly from the 155mm calibre guns Army has standardised to. His position, it could be argued, supported that of THE NAVY magazine's last editorial. Again, Navy needs to take note.

Professor Geoffrey Till, Director Corbett Centre, King's College London, spoke of the economics of sea power, referring to the writings of Mahan and Corbett. The main issue was the balance between elements of national military power. Some supported greater sea power, others land power, but each was an element of the other. Britain's past maritime success was the cost-effectiveness and controllability of sea power and the linkages between navies and trade.

The rise of India and China foreshadowed great change. Maritime powers must avoid major land centric conflicts and he instanced the cost effectiveness of the recent Libya model of intervention. He recommended sustaining or developing maritime power thus enabling limited engagement to maximum effect.

Commodore Gregory Sammut CSC RAN, Director General Submarine Capability gave an Australian Perspective on International Naval Coalitions. He outlined the RAN's involvement in the multi-national naval force in the Gulf and the NW Indian Ocean since the invasion of Kuwait by Iraq in 1990. The nations involved had worked closely together and the command of one Task Group in the Gulf had rotated between the USN and the RAN.

RADM Liao Shining, Deputy Chief of Staff of the Chinese PLA Navy, spoke of his navy co-operating with others in the control of piracy off Somalia.

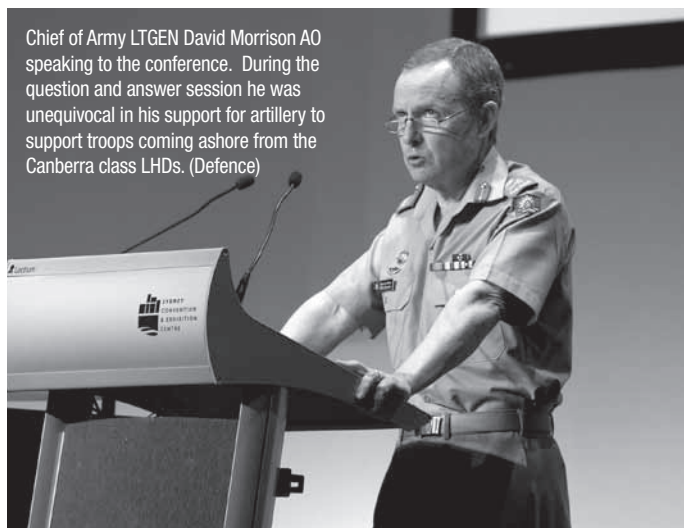
Commander David Neumann RANR Deputy Director Maritime Trade Operations, spoke on the need for the protection of shipping in time of war. Some 95% of Australia's imports and exports were transported by sea and most of our trade was now with East and South East Asia.

Australia's oil refineries held as reserves only 5 to 15% of needs, and the retail industry was similarly placed. There were now some serious threats to shipping including piracy and tensions in the Straits of Hormuz.

Captain Jenny Daetz CSC the Deputy Hydrographer outlined Australian responsibility for charting one eighth of the world's surface. Electronic charts (ECDIS) would be introduced for all ships during the next six years. An Under-Keel-Clearance Management System was now in place for the shallow Torres Strait, giving accurate time depths for shipping. Two new shorter routes through the Great Barrier Reef – Hydrographers Passage and Lads Passage - had been charted.

Mr Noel Hart, Chairman of the Australian Shipowners Association gave an outline of Australian commercial shipping. There were now only 24 ships on the Australian register with only four (carrying LNG) involved in our huge overseas trade. However the offshore marine oil and gas industry was thriving and employed 47% of our seafarers. Major legislative changes were foreshadowed from 1 July this year. Australian shipping could be tax free under most scenarios; have accelerated depreciation; a second register requiring only two Australians in the crews of ships in the international trade; more onboard maintenance by crews; tighter control of foreign traders engaged in our coastal

Chief of Army LTGEN David Morrison AO speaking to the conference. During the question and answer session he was unequivocal in his support for artillery to support troops coming ashore from the Canberra class LHDs. (Defence)



trade; and have a co-ordinated training scheme. There might be 50 to 60 Australian ships in the next few years.

Commodore Sam Bateman AM, PhD, RAN (Rtd), Visiting Professional Fellow, Australian National Centre for Resources and Security at the University of Wollongong, spoke on the significance of the International Law of the Sea. Newly independent countries influence has led to a 12 mile territorial sea and a 200 mile zone (EEZ) under which nations have certain controls over largely economic and resources matters. There are also laws regarding passage through archipelagos. There are contentious issues, largely in E Asia, between those for freedom of movement and those for control of local waters. Australia has now slowly changed its position towards the latter group by introducing compulsory pilotage through the Torres Strait; exclusion zones around undersea cables in the EEZ; mandatory ship reporting in the Great Barrier Reef; and the declaration of the entire EEZ as a submarine exercise area.

There are now disputes over the Continental Shelf in the Bay of Bengal; increased tensions over claims in the South China Sea; tensions between China and the US over US military survey vessels operating in the Chinese EEZ; and problems over whaling in the Southern Ocean. The US has not agreed to the UN sponsored Law of the Sea including EEZ rights of coastal states, fearing this could limit operations of her maritime forces.

Australia, including Antarctica, has the largest claimed EEZ in the world and is responsible for search and rescue for one ninth of the world's surface. As such Australia should play a leading role in Law of the Sea matters

Admiral Maritime Datuk Mohd Amdan bin Kurish, the Director General Malaysian Maritime Enforcement Agency and Singapore's Chief of Navy, Rear Admiral Ng Chee Peng, stated that as a result of enhanced patrols; great co-operation between the navies of Malaysia, Singapore and Indonesia; a hotline enabling hot pursuit into territorial waters; and a robust and timely prosecution system, piracy in the Straits had now almost been eliminated. The 75,000 ships passing through yearly now pass in safety. Prosecution took only 19 days and the normal sentence for piracy was 10 years imprisonment and 10 lashes. The three nations also co-operated on navigational safety measures and environmental protection. People smuggling had increased.

Australia's Future Submarine Programme was addressed by Rear-Admiral Rowan Moffitt AO, the Head of the programme. For a new design it would take some 20 years before the first boat would be fully operational. Building 12 boats would involve 36 to 42 years to the end of the programme by which time the first boat would be at the





A life size mock up of a RBS-15 Mk3 anti-ship missile on display from SAAB.

end of its life. It may be cheaper in cost and maintenance to run a submarine life of 20 years without upgrading a boat during its life, and building boats in batches to introduce new technologies. The future possibility of Lithium-ion Batteries would increase the operational performance of conventional submarines considerably.

Professor Henry Ergas, Senior Economic Adviser, Deloitte Australia and Professor of Infrastructure Economics, SMART Faculty, University of Wollongong, addressed the Economics of Naval Shipbuilding in Australia. He outlined the effect of our ageing population and that without change Australia would have permanent deficits by 2020. A mining bust would make the situation more acute. He believed that, due to its additional cost, it made no sense to build our ships locally and that a cost benefit analysis was essential.

Dr Christian Bouchard of the Laurentian University, Canada, outlined the French influence in the Indian Ocean with not only its role in Djibouti at the entrance to the Red Sea but the permanent presence based on Reunion. The French islands in the Mozambique Channel, and those in the Southern Indian Ocean embraced huge EEZs with major potential for oil and gas. Mayotte in the northern Mozambique Channel was the base of an important air/sea rescue organisation but suffered from huge illegal immigration (16,000 last year). There was also concern over piracy from Somalia, incidents having taken place in the Channel. France co-operated closely with Australia in the Southern Indian Ocean particularly on fisheries control and sea/air rescue.

Captain Frank Evan Rooyen, South African Navy (Rtd), a Research Associate, South African Institute of International Affairs, gave a southern perspective of the Indian Ocean. There was increased interest by the major powers in recent years as tensions developed in the NW corner and piracy spread. China's maritime reach had increased. India was increasing its power and role and had started the Indian Ocean Naval Symposium which South Africa would shortly chair, followed by Australia. African states had large EEZs but were unable to perform maritime tasks. The South African navy was the best in the continent but was under-resourced. He felt that Australia should take a lead in Indian Ocean matters.

Dr Andrew Davies, Programme Director Operations and Capability, Australian Strategic Policy Institute, spoke on the role of sea power in the 21st century in the Asia Pacific Region, outlining the importance of sea trade and the great reduction in the size and presence of the Royal Navy and the major reduction in ship numbers of the US Navy in recent years. He called for a new strategy. Prosperity depended on sea transport.

Maintaining good order at sea was the theme of a presentation by the internationally well-known US strategist, naval historian and contributor to THE NAVY Dr Norman Friedman. He pointed out that navies contribute enormously to maintaining peace by helping insure the free flow of trade and protecting the vast resources of the sea. This has been taken for granted until specific naval operations were required to protect trade from piracy and attack in the Persian Gulf during the Iran-Iraq War of the 1980s. Australia's new Air Warfare Destroyers may have the ability to intercept ballistic missiles and may have an important future role. He noted that maritime power gave great freedom of action with easy withdrawal if necessary. It was very important not to be in anyone else's country and this flexibility could be provided by navies.

In answer to questions he considered that while UAVs might help (with in-flight refuelling) there needed to be aircraft near the Army and that the new large landing ships (LHDs) should carry the STOVL version of the projected Air Force F-35 fighter to ensure this Army support. He also considered that Australia should acquire nuclear powered submarines.

There were also presentations on the great importance of the Naval Reserves; maritime medical diplomacy as an instrument of Soft Power including the advantages of the new large landing ships; and measures to overcome the RAN's serious problems in the engineering area.

## COMMENT

The well-organised and expertly run biennial Sea Power Conference along with the associated International Maritime Exposition is now recognised as one of the foremost maritime conferences in the Indo/Pacific area and attracts high level delegates from all over the world.

The great strides in building organisations to promote dialogue and co-operation between nations in the Indian/Pacific oceans as outlined by the Minister give much hope for future stability.

The Navy League of Australia has long supported the development of Australian Maritime power in all its forms. As the balance of economic and military power moves steadily to East and South Asia this has become recognised by successive governments who have moved to improve our military and commercial maritime capabilities.

A Maritime Strategy for Australia's Defence seems now to be firmly accepted and established, with all three branches of the ADF working together in full support.

The two LHDs and the Air Warfare Destroyers, the development of the RAAF, and the major re-organisation of an element of the army into a marine-type force will transform Australia's capability to deploy, defend and support the ADF at great distances from the mainland. There may be occasions when the operation is beyond the effective range of strike/ fighter aircraft from mainland or well-defended, supplied, and equipped overseas airfields. So long as such aircraft are important for defence of the Fleet and support of the Army there would seem to be a strong argument, despite the extra logistic effort, training, and costs involved, for some of the RAAF's F-35 fighters to be of the STOVL version to enable them to operate from the LHDs.

There also seems to be a very strong argument that Australia should purchase or lease a lesser number of nuclear powered submarines from the US or Britain rather than proceed with the construction here of the proposed 12 large orphan conventional submarines. The Navy League believes that Australia must not send its men and women submariners to sea in decades to come, in a very different and uncertain world, in anything less than the most effective, reliable, and survivable boats that can be acquired. ■

# NO WRITING THE WHITE

## A MARITIME COMMENTARY

### ON THE UK STRATEGIC DEFENCE

### AND SECURITY REVIEW (SDSR)

### WHITE PAPER 2010-2011

By Frank Horrigan

**The UK's 2010 Strategic Defence and Security Review as been devastating to the capability of the RN. Not even recent enemies like the Argentines or Soviets could have been more devastating than the Government's actions towards its own Military forces. Frank Horrigan takes a look at the aftermath.**

The British / United Kingdom's Strategic Defence and Security Review (SDSR) has been variously described during its writing and since its publishing in October 2010. Commentary, including by the previous Secretary of State for Defence, The Right Honourable Dr Liam Fox, has often been critical. The strategic setting for the SDSR was set out by both Liam Fox and William Hague, the Foreign Secretary:

'Tackling the crisis in the public finances is not just an issue of economics but an issue of national security too. It is central to sustaining in the long-term Britain's reach, military power and influence<sup>1</sup>.'

'This Government reject the idea of strategic shrinkage. We believe that this would be to retreat as a nation at the moment when a more ambitious approach is required<sup>2</sup>'.

'The lessons of history are clear. Relative economic power is the wellspring of strategic strength. And conversely, economic weakness debilitates every arm of government. Structural economic weakness, if not dealt with, will bring an unavoidable reduction in our ability to shape the world<sup>3</sup>.'

'Building and sustaining the power, influence and prosperity of a country in the long flow of history – particularly in our age of rapid change and unpredictability – requires action now to ensure the country can succeed in the future. The bottom line is that a strong economy is a national security requirement and an affordable Defence programme is the only responsible way to support our Armed Forces in the long term<sup>4</sup>.'

The outcomes of the SDSR are becoming increasingly clear to a battered Britain seemingly clinging to the vestiges of lost glories. A question for all those who admire and have an abiding love and respect for Her Majesty's Royal Navy's is wither now:

'The United Kingdom in 2011 is at a strategic tipping point. We have to decide whether we wish to remain a global power, with a global role, or whether we are to accept the supposedly inevitable and decline to the status of a middling European power with only a regional one<sup>5</sup>.'

## STRATEGIC SETTING

The following quotes essentially speak for themselves in setting out the potential road to recovery post SDSR and as the United Kingdom emerge from the Global Financial Crisis and recession:

'The requirement for strategic thinking, for strategic planning and preparation – the requirement to play the long-game – is equally necessary. To be a hawk on defence, you need to be a hawk on the deficit and the national debt too. I didn't come into politics to cut the defence budget, but neither did I come into politics to be fiscally irresponsible – because the consequences of that are written deep in the historical record. The adaptable posture we have embraced gives us the best capability to respond with agility to changing threats in an uncertain world<sup>6</sup>.'

'If the UK's influence in the world is to be maintained, we are concerned that the impact of defence cuts on the UK's defence



The former invincible class aircraft carrier HMS ARK ROYAL decommissioned at Portsmouth naval base. ARK ROYAL's snap decommissioning came as the biggest shock of the SDSR. She was at sea on exercise when a signal was sent to her Captain informing him of the ship's fate when it returned to port.



The first newly modified MRA-4 Nimrod maritime patrol aircraft (MPA). The entire Nimrod MPA fleet was wiped out and its home base sold leaving the UK without a long range anti-submarine warfare and surface surveillance aircraft to support the RN.



commitments and role within NATO and other strategic alliances does not appear to have been fully addressed. UK defence does not operate in a vacuum and decisions taken in the UK have repercussions for the spending commitments and strategic posture of allies and alliances<sup>7</sup>.

'Current operations in Afghanistan and in Libya remain the priority for the Ministry of Defence and the men and women of our Armed Forces fighting on the front-line get first call on MOD resources<sup>8</sup>.'

'The unpopularity of the war in Iraq, coupled with the public's lack of understanding of the reasons for the war in Afghanistan, have drawn attention to the lack of a strategic rationale and deficiencies in strategic preparation for those conflicts. They are examples of strategic failure<sup>9</sup>.'

'The MoD cannot proceed with all the activities and programmes we currently aspire to, while simultaneously supporting our current operations and investing in the new capabilities we need. We will need to make tough decisions<sup>10</sup>.'

'[Uncertainty] means keeping our forces ready to react swiftly to those things we cannot easily predict. It means upgrading strategic lift capability. It means investment in Special Forces. It means being efficient, cutting down on duplication and numbers of equipment types to shorten the tail. And it means investing in areas of capability that suit the future character of warfare – such as cyber, intelligence and unmanned technology. It also means investing in activities, such as conflict prevention and aid, that prevent the development of threats 'upstream', before they require a more demanding military response. But in doing so we are not ignoring conventional military power required for flexible, multi-rolled, deployable forces<sup>11</sup>.'

## A FINE POT MESS

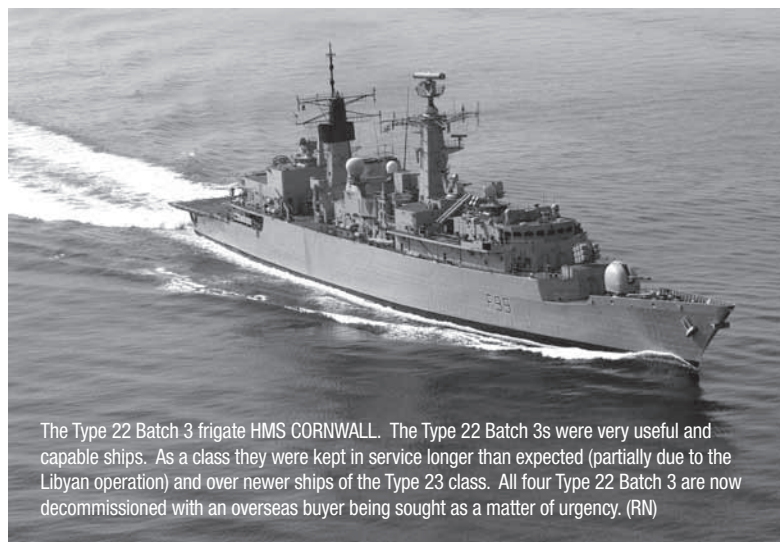
It is not possible to consider the SDSR without placing it within the wider political, bureaucratic, and geo-security context of the time. The Strategic Defence Review (SDR) undertaken in 1998 was set against the backdrop of relatively successful engagements in the Balkans and Iraq; the bankrupting of the Soviet Union (morally and financially) and a sustained period of economic growth (based on Mrs Thatcher's reforms) followed by political incompetency / sleaze (under the Major government). SDR and to an extent the SDR New Chapter (after 911) were undertaken from positions of strategic strength. SDR was also the last strategic review to be undertaken with the backdrop of a unitary political British state. In 2010 the geo-political strategic context was significantly different:

- The United Kingdom had been devolved into constituent

parliaments in Westminster, Wales, Northern Ireland and Scotland. In the words of Alex Salmon, the First Minister of Scotland, Britain had become the 'United Kingdoms'.

- Post the Global Financial Crises (2008 & 2011) – attributed in some measure to the behaviour of the City of London and the failure of the public servants in the Bank of England, for example on Northern Rock – the UK was amongst the first into the recession and may be the last out.
- The industrial base, representing approximately 30% of GDP under Mrs Thatcher, had shrunk to between 8-10% of GDP. The UK economy is increasingly reliant on service type industries in the City / South East of England and incapable of balancing appropriately across variable enterprises. Countries such as Scotland have, in fact, been de-populating.
- A political professional class with very little experience other than in politics has formed in which average 'tours' in the House of Commons have increased and variety from across society, including from engineering, business, commerce, industry and the military, has decreased<sup>12</sup>.
- A period of political sleaze (2006-10) including the abuse of expenses / honours culminated finally in the 2010 election and resulted in the return of the Liberal Party to Government-in-coalition for the first time in almost 90 years.
- A divided political leadership (Blair and Brown) that provided both opposition and government from across the same benches and in which the military was perceived to have taken the side of the PM. The result was that funding necessary to support operations in Iraq and Afghanistan increasingly had to be found begrudgingly from within MoD resources.
- Increasing operational requirements and decreasing contingency funding led to much higher demands on people and equipment.
- As defence spending fell to 2.5% of GDP and less, so fleets were extended in life from 25 to 40 years or more, for example Nimrod MR4. At the same time, these same fleets were being consumed directly in Afghanistan or Iraq or indirectly through increasing demands on existing resources at reduced numbers. Numbers reduced to pay for Afghanistan and Iraq.
- The consumption rate on all Fleets – including personnel – in wartime is much higher than in peace time, 8-10 years compared to 25 years in peace time. The result was that by 2010 the UK was running out of people, trucks, aircraft, ships etc etc.

General Sir Robert Fry Royal Marines (part of the UK Naval Service) rtd indicated that the deployment to Helmand showed 'an absence



The Type 22 Batch 3 frigate HMS CORNWALL. The Type 22 Batch 3s were very useful and capable ships. As a class they were kept in service longer than expected (partially due to the Libyan operation) and over newer ships of the Type 23 class. All four Type 22 Batch 3 are now decommissioned with an overseas buyer being sought as a matter of urgency. (RN)



The UK Army's Challenger 2 Tank. The SDAR cut the Tank force by 40%.

of Grand Strategy' and 'no sense of national interest'<sup>13</sup>. Commodore Steve Jermy RN rtd, who was serving in the office of the then CDS<sup>14</sup> at the time, confirmed the impression of the lack of strategy within NATO. In 2007, after asking Regional centres in two separate areas of Afghanistan about the strategy they were using to design this campaign, he was told 'There's no plan, Sir. We're just getting on with it.' He described the consequences of this lack of strategy as follows: 'if you think about the South, Kandahar is by far the most important province there, and it had 1,200 Canadian troops. Helmand is not the most important but it had 5,500 British troops. That does not make sense'<sup>15</sup>. Failure both of culture and strategic thinking – a type of ISO 9000 tick box culture – was highlighted by both the Haddon-Cave and Gray reports:

'Financial pressures and cuts drove a cascade of multifarious organisational changes, which led to a "dilution of the airworthiness regime and culture" within the MOD, and "distraction from safety and airworthiness issues as the top priority". There was a "shift in culture and priorities" in the MOD towards 'business' and "financial targets" at the "expense of functional values" such as safety and airworthiness.'<sup>16</sup>

'Participants in 1998, including Civil [Public] Servants and Military Personnel as well as Ministers, took the view that [financial] problems would be ironed out in time, and that some kind of 'bow wave' had existed within the equipment programme for a long time, and that its effects had always in the end been smoothed out'<sup>17</sup>.

'This feels reassuring to the country about the size and scope of Britain's Armed Forces, but behind this comforting thought is the cold fact is that the budget does not exist, and has arguably not existed since the end of the Second World War, to support this level of ambition'<sup>18</sup>.

'The policies of successive governments, and a lack of political will to present to the electorate the unpleasant reality of the position, has been a significant force behind this double-think. It is equally true that Ministers, the Armed Forces, and Civil Servants did not rush to confront the problem either'<sup>19</sup>.

Strategic British failure in Iraq and Afghanistan was not primarily military. More it was the defeat of the British establishment across all its political, military and bureaucratic levels. The Comprehensive Approach (to countering insurgency) was nominally an FCO initiative. It was never staffed properly by the Public Service. Instead the military filled the vacuum, as they had done before in places like Bosnia. The Petraeus civil-surge mentioned by Cowper-Coles<sup>20</sup> was never delivered by the British establishment. And as the military did yet more and the public service still less, this caused huge resentment at

senior levels. When the opportunity arose to 'put the boot in', as the SDSR crossed the road from the MOD to the newly formed national security secretariat in the NSC (previously the civil contingency secretariat; consisting of special advisers, 'loaned' consultants and fast-tracked public servants with minimal military knowledge), no quarter was given.

## ON A FUTURE NAVAL SERVICE

The following quotes give some indication of the unfinished debate on a future Naval Service:

'The reduction in overall surface ship numbers means we will be unable to undertake all the standing commitments (providing a permanent Royal Navy presence in priority regions) we do today. Assuming a presence in UK waters, the Falklands and in support of the deterrent is essential we would have to withdraw our presence in, for example, the Indian Ocean, Caribbean or Gulf'<sup>21</sup>.

'Deletion of the amphibious shipping (landing docks, helicopter platforms and auxiliaries) will mean that a landed force will be significantly smaller and lighter and deployed without protective vehicles or organic fire. We could not carry out the Sierra Leone operation again'<sup>22</sup>.

'Deletion of the Nimrod MR4 will limit our ability to deploy maritime forces rapidly into high-threat areas, increase the risk to the Deterrent, compromise maritime CT (counter terrorism), remove long range search and rescue, and delete one element of our Falklands reinforcement plan'<sup>23</sup>.

## REBUILDING THE COVENANTS

The Armed Forces are not without blame. The much publicised act of the previous [RAF] CDS and Chief of Air Staff (equivalent to Chief Air Force) with the Prime Minister that dealt the end of naval harriers and carriers was non-representative. To a great extent, the SDSR was 'done and dusted' well beforehand and represented a 20% salami slice, across the board. When the military failed to deliver, the SDSR was moved to the NSC and the cuts made regardless. The Armed Forces could only have succeeded if they had remained properly commanded, effectively led, united and joint. They failed to do so as shown by the, at best unconstitutional, and literally last weekend 'carrier-Harrier deal'.

More recently, the phone hacking scandal – connecting across the establishment, including the media, the PM, politicians and the Metropolitan Police – the student riots and this summer's London riots have exposed the dysfunctional and broken nature of British society. One of the few vestiges of a once strong national fabric remains the Armed Forces and they are about to be cut yet further. And with them, jobs for an increasingly unemployed / disenfranchised male youth (graduates and school leavers). Many covenants need repairing in British society including that between Service personnel, Queen and country and between Westminster and the City of London; Greater London; Scotland; Wales and Northern Ireland. No part of society is untouched. The connected nature of British society means that failure in any one sector (or class given the British predilection for stratification) affects the other. But then, so does success and change given an emerging political resolve and will to repair and restore British society and industry and with it, its Armed Forces.

Underpinning Britain's Armed Forces has and always will be its civil and military maritime arms – the ensigns of Her majesty's White, Blue and Red Fleets. As lessons are truly learned and the UK vests itself from unpopular wars in which proportionally large numbers of the Naval Service (Royal Marine and Royal Navy) – almost twice the



number of fatalities suffered to date by the ADF – have been injured and killed, empirical sense will return. The projection of power for a maritime nation was, is and always will be from the sea. These are the immutable facts upon which future glories will be secured. And these repairs – specifically to the Royal Navy and the Royal Marines – will be essential to restoring the UK and its civil and military enterprises to the vanguard of the Liberal democracies, so under threat as the world struggles to emerge from the continuing GFC recession.. ■



An RAF GR-9 Harrier on its last mission over Afghanistan where it quickly became the aircraft of choice to support troops in contact. The GR-9 had only recently undergone an upgrade to make it one of the best attack/strike aircraft in the world. All 72 were sold to the US Marines as spares for their AV-8B Harriers for the price of one C-130J Hercules cargo aircraft. They, with HMS ARK ROYAL, would have been perfect for operations off Libya in 2011. They would have also been vital in any operation to retake the Falkland Islands from a resurgent and belligerent Argentina.

<sup>1</sup> Rt Hon Dr Liam Fox MP previous Secretary of State for Defence. Strong Economy, Strong Defence, Strategic Reach: Protecting National Security in the 21st Century. Chatham House, 19 May 2011

<sup>2</sup> House of Commons Debate Rt Hon William Hague MP, Foreign and Commonwealth Secretary, 26 May 2010.

<sup>3</sup> Liam Fox Ibid Chatham House, 19 May 2011.

<sup>4</sup> Liam Fox Ibid Chatham House, 19 May 2011.

<sup>5</sup> George Grant. Is Britain's decline and fall unavoidable? Daily Telegraph, 20 July 2011.

<sup>6</sup> Liam Fox Ibid Chatham House, 19 May 2011.

<sup>7</sup> House of Commons Defence Select Committee Report.(2011). SDSR & NSS. 6th Report of Session. Vol 1. 20 Jul.

<sup>8</sup> Liam Fox Ibid Chatham House, 19 May 2011.

<sup>9</sup> PASC Report (2010). Who Does UK National Strategy?

House of Commons Public Administration Select Committee, 12 Oct 10.

<sup>10</sup> Green Paper on Defence released during the last Labour Government, Jan 2010.

<sup>11</sup> Liam Fox Ibid Chatham House, 19 May 2011.

<sup>12</sup> Vice Admiral Sir Jeremy Blackham rtd. On Armed Forces Day, we should reflect on Britain's military decline. Daily Telegraph, 24 June 2011.

<sup>13</sup> Evidence to PASC Enquiry, Lieutenant General Sir Robert Fry KCB (rtd) and Commodore Steven Jermy RN (rtd) 16 Sep 2010.

<sup>14</sup> UK Chief of Defence Staff equivalent to the Australian Chief of Defence Force (CDF).

<sup>15</sup> PASC. Ibid. 16 Sep 2010,

<sup>16</sup> Haddon-Cave, C.The Nimrod Review. Ordered by the House of Commons to be printed by the Stationary Office, 28th Oct 2009.

<sup>17</sup> Bernard Gray. Review of Acquisition for the Secretary of State for Defence. An independent report by, Oct 2009. Bernard Gray is now the UK Chief of Defence Materiel.

<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

<sup>20</sup> Cowper-Coles. Breaking Ranks. Spectator. 11 June 201.

<sup>21</sup> Rt Hon Dr Liam Fox MP Secretary of State for Defence. Defence cuts: Liam Fox's leaked letter to the PM of 22 July 2010 in full. Daily Telegraph, 28 Sep 2010

<sup>22</sup> Liam Fox. Leaked Letter Ibid 22 July 2010.

<sup>23</sup> Liam Fox. Leaked Letter Ibid 22 July 2010.



The former Type 42 Batch 3 destroyer HMS MANCHESTER seen here being stripped of any useful items to sustain the last Type 42s in service after being decommissioned. (Mark Schweikert)

## Big Gun Monitors

By Ian Buxton

Seaforth Books

Paperback 240 pages

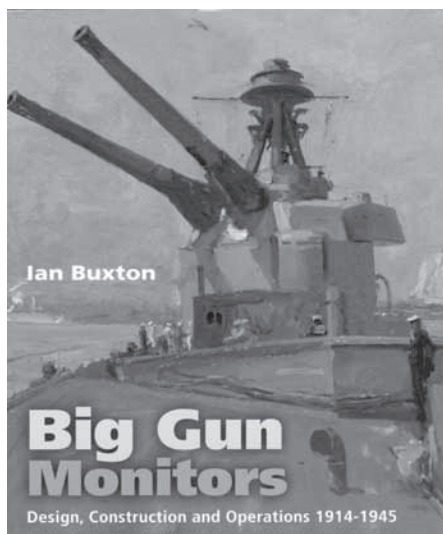
ISBN: 9781848321243

Published: 25 January 2012

In the history of naval warfare probably no type of ship has provided more firepower per ton than the monitor – indeed they were little more than a huge gun mounting fitted on a simple, self-propelled raft. Designed and built rapidly to fulfill an urgent need for heavy shore-bombardment during World War I, they were top secret in conception, and largely forgotten when the short-lived requirement was over. Nevertheless, they were important ships, which played a significant role in many Great War campaigns and drove many of the advances in long-range gunnery later applied to the battle fleet. Indeed, their value was rediscovered during the Second World War when a final class was built.

Considering the urgency of the times and the design limitations, it should not be surprising that the history of these vessels also provides many interesting examples of what can go awry in ship design projects evolving under such conditions. Monitors seldom achieved their design weight and stability; displacement was generally much more than intended, with subsequent deleterious effect on draft and performance. While draft itself never proved to be a serious limitation, with only one ship of this type running aground, speed on the earlier examples tended to be abysmal; headway often could not be maintained against even moderate wind or current. Stability tended to be good to exceptional on the larger torpedo-bulged monitors, but some of the smaller non-bulged ones were atrocious. Roll in one case was as

much as 50 degrees; a salvo fired athwart-ship could roll the deck edge under water. All manner of design deficiencies could be found in some specimens, from structural weaknesses to recurrent propulsion fires, etc. However, as the monitor evolved, its worst deficiencies were corrected. The mobility, accuracy, and sustained rate of fire that monitors were to develop made them invaluable in support of shore assaults. Compared to cruisers and battleships, when utilised for the same purpose, monitors were to prove themselves much more cost-effective. It was the general march of technology, and perhaps in particular the advent of truly awesome air bombardment capability, that was to render these vessels ultimately obsolete, but in their time they were quite relevant. We shall not see their like again, but we may read and wonder about them, thanks to Ian Buxton's remarkable book.



Big Gun Monitors has a soft cover and is 240 pages long. It has been thoroughly researched by the author and contains the images, line drawings and blue prints not seen before.

The book starts with the origins of the Big Gun Monitor with the chapters covering the 14-in, 12-in, first 15-in, the Ex Brazilian River Monitors, Ex-Norwegian vessels, Small Monitors, second 15-in, last 15-in and the guns they used before the author offers a retrospective view. Altogether, the book is as a most complete and competent work.

Monitors were largely ignored by naval historians until author Ian Buxton produced the first edition of this book in 1978. Although published privately, this became an established classic and copies of the first edition are now almost unobtainable, so this new edition will be welcomed by many. It has

been completely revised, extended and redesigned to a generous large format which allows material deleted from the original edition for lack of space to be restored.

The book is a must for any warship library and is thoroughly recommended.



## THE HISTORY OF THE NAVY LEAGUE OF AUSTRALIA

**The Federal Council of the League is planning to produce a history of the organisation, dating from the time its first branches were formed in Tasmania in 1900 up to the present day.**

In this regard it has commissioned Mr Malcolm Longstaff, who has been a member of the NSW Division Executive Committee since 1970, to undertake the necessary research as a prelude to the production of the history in a form yet to be decided.

If any reader, including especially those who may have been office-bearers in a Division, has any personal reminiscences or memorabilia relating to their involvement with the League that they believe may assist the research, it would be appreciated if they could as a first step **kindly contact Malcolm:**

**Telephone:** Sydney (02) 9988 3563  
**E-mail:** nla.history@inet.net.au

**In writing:** Navy League History  
PO Box 518  
Turrumurra NSW 2074



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

## The Navy League:

- Believes Australia can be defended against attack by other than a super or major maritime power and that the prime requirement of our defence is an evident ability to control the sea and air space around us and to contribute to defending essential lines of sea and air communication to our allies.
- Supports the ANZUS Treaty and future reintegration of New Zealand as a full partner.
- Urges close relationships with regional powers and particularly with the nearer ASEAN countries, PNG and South Pacific Island States.
- Advocates the acquisition of the most modern armaments, surveillance systems and sensors to ensure that the Australian Defence Force (ADF) maintains some technological advantages over forces in our general area.
- Advocates a significant deterrent element in the ADF capable of powerful retaliation at considerable distances from Australia.
- Believes the ADF must be capable of protecting essential shipping both coastally and at considerable distances from Australia.
- Endorses the control of Coastal Surveillance by 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.
- Endorses measures being taken to foster a build-up of Australian-owned shipping to assist the economy to support the ADF and to ensure the carriage of essential cargoes to and from Australia in time of conflict.

**As to the RAN, the League,** while noting the important peacetime naval tasks including border protection, flag-showing/diplomacy, disaster relief, maritime rescue, hydrography and aid to the civil power:

- Supports the concept of a Navy capable of effective action in war in both the Pacific and Indian Ocean proximate areas simultaneously and advocates a gradual build up of the Fleet and its afloat support ships to ensure that, in conjunction with the RAAF, this can be achieved against any force which could be deployed in our general area.
- Believes that the level of both the offensive and defensive capability of the RAN should be increased and welcomes the Government's decisions to acquire 12 new Future Submarines; to continue building the 3 Air Warfare Destroyers (AWDs) and the two landing ships (LHDs); and to acquire 8 new Future Frigates,

a large Strategic Sealift Ship, 20 Offshore Combatant Vessels, 24 Naval Combatant Helicopters, and 6 Heavy Landing Craft.

- Noting the deterrent value and the huge operational advantages of nuclear-powered submarines in most threat situations and the need to train our own submarine forces, recommends that the future force include proven off-the-shelf nuclear-powered vessels.
- Noting the considerable increase in foreign maritime power now taking place in our general area, advocates increasing the order for Air Warfare Destroyers to at least 4 vessels.
- Welcomes the decisions to increase the strength and capabilities of the Army and Air Force and to greatly improve the weaponry, and the intelligence, surveillance, reconnaissance, cyberspace, and electronic warfare capabilities of the ADF.
- Advocates that a proportion of the projected new F35 fighters for the ADF be of the short-takeoff and vertical-landing (STOVL) version to enable operation from small airfields and suitable ships in order to support overseas deployments where access to secure major airfields may not be available.
- Advocates that all warships be equipped with some form of defence against missiles.
- Supports the development of Australia's defence industry, including strong research and design organisations capable of constructing and maintaining all needed types of warships and support vessels and advocates a continuous naval ship-building programme.
- Advocates the retention in a Reserve Fleet of Naval vessels of potential value in defence emergency.
- Supports a strong Naval Reserve to help crew vessels and aircraft and for specialised tasks in time of defence emergency.
- Supports a strong Australian Navy Cadets organisation.
- Advocates improving conditions of service to overcome the repeating problem of recruiting and retaining naval personnel.

## The League:

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



A USN P-8A Poseidon Maritime Patrol Aircraft (MPA) dropping a Mk-54 dummy torpedo during flight testing. The RAAF has signed up to the P-8A but has received criticism for only planning on eight airframes to replace the existing 18 P-3C Orion MPAs. (RAN)



Soon to be a familiar sight in Sydney Harbour. The Spanish Navy (Armada) LHD JUAN CARLOS I seen here arriving in port from operational testing is, on the outside, the same as the new Canberra class LHDs to be based in Sydney.



The Malaysian Scorpène class diesel electric attack submarine K.D. TUN RAZAK arriving at a port in Malaysia in December 2011. The Royal Malaysian Navy has two Scorpène class submarines armed with Blackshark wire-guided torpedoes and Exocet SM-39 sub-launched anti-ship missiles. (Chris Sattler)



The Royal Malaysian Navy Kedah class Offshore Patrol Vessel KD KELANTAN. The Kedah class is based on the MEKO 100 design by Blohm + Voss. A total of 27 ships were planned, but only six have been ordered from Malaysian builders. KD KELANTAN is the fifth unit of the class seen here operating with a USN Arleigh Burke class destroyer. (USN)

