

THE NAVY

THE MAGAZINE OF THE NAVY LEAGUE OF AUSTRALIA



**NUCLEAR
POWERED
SUBMARINES
FOR AUSTRALIA**

**REBUILDING THE
CRUISER FORCE:
THE PURCHASE
OF SYDNEY II**

**HMAS ADELAIDE I:
THE FAITHFUL
SHEPHERD**

**THE BATTLE
FOR BRITAIN
INTERVIEW**



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Penny Haines T: +61 (0) 3 5282 0535 M: +61 (0) 407 824 400 E: phaines@amda.com.au
Nandini Rego T: +61 (0) 3 5282 0519 M: +61 (0) 417 011 982 E: nrego@amda.com.au

MARITIME AUSTRALIA LIMITED PO Box 4095, Geelong VIC 3220, Australia T: +61 (0)3 5282 0500 E: expo@amda.com.au



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All letters and contributions to:

The Office of The Editor

THE NAVY

Navy League of Australia

GPO Box 1719

Sydney, NSW 2001

E-mail to: editorthenavy@hotmail.com

All Subscriptions, Membership and Advertising enquiries to:

The Hon Secretary

Navy League of Australia, NSW Division

GPO Box 1719, Sydney NSW 2001

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Front cover:

The nuclear powered Virginia class SSN USS MISSOURI on the surface.

Nuclear powered submarines seem to be a logical strategic step for the RAN.

The only real impediment is Government. (USN)

MINISTER DUMPS ON NAVY

Recently it was announced that the LPAs KANIMBLA and MANOORA were suffering from main reduction gearbox failure and hull corrosion. So bad was MANOORA's condition that, given her planned withdrawal date, it was deemed more economical to decommission her early than to repair her.

KANIMBLA will be repaired as her planned withdrawal date is further into the future and her condition requires less work to remediate.

On this issue it was disappointing and worrying to see the Minister for Defence taking such an early negative tone about Navy. His speech to a conference in February announcing the news of the LPAs state was designed to distance him from what is, at the end of the day, his responsibility. It was also intended to attract the media's curiosity with its subtle and passive language.

From this we must assume he has received extremely unsound advice as much of what he said is patently wrong, and whether inadvertent or not, has severely damaged Navy's image. His speech also prompted a chorus of hysterical uninformed naysayers in his support.

Some journalists, politicians and members of the public started to use emotive language as "national disgrace", "appalling negligence" and "debacle" to describe the LPAs in-service management. Many of them used the two natural disasters in Queensland to further their case. However, what use the LPAs could have been for Queensland is certainly open to debate.

The Minister's advisers succeeded in distancing him from the real issue, and deflecting all criticism onto Navy. Regrettably no one made the very easy and quite accurate link to the Government's Defence Reform Programme - which is squeezing every facet of Defence to find \$2billion worth of savings every year for 10 years. Surely the Minister ought to recognise those savings are coming from areas such as support for ageing platforms like the LPAs. This is understandable given their extreme age, cost of maintenance, impending replacement and other priorities.

To fully comprehend the Minister's lack of any real understanding we need to understand the history of the LPAs.

KANIMBLA and MANOORA were originally USN tank landing ships of the Newport class acquired by the then Keating Labor government for AUD\$60 million. The class numbered 20 and were decommissioned and/or sold 2nd hand by the USN during the 1990s. The Newports were built to replace the traditional WW II bow door designed landing ships. The vessels had two huge derricks used to extend and retract a bow ramp. The 110-foot (34 m) ramp had a 75-ton capacity. They also had a stern gate that allowed the load and launch of amphibious assault vehicles, and permitted stern gate marriages with landing craft. HMAS MANOORA was originally USS FAIRFAX COUNTY (LST-1193), which was launched on 19 December 1970. She saw extensive service in the Caribbean with regular, extended deployments to the Mediterranean. She was decommissioned on August 17, 1994 and recommissioned as HMAS MANOORA in September 1994, already 24 years old.

KANIMBLA started life as USS SAGINAW (LST-1188) and was launched on 7 February 1970. After extensive service, including the first Gulf War, the ship was decommissioned on 29 August 1994 and at the same ceremony transferred to the RAN. Like MANOORA she was already 24 years old.

KANIMBLA and MANOORA were converted from tank landing ships to aviation capable amphibious warfare transports at Forcades Dockyard in Newcastle, NSW. The conversion required the bow ramp to be removed and the bow doors welded shut. A hangar for three Sea King or four Blackhawk helicopters was added, while the aft helicopter deck was reinforced. Chinook helicopters were able operate from the

aft deck, but could not be carried long-term. The deck forward of the superstructure was converted to carry two LCM-8 landing craft, which were launched and recovered by a single 70 ton crane. When the LCM-8s were deployed, the area functioned as a third helicopter landing spot. Accommodation was provided for up to 450 soldiers, while improved medical facilities and an upgraded galley were also installed. The ships also sported an extensive and comprehensive command, control and communications capability.

Interestingly, by the time the ships had completed the conversion, they were already 30 years old. At that age most navies are decommissioning ships, not pressing them into service for another 11 years with a new role. It should be noted that nearly all owners of 2nd hand Newport class LSTs have already decommissioned these ships due to remarkably similar issues the RAN has experienced. Our LPAs are/were amongst the oldest warships in the world.

Despite their age they have proven to be an indispensable part of the ADF. It was the LPAs contribution to ADF capability that saw the genesis of the Canberra class LHDs. A capability that will prove more indispensable in the future.

The very useful but old LPAs MANOORA (52) and KANIMBLA (51) at Garden Island Sydney. BZ Navy for getting them this far. (RAN)



So with a better understanding of KANIMBLA's and MANOORA's service lives a better political strategy for the Minister for Defence to have pursued might have been to praise Navy. KANIMBLA and MANOORA are very old and have had very hard lives. Many forget the previous life in the USN and the numerous operations and exercises they have carried out while flying the Australian White Ensign. The ships too were never designed for longevity. They were built during the Cold War and were expected to survive one crossing of the Atlantic and one amphibious assault if it turned 'hot'. Not 40 years.

Navy has done an incredible job to get these ships this far given the operational tempo requirements, age and government penny pinching. To prove the point, let's put it into car terms. You would be hard pressed to find an American made car that has lived on the Australian east coast all its life, which has been thoroughly thrashed every year for 40 years, modified for a task that it was never designed for that still works and has no rust. BZ Navy! Shame on you Minister.

However, the Minister does have an opportunity to put matters right. If he can secure the surplus Royal Fleet Auxiliary LARGS BAY, as suggested in this column in the last issue of *THE NAVY*, then all is not lost. The RFA LARGS BAY has an impressive amphibious operations capability. If he is unable to secure that ship, then it will be interesting to see what he expects Navy to do as there is no alternative for the ADF to retain a meaningful amphibious capability until the arrival in service of the LHD HMAS CANBERRA in 2014/15.

NUCLEAR POWER

When the Defence White Paper was released it was welcomed by the Navy League. There was much in the Paper with which the League agreed.

One area of difference was in the question of the propulsion of the 12 submarines the White Paper stated that Australia would acquire. The Defence White Paper did not discuss the issue. The White Paper contained nothing other than a one line rejection of the possibility of nuclear propulsion.

It is the League's view that at the very least the option of nuclear power should remain under consideration. There is a growing body of opinion in support of this view.

Despite the one line rejection in the Defence White Paper, the issue of nuclear propulsion is one worth pursuing. The Navy League believes that it is an issue that must be given a comprehensive airing.

FPDA

In January Australia had the first visit in a long time from the British Foreign Secretary and Minister for Defence. Their visit was very welcome. The two Ministers were in Australia for AUKMIN, a meeting of the Foreign and Defence Ministers of Australia and the UK. Henceforward this is to be an annual event.

The overwhelming power of the US and our focus on our own part of the world might lead us to ignore the important role our relationship with the UK (by any definition our oldest ally) can play. At many levels of defence activity our connection with the UK is of great value.

It was interesting to read the comments of the British Defence Minister, Dr Liam Fox, about

the Five Power Defence Arrangements (FPDA - Australia, UK, New Zealand, Singapore and Malaysia). "The FPDA in its 40th anniversary has more relevance than ever. It has huge relevance in maritime security. It is important to create a range of alliances and arrangements to tackle piracy and similar issues. The more different alliances we can have the better."

As is well known the British Ministry of Defence has been under great pressure from the UK Treasury to cut expenditure.

It is to be hoped that the actions of the Treasury do not unnecessarily inhibit Dr Fox's good intentions.

LARGS BAY

The difficulties the British Defence Forces are having with their Treasury may turn out to be of benefit to Australia. One can question the wisdom of the UK Government's cuts in defence while at the same time recognising the opportunities for Australia.

The UK Government has up for sale the RFA LARGS BAY. Getting rid of LARGS BAY may be contrary to the wishes of Dr Fox "we're committed to amphibious capabilities", but it does represent a chance for the RAN to repair the gap created by the unavailability of KANIMBLA and MANOORA.

LARGS BAY was the subject of a timely article in the previous edition of *THE NAVY*. LARGS BAY appears capable of providing the RAN with exactly the "large strategic sealift ship" the Australian Government stated in the Defence White Paper it wished to acquire.

It is reported that a number of other Navies, including those of Brazil, Chile and India are also interested in acquiring LARGS BAY - an

indication of how useful a ship it could be.

By the time this edition of *THE NAVY* is published we should know whether the RAN has been successful in acquiring RFA LARGS BAY.

COMMUNITY AWARD

In 1980 the Navy League decided that the considerable service the Royal Australian Navy renders to civilian communities should be recognised.

After discussion with Navy it was decided that the recognition would take the form of a Perpetual Shield, to be called the Navy League Community Award to be presented annually to the Navy ship or establishment considered to be most deserving of recognition for assistance given to the community during the particular year.

Each year nominations are received from Naval Commands. From these nominations the Deputy Chief of Navy selects a short list of three. This list is forwarded to the Federal Council of the Navy League which makes the final selection.

The task of final selection is often very difficult. The community work of Navy, from the largest establishment to the smallest ship, is truly remarkable.

The winner of the Award for 2010 is HMAS MELBOURNE. Our congratulations to HMAS MELBOURNE. The win was well deserved.

A very well done to all the other contestants. As ever, the work of all Navy's ships and establishments was very worthwhile. There can be no doubt that this community work enhances the high opinion of Navy within the Australian community.

The very impressive amphibious warfare ship RFA LARGS BAY. (RN)



NUCLEAR POWERED SUBMARINES FOR AUSTRALIA

By Rear Admirals Andrew Robertson, David Holthouse & Chris Wood

Three members of the Navy League, retired Rear Admirals Andrew Robertson, David Holthouse and Chris Wood (ex RN), gave a presentation in late November 2010 on the need for nuclear powered submarines for the RAN to the Nuclear Panel of Engineers Australia (NSW Branch). The following is an edited version.

The main address was given by Rear Admiral Wood, a former commander of several British submarines including the nuclear-powered attack boat HMS WARSPITE. He outlined that the submarine's prime tasks have now become surveillance and intelligence-gathering, so as to enable threat assessment of the potential opposition, and ultimately to prepare for the destruction of its surface warships and submarines. In the latter case, the most effective counter to a modern, fast, stealthy and deep-diving opponent is another submarine which is capable of detecting, stalking and attacking from deep – and they need to be nuclear powered to be able to do that.

The first allied nuclear-powered submarine, the USS NAUTILUS, was commissioned in 1954. With her Westinghouse S5 PWR (Pressurised Water Reactor) nuclear reactor she had a range of 158,000 nautical miles! USS NAUTILUS went on to break all existing endurance and speed records and, in 1958, became the first vessel to reach the geographic North Pole en route to the UK, and in due course went on to travel over 1800 nm under the ice – a major achievement, given the future importance of the Polar region for strategic ballistic missile submarine operations.

Later in 1960, the USS TRITON circumnavigated the world without once breaking surface, in a three month deployment. It was an astonishing achievement by any standard and one which initiated a full scale programme of building and improvement thereafter.

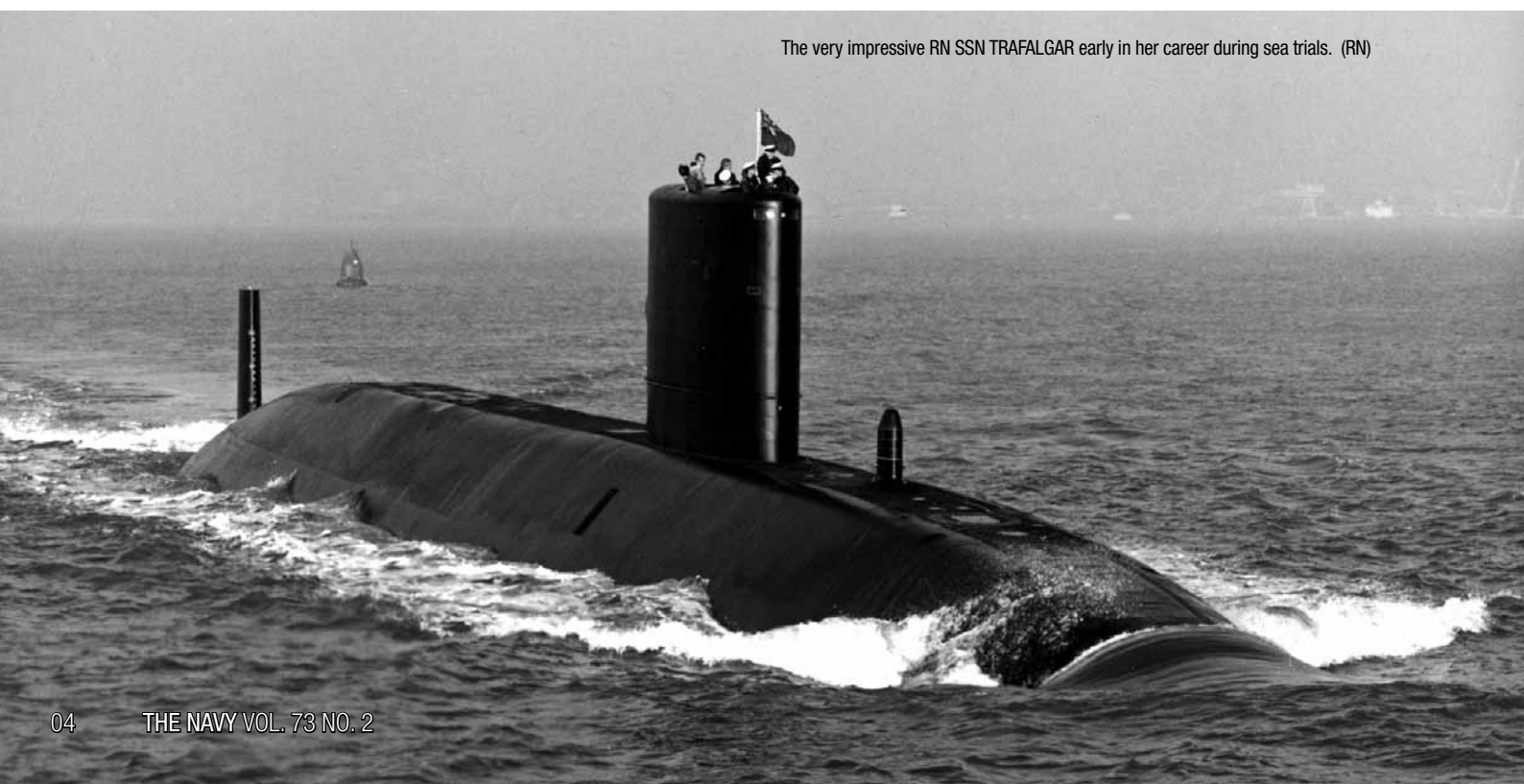
The first British nuclear-powered submarine, built with much co-operation from the US, was HMS DREADNOUGHT which commissioned in 1963. In most respects she was a direct copy of the US Navy's new Skipjack class of attack submarine (or SSN) and was fitted with an advanced 2nd generation Westinghouse S5W PWR and a complete set of propulsion machinery driving through ahead and astern turbines to a single propeller.

Buying American enabled Britain to get her first SSN to sea three years earlier than had been anticipated, and importantly led to successful completion of a British shore-based prototype propulsion plant.

In addition to mastering the nuclear plant itself, new pressure-hull welding techniques to guarantee watertight integrity of the reactor compartment had to be learned, together with those for ventilation, air-conditioning, air purification, and waste disposal. A constant supply of pure air had to be provided by electrolyzers extracting oxygen from seawater. High voltage precipitators were needed to keep dust out of the submarine's atmosphere which had itself also to be closely and continuously monitored for any radiation content. Other units were needed to remove CO² from the air. The learning curve was steep.

HMS DREADNOUGHT's distinctive whale-shaped hull gave reduced drag and emphasised speed rather than stealth in those early days. She was actually quite small – at 3,000 tons, only a third bigger than

The very impressive RN SSN TRAFALGAR early in her career during sea trials. (RN)





The RN SSK HMS ONYX refuelling and provisioning for the long trip to the Falklands from the RFA OLMEDA at Ascension Island in 1982. ONYX's slow rate of advance meant she was the last combatant to enter the war zone, while her SSN cousins had been on patrol for weeks enforcing the exclusion zone around the islands and gathering vital intelligence. (RN)

contemporary diesel boats – but with a larger complement of 113 men.

One major impact of her introduction was the need for comprehensively re-organised recruitment, training and re-training necessary to prepare the crews and shore bases for the operation and support of these revolutionary new boats. Furthermore, the unique qualities of life onboard required personnel of proven ability and leadership, capable of operating for long periods underwater.

The RN's second SSN, HMS VALIANT, had a British front half and part-British rear end. The third, HMS WARSPITE, was the first all-British nuclear submarine from one end to the other, and constructed with the first Rolls-Royce PWR1 reactor.

She was followed by a succession of evermore sophisticated and costly, but increasingly effective, hulls – initially an interim class of three Churchill class, followed from 1973 onwards by the first of 14 larger and greatly improved and deeper diving SSNs of the Swiftsure and Trafalgar classes which bore the brunt of Cold War operations.

These boats would typically submerge as soon as they left their home base and, if necessary, remain dived for the duration of their operational patrol until surfacing outside that home base once again. Crews might go for weeks without seeing daylight or having any contact with the outside world. Most onboard would not have the slightest idea of their whereabouts, the time zone they were in, or even whether it was day or night.

Two or three month, and even longer, dived patrols were perfectly feasible so aspects of crew welfare became a priority in both selection and training. From early American experience, and as repeated in Britain, it was

evident that prospective crews needed careful screening for temperament, intelligence and stamina, as well as operational competence. Social misfits in particular could not be countenanced and were rejected.

This, then, was the scene for the 30 years of Cold War operations during which, in close co-operation with our American allies, surveillance patrols were conducted against Soviet surface and underwater activity in the far reaches of the North Atlantic and elsewhere (including under the Arctic ice) so as to constantly monitor and assess the maritime threat.

Professionally they were valuable years which provided challenging technological and operational experience for crews, planners and analysts alike - but perhaps above all it was this eyeball to eyeball confrontation that confirmed the need for high sustainable power and lengthy dived endurance together with increasing stealth and reduced vulnerability to counter detection by an opponent, which defined the classic attributes offered by nuclear power.

Admiral Wood then went on to outline the British submarine involvement in the Falklands Campaign in 1982 which, until

only a few years ago, had been kept under security wraps. He pointed out some significant problems which had to be faced, including:

- The 8,000 miles separation between the UK and Port Stanley.
- The surface warship refuelling problem down to the South Atlantic, requiring the pre-placement of 40+ commercial tankers taken up from trade to act as petrol stations along the route.
- Ascension Island, the nominated Forward Logistics Support Base, was over 3,000 miles from the Falkland Islands.
- South Georgia, where things started, was a long way from the Falklands.
- And finally, the worrying proximity of Argentinian shore-based air cover and aircraft equipped with anti-ship weapons sitting only a few hundred miles away on the mainland.

Six UK submarines, five of which were SSNs, were deployed in late March 1982, well before the developing crisis was generally acknowledged and broadcast to the British Nation. Two of these were of the fairly new Swiftsure class (SPARTAN and SPLENDID), two middle-aged (CONQUEROR and COURAGEOUS), and an elderly SSN (HMS VALIANT).

In addition, one modern conventionally-powered diesel-electric submarine, HMS ONYX, was deployed for specialist shallow water and inshore operations.

Two of the nuclear boats were on station on surveillance patrol off Port Stanley and Falkland Sound within a matter of days –and well before the Naval Commander in Chief in Britain needed to establish an Exclusion Zone around the islands.

The CinC's difficult task was to deliver an initial assault of about 7,000 troops onto hostile shores 8,000 miles away with only minimal air cover, and in increasingly foul weather. His only forward logistics support

The French Rubis class SSN FS PERALE. Many lay observers believe SSN's to be large vessels unable to operate in the littoral parts of the world's oceans. However, they fail to appreciate that the French SSNs are in fact smaller than the RAN's Collins class submarines. (USN)



base was at distant Ascension Island.

For air cover, at least at the start, the only fixed wing aircraft capable of air defence and direct support of landing operations were the handful of Sea Harriers embarked in the two carriers HERMES and INVINCIBLE – whereas the Argentineans could deploy an airforce of considerable strength from safe shore bases on the mainland, and also from their own aircraft carrier the VIENTICINCO DE MAYO.

From the start, intelligence sources suggested that much of the Argentine fleet was at sea in the vicinity of South Georgia whilst other heavy units posed a direct threat to the Falklands from the west. But nothing was known of the whereabouts of their two small modern German-designed and very capable conventional submarines.

Early priority was given to establishing clandestine eyes and ears throughout the area, plus secure communications to and from UK and within Task Force ships, so the speedy SSNs became an obvious first choice for deploying those capabilities.

Emphasis upon their non-detectability and covertness was paramount and strictly maintained until circumstances in early May led to the incident which left the Argentines in no doubt whatsoever about the seriousness and determination of the UK response – namely the sinking of the elderly Argentine cruiser GENERAL BELGRANO.

CONQUEROR's attack on the GENERAL BELGRANO south of the Falklands was the first and only revelation of the presence of any of the British submarines, nuclear or otherwise, but it was not a demonstration to frighten off the opposition.

It resulted from the Battle Group Commander's assessment that his ships, and his two crucially important carriers in particular, were in jeopardy from the threat of an Argentine Navy pincer movement by the aircraft-carrier DE MAYO Group on one edge of the declared Exclusion Zone and the BELGRANO Group on the other – with a further big question mark concerning their small, fast submarines which remained undetected and therefore a permanent threat.

The Battle Group Commander, Admiral Sandy Woodward's military (personally I prefer "naval", as in "naval and military") conviction was "Lose INVINCIBLE and the operation is severely jeopardised, lose HERMES and the operation is over".

Either way the tactical importance of the BELGRANO sinking was that it nipped in the bud any co-ordinated attack on the UK Battle Group, whilst the potential longer term strategic effect was the withdrawal of all Argentine surface units to their home bases – never to emerge

China's newest SSN, the Shang class.



again for the duration of the conflict.

Separately from CONQUEROR, the other four SSNs were employed covertly during the entire campaign. Their wide area surveillance and close contact monitoring ensured enforcement of the UK Exclusion Zone – and this was important because it not only established clear boundaries in fighting terms but it also created scope for further possible diplomatic options with continuing discussions at high level.

Next in importance came their constant tasks of locating, reporting and reconnaissance which revealed amongst other things, minelaying off Port Stanley (which was immediately surveyed and reported) and further attempted activity off South Georgia where the Argentineans were trying to decoy our forces off to the south east.

An obvious SSN role was to patrol and sanitise the entire sea area around the Falklands so as to protect and clear the way for the eventual British amphibious approach.

Another new role was the close inshore visual and electronic spotting identification and reporting of enemy aircraft as they took off from mainland airfields en route for the Islands. This early warning enabled the Landing Force to shorten its readiness time, prepare its defences and significantly reduce the potential for surprise attack.

The invisible presence of the British submarines (only ever guessed at by the Argentineans, and wrongly as it turned out because they assessed twice as many submarines were out there) – coupled with

A Russian Akula II class SSN on the surface. India is about to take delivery of one of these very impressive Akula II class SSNs as part of a lease from Russia. This acquisition will help inform and train her sailors in nuclear submarine operations and tactics, given India's first indigenously built SSN has already been launched.



their later-revealed disbelief that the British would actually use such expensive assets as SSNs – meant that the deterrence effect worked successfully in two quite different but equally effective ways.

The British Defence Review in November 2010 indicated that all the remaining Trafalgar class SSNs will now be withdrawn from service. In their place the ordering of six (or maybe seven) of the very latest Astute class SSNs is confirmed. The first batch of these large submarines is estimated to cost £3.6bn – (ie £1.2bn – about \$2bn per copy).

The Astute class has a dived displacement of over 8,000 tonnes, length over 100m, a 50% greater weapon load than any previous SSN, a crew of only 98 (compared with TRAFALGAR's 118) and the latest Rolls Royce PWR2 reactor (Core H) which is designed to last for the full 25 year life of the submarine, and thus obviate the need for any lengthy and expensive refuelling refits. Add to that a weapons and communications suite to surpass any other currently at sea, and she becomes the ultimate nuclear submarine for the Royal Navy.

Following Admiral Wood's outline of some operational experiences with British nuclear-powered submarines in the Cold War and the Falklands War, Admiral Robertson gave his view of an Australian perspective in the case of a major war involving Australia.

He argued that of all world countries few would benefit more, in terms of national defence, from the possession of such submarines than would Australia. This was due to a number of factors – primarily our maritime geographical position, our vast distances and the fact that we are a democracy, slow to see a threat developing, and slow to react. So speed of deployment would be of considerable importance.

Any major threat to the survival of our nation itself must come from a powerful maritime nation, for armies cannot walk upon water and need huge support, particularly when deployed over great distances.

Arguably, noting our large island continent and small population, the best deterrent and defence capability we could possess would be an offensive capability which could be deployed indefinitely near an enemy's homeland. This would divert huge enemy resources into his local defence. The destruction of his shipping would have a major effect on any enemy's economy. Attack by submarines using accurate long-range weapons, such as the American Tomahawk, would pose a great threat to an enemy's centres of production, transport, command



The open vertical launch tubes of a later USN Los Angeles class SSN. These are used for firing long range land attack Tomahawk cruise missiles. The power of the SSN means its capabilities can be expanded beyond simple submarine barrier patrol operations of choke points, which is the diesel electric submarine's main contribution to the battle.

and Government, as was so vividly displayed on our TVs in the early stages of the first Iraq War.

There seems a strong case that the most effective deterrent Australia could have would be some nuclear powered submarines armed with the latest conventional weapons, noting:

- Nuclear submarines can get to their operational areas submerged and stealthy in about one third of the time required by conventionally-powered boats.
- They can stay longer in the operational area than can conventional boats due to their high transit speed and endurance, limited only by food and crew fatigue. They can electronically search out vast areas of ocean, pursue, hunt and intercept targets much more effectively than can conventional boats.
- Operational areas can be changed swiftly.
- Refuelling would not be needed for the whole life of the latest boats, and there would be no call on maybe scarce oil supplies.
- They have almost unlimited power for propulsion and electricity generation.
- They can help in the escort of convoys and naval Task Forces (conventional submarines can't, due to lack of endurance at speed).
- Due to their stealth and speed, nuclear boats are probably more survivable.
- Australia having its own nuclear powered boats would greatly assist in the training of our own anti-submarine forces.

And the disadvantages?

- Larger and more skilled crews would be required (offset by the probability that

fewer boats would be needed).

- Major training and considerable infrastructure would be needed (offset somewhat by the extra required for the projected future large conventional boats).
- Probable limitations in peacetime flag-showing cruises due to reluctance by some other countries to receive such visits.

Admiral Holthouse, a naval engineer of over 40 years experience, trained in Britain in the mid 1960s at UKAEA (UK Atomic Energy Agency) Harwell, Winfrith Heath and Dounreay and at the Birmingham College of Advanced Technology. This was an indication of the RAN's vision for nuclear propulsion all those years ago.

He said the announced eventual 12 replacements for the Collins class, which will be very big boats, are the most significant element of the Rudd Government's Defence White Paper.

The size of these projected submarines is of importance not only because of the extra range, endurance, speed and payload that flow from size, but also, unfortunately, because Australia has nowhere to turn to but itself for expertise in designing and building such a large conventionally powered submarine. The US and the UK have no conventional submarines. Several European nations have them but they are too small to be extrapolated safely and economically.

The new submarine program has a high priority in the White Paper and enjoys bipartisan support. But it is a long way off, perhaps 10 years before the first steel is cut and six years more before commissioning the

first boat. The twelfth boat is probably 25 years beyond that, putting the last of them in the water in 2045.

As warships are complex and take a long time to build the usual practice is to build them in flights, taking advantage of technological and strategic developments over time. The last flight is therefore likely to be very different from the first in terms of capability, weapons fit, even mission; and of course propulsion.

So if we start conventional, can we finish nuclear? Anything is possible: after all the French Scorpene class is a conventionally powered design which it is rumoured may be redesigned for Brazil as a nuclear powered variant. The French offered Australia a conventional variant of the nuclear powered Rubis class as a Collins class option during the initial tendering process in the 1980s.

So it is possible but there has to be a will within government, where there is presently none. One wouldn't expect Defence/Navy to take a different line from government about this but Admiral Holthouse expressed disappointment that the retired submarine community has apparently chosen to fall into line, too.

The publicly available reasoning for this stance includes :

Cost, covering both acquisition and through life costs. The generally accepted wisdom is that a nuclear submarine might cost between 1.5 and 2 times the cost of a conventional submarine and it is public knowledge that a USN Virginia class attack submarine costs about US\$2b in 2005 dollars.

Source. Only a handful of navies presently have nuclear submarines: US, UK, France, Russia, China, India, and perhaps Brazil and Argentina on the way. For our own practical purposes though, only the US, UK and France are relevant as potential sources. The USN and RN share information and technology, and in the past, access to the RN's nuclear submarine world was controlled by the US. Admiral Holthouse postulated that the RN's privileged access to USN technology might possibly be compromised were the RN to set itself up as a source of submarine nuclear propulsion technology independent from the US. Which would then leave the USN and the French.

One difficulty would be that US submarines are very big. Our Collins class boats displace about 3,000 tonnes and the planned conventional replacements might displace about 5,000 tonnes, as compared to the US nuclear-powered Virginia class of around 8,000 tonnes and the Seawolf

class of over 9,000 tonnes.

He considered that going elsewhere, to the French for example, was likely to be problematic. The USN might be concerned for permeability believing that an extended "family" including themselves, ourselves, the French and France's other international customers would introduce just too many potential leakage paths for closely held information to be safe.

Industry infrastructure. Admiral Holthouse felt that the proposition that the Navy's ability to own and operate nuclear submarines was governed by the availability of domestic nuclear infrastructure was often overstated. There were ways this perceived problem could be overcome.

During the RAN's service with the US 7th Fleet in the Vietnam War, he had observed with amazement how reliant upon fly-in-fly-out commercial technical representatives the USN had become. The RAN does the same today and it works. 250,000 tonne merchant ships traverse the oceans with unmanned engine rooms and 18 souls on board, hooked up by radio link to monitoring stations ashore and the certainty of a technical response team meeting the ship at her next port of call in the event of a transducer somewhere in the system warning of an incipient problem.

He felt that were we to decide now that the next generation of submarine would be nuclear, entering service in 10 or 15 years' time, we could handle it safely through a combination of immensely long refuelling cycles (minimum 20 years), return-to-builder for depot-level reactor and perhaps all primary circuit maintenance, and fly-in-fly-out technical representatives. The real issue

for us would be whether the submarines would be alone in an otherwise still nuclear-free Australia or would the decision to acquire them provide the catalyst for other elements of a nuclear industry to emerge including ground-to-ground fuel cycling, nuclear waste processing and storage and even power generation in an era when fossil fuels are drying up and otherwise on the nose, and renewables are still an expensive luxury. He referred to the sometimes disputed Peak Oil element in the equation and made an interesting observation about how nuclear reactors in some commercial applications, for example as a power source in remote settlements and mining operations, are down-sizing. This opened up, he felt, the prospect of commonality between reactors for naval propulsion and civilian power generation.

National will. Conventional wisdom is that the Navy can do nothing about nuclear propulsion. Unless and until there is a domestic nuclear power industry to support it, which would be a lot more than 10 years away. In his view it is a matter of how best to gain traction in a society which has become more willing than ever before to entertain the possibility of nuclear energy as a power source, since Prime Minister Howard floated it as a legitimate topic for discussion and since the community became more conscious of global warming and climate change.

What is needed is a champion, just as the then Defence Minister Kim Beasley was a champion for domestic building for the Collins class; and it may be easier to find a champion for nuclear propulsion for submarines than for a nuclear power generation industry ashore, in a timescale to suit the new submarine delivery.

HMS ASTUTE on the surface. The Astute class submarine's reactor does not require refuelling for the life of the boat. This reduces through life support costs and national infrastructure requirements. (BAE Systems)



The need is for a champion for nuclear propulsion, not for domestic building, which raises an interesting issue. Informed commentators have said that to build and support the new (conventionally powered) submarines would require a permanent workforce of 5,000 and the involvement of 1,000 Australian companies across the nation competing with the mining industry for critical engineering capacity and human resources. An overseas build would reduce the pressure on local industry and resources. However, with a working population in excess of 12 million he felt that it has to be possible for Australia to find 5,000 people for a submarine building industry, and the prospect of continuous work for decades.

Admiral Holthouse then summarised his views. The presently planned conventional replacements for the Collins class will still be with us in the 2070s, by which time, surely, concerns for the availability of fossil fuels and their impact on global warming will have bitten hard.

If we are to design and build conventional replacements ourselves we may be faced with capacity problems. Were we to opt for nuclear propulsion and an offshore build these problems could be substantially reduced.

Nuclear powered submarines are steam ships. Towards the end of the steam era in the RAN its three remaining (high end) steam plants became orphans. There was no longer a steam nursery in which to train the operators and offshore training became the order of the day. We could obviously do it again.

The Government closed down any conventional versus nuclear debate by plumping for conventional from the outset. It did so pretty much because it believed the nuclear option to be unacceptable to the general public and that, anyway, Australia would need an established power generation industry and associated infrastructure to support nuclear powered and conventionally armed submarines.

Yet Australia mines uranium and sends it overseas, in the process dividing public opinion over the underlying moral principles. Some fresh impetus for ground-to-ground handling of the lifetime fuel cycle is needed to move this divisive debate forward. Australia's entry into the fuel cycle through the acquisition of nuclear powered submarines might just do it.

Options for the acquisition of nuclear powered submarines come down to probably two potential suppliers and both present difficulties. But just how serious



The old and the new. The Virginia-class attack submarine USS HAWAII makes its way down the Thames River (USA) past the historic SSN NAUTILUS. (USN)

these difficulties are will remain matters for conjecture until a champion emerges at the political level. Someone to carry the discussion overseas and to ask the question of potential supplier navies: what would it really take to persuade you to give us access to nuclear propulsion for our next generation of submarines?

Admiral Robertson concluded the presentation by outlining some of the factors governing the practicability of introducing nuclear-powered submarines.

Costs. Assuming that one or other of our allies would be prepared to sell us such boats, how would costs probably compare with the local production of the proposed conventional boats? Admirals Wood and Holthouse had already given some rough costs of US submarines. The cost of a British Astute submarine (which does not have to be refuelled in its entire life and therefore considerably reduces running costs and increases operational availability) built in Britain has been quoted at about £1.2 billion. At present exchange rates this is about \$A2 billion Australian dollars. Costs would seem to be similar for US boats built in the USA. The only known rough estimate of our proposed 12 future conventional submarines is \$36 billion – about \$3 billion each. Allowing for hidden costs, infrastructure etc the costs involved for conventional built here and nuclear built overseas would probably compare.

Can Australia introduce such submarines?

It is still about 14 years before the first conventional boat is due to be completed. This would seem to be enough time to make the necessary arrangements. After all Australia in the past introduced :

- Aircraft Carriers in about three years from the decision to acquire without previous experience in carriers, though with much help from Britain.
- Submarines in about five years although it was some decades since we had last possessed such vessels.
- US Guided Missile Destroyers in about five years from decision, though this involved buying our first large American warships with entirely new equipment of all types including Australia's first large guided missiles, three dimensional radars and very high-pressure steam systems. This involved a huge recruiting, training, dockyard, infrastructure and logistic effort at the same time as submarines and other new ships and aircraft were being introduced into the RAN.

Political. This seems to be the main hurdle. A national debate on nuclear power and nuclear-powered submarines is needed to inform the Australian public. It should be remembered that the proposed conventional submarines will be in service from 14 years until about 50 or more years time in a very different world. Long-range decisions are required in the national interest, and unshackled by present perceived prejudices. Four nations in our general area operate nuclear-powered submarines today. Sixteen nations in our region have nuclear power stations. Australia is drifting behind in technology and in maritime defence and it would seem of importance for the nuclear option to become a national issue. ■



01 INDIAN JAGUARS TO GET HARPOON

The Indian Air Force is moving forward with plans to upgrade its fleet of Jaguar maritime strike aircraft with the Boeing AGM-84L Harpoon Block II anti-ship cruise missile.

A solicitation notice released by the US Naval Air Systems Command (NAVAIR) on 11 January revealed that Boeing is in line to receive a sole-source contract to complete Harpoon Block II/Jaguar aircraft integration for India. NAVAIR's Precision Strike Weapons Program Office (PMA-201) is managing the integration of the AGM-84L missile under a 'Foreign Military Sales' case.

The Jaguar IM aircraft are operated by the Indian Air Force's No 6 Squadron based at Jamnagar. The Jaguar IM was built by Hindustan Aeronautics Ltd and is a dedicated maritime strike variant of the original SEPECAT Jaguar ground attack aircraft. The IM version entered service configured with the Thomson-CSF Agave search radar and the British Aerospace Sea Eagle anti-ship missile.

Agave was subsequently replaced by a version of the Israeli IAI Elta EL/M-2032 radar incorporating synthetic aperture radar (SAR)/inverse SAR modes. However, the British made Sea Eagle missile is no longer supported in service, hence the move to Harpoon.

In December 2010 the US Defense Security Cooperation Agency notified Congress of a further FMS deal, worth US\$200 million, for the supply of 21 AGM-84L Harpoon Block II missiles, five ATM-84L training rounds and support to equip the Indian Navy's new P-8I maritime patrol aircraft.

NAVY LEAGUE QLD SAVING HISTORY

The Queensland Division of the Navy League has been active in preserving the history and memory of the sacrifice of the RAN. Commencing late last year the historic ship's wheel located at the rear of St John's Catholic Church at Northgate in Queensland was restored.

The wheel was manufactured by Brown Bros & Co Ltd Rosebank Works in Edinburgh which also made wheels for grand ships such as RMS *Queen Elizabeth* and SS *Normandie*. Furthermore, the Naval Emblem and Dedicatory Plaque have been restored commemorating those who lost their lives in the service of the nation and RAN during the Second World War.

St John's Catholic Church was opened on 5th August, 1962 with the guest of honour the Hon. John Gorton, Minister for Navy and later Prime Minister. The Honour Guard of RANR comprised of two officers and 50 ratings, rifles and fixed bayonets and a Naval Reserve Band. The Sacristy has a small collection of photographs commemorating the dedication of the church and its naval theme.

The Queensland Division President of the Navy League Mr. Harvey Greenfield was a member of the Guard of Honour on that day in 1962.

The restoration of the RAN Memorial was organised and funded by members of The Navy League of Australia, Queensland Division.

By Paul Johnstone

02 DEATH OF A THOUSAND CUTS FOR RN

The UK Royal Navy (RN) aircraft carrier HMS ILLUSTRIOUS - now roled as a helicopter platform - will be withdrawn from service in 2014, Defence Secretary Liam Fox confirmed on 15 December.

The announcement provides further detail of plans originally set out in the UK's Strategic Defence and Security Review (SDSR) released in October 2010. ILLUSTRIOUS is currently in refit in Rosyth.

HMS OCEAN - the RN's purpose-built landing platform helicopter ship - will be retained for an unspecified longer term. The SDSR stated that the retained vessel would remain in service until the first of the new Queen Elizabeth-class aircraft carriers is commissioned towards the end of this decade.

The retention of OCEAN "will ensure that we retain the ability to deliver an amphibious intervention force from the sea and maintain an experienced crew to support the later introduction into service of the new Queen Elizabeth-class carrier", Fox said in a written statement to Parliament.

As a result of the SDSR, the UK's GR9 Harrier aircraft fleet has now been axed.

The defence secretary also provided a schedule for the withdrawal from service of the four remaining Type 22 Batch 3 frigates. HMS CHATHAM was withdrawn at the end of January 2011, HMS CAMPBELTOWN and HMS CUMBERLAND on 1 April and HMS CORNWALL at the end of April.

As a result of the retirement of the Royal Navy's (RN's) four Type 22 Batch 3 frigates

01

An Indian Air Force Jaguar of 6 Squadron based at Jamnagar. The squadron is specifically trained in and fitted for anti shipping operations. The addition of Harpoon Block II will significantly enhance their capability.

02

The Type 22 Batch 3 frigate HMS CORNWALL, due to decommission early at the end of April. The retirement of the RN's four Type 22 Batch 3 frigates means the UK faces a significant reduction in its maritime signals intelligence capability. (USN)



and continuing delays to the procurement of a replacement for their AN/SSQ-124(V) communications electronic support measures (CESM) suite the UK faces a significant reduction in its maritime signals intelligence capability

The auxiliary oiler replenishment vessel RFA FORT GEORGE and the auxiliary oiler RFA BAYLEAF will also be withdrawn in April.

HMS BULWARK, one of two landing platform dock ships, will be placed at high readiness from November next year, while sister ship HMS ALBION will be mothballed at the same point.

ALBION will resume a state of high readiness in late 2016, when BULWARK enters a refit period. HMS ALBION, based in Plymouth, becomes the flagship now that the previous flagship HMS ARK ROYAL has been decommissioned.

ARK ROYAL entered her home port of Portsmouth for the last time on 3 December 2010 flying a decommissioning pennant.

HMS ALBION becomes the first Devonport-based ship in living memory to hold the prestigious responsibility of fleet flagship.

ALBION is currently held at very high readiness for unexpected operations around the world.

She is at the vanguard of the Armed Forces' contingent capability for unforeseen events that may require a maritime response from the UK.

Since early 2010, HMS ALBION has been the flagship of the Royal Navy's Amphibious Task Group - a designation she will retain in addition to her new fleet flagship role.

PRIDE OF THE NAVY ANNOUNCED

HMAS MELBOURNE has been recognised as the best ship in the fleet, with the announcement of the 2010 Fleet Proficiency Awards.

MELBOURNE was awarded two of the top prizes, the Gloucester Cup and the Spada Shield for excellence in capability generation, safety, seamanship, reliability and unit level training.

MELBOURNE under the command of Commander Michael Harris, RAN, was presented with her trophies when she returned from her Operation Slipper duties recently.

Commander Australian Fleet, Rear Admiral Steven Gilmore, AM, CSC, RAN acknowledged the considerable effort made in training over the past twelve months.

"It is with great pride that I acknowledge the hard work and commitment demonstrated by the winning ships' companies," said Rear Admiral Gilmore.

"The competition for the 2010 awards was extremely strong and required every individual to be dedicated to their respective task.

"The excellence demonstrated by these ships is world-class, and every member should be justifiably proud."

MELBOURNE wasn't the only unit to be recognised, with establishment HMAS CAIRNS winning the Governors Cup identified as the foremost in shore operations.

Nowra based 816 Squadron, which operate the S70B2 Seahawk helicopters, were awarded the McNichol trophy for being the

leading aviation unit, while replenishment ship HMAS SUCCESS was acknowledged with the Amphibious Afloat Support Group Efficiency Shield.

Armidale class Patrol Boat crew Attack 2 took out the Kelly Shield, while former Mine Hunter Crew 1 was awarded the Rushcutter Shield. HMAS WEWAK was identified as the foremost in its class, taking out the LCH Proficiency Shield, while HMAS MERMAID won the Hydrographic Excellence Award and HMAS DECHAINEUX won the Submarine Fighting Proficiency Award.

03 HARRIER BIDS A FINAL FAREWELL

Tributes were paid to the joint force of Royal Navy and RAF Harrier aircraft on 15 December 2010 as a spectacular flypast across eastern England marked the aircraft's retirement after 41 years of service.

A formation of 16 Harriers took to the skies over Lincolnshire, flying over seven RAF bases, Lincoln Cathedral and the towns of Stamford and Oakham.

Brought into service in 1969 and based at RAF Wittering, this British aircraft was designed to take off and land both vertically and on a short runway.

Well known for its role in the Falklands War, the Harrier went on to serve in many other conflicts including in Bosnia and Iraq in the 1990s.

The RAF and Royal Navy Harrier squadrons joined forces in 2000 to form Joint Force Harrier, based at RAF Cottesmore. These combined Harrier squadrons went on to serve in Sierra Leone, the second Gulf War

03 A formation of 16 Harriers in the skies over Lincolnshire on 15 December 2010 to mark the aircraft's retirement after 41 years of service. (RAF)





and most recently Afghanistan.

Air Officer Commanding No 1 Group, Air Vice-Marshall Greg Bagwell, said: "The Harrier is a true icon and stands testament to the innovation and excellence of British design and engineering, and the skill and courage of our airmen.

"It has had a truly distinguished service with both the RAF and the Royal Navy, from the South Atlantic to the skies over Afghanistan. It now takes its place in history as one of aviation's greats."

Officer Commanding 800 Naval Air Squadron, Commander Dave Lindsay, said:

"The Harrier leaves UK service after an illustrious career that has seen it contribute to every major conflict in the last 30 years. It has been an enormous personal privilege and honour to have been involved with this wonderful aircraft for nearly 20 years, at sea and over land, at peace and in conflict."

"I will forever be immensely proud to be able to say I have been a Royal Navy Harrier Squadron Commander."

Last year the aircraft celebrated its 40th anniversary as the Harrier squadrons flew home after five years in Afghanistan.

04 AMBUSH LAUNCHED

The official launch of the second Astute-class submarine, HMS AMBUSH, occurred at the BAE Systems shipyard at Barrow-in-Furness on 16 December 2010.

Lady Anne Soar, AMBUSH's sponsor and wife of the Royal Navy's (RN's) Commander-in-Chief Fleet, Admiral Sir Trevor Soar, performed the ceremony, which was watched by invited guests from the RN, Ministry of Defence (MOD), industry and the Barrow community.

The first submarine, HMS ASTUTE, was officially commissioned into the RN in August 2010. The Astute-class boats are the UK's biggest SSNs, and one of the most capable military assets in the RN.

BABCOCK AWD TORPEDO LAUNCHER CONTRACT MOVES INTO NEXT PHASE

Assembly of the Mk32 Mod 9 torpedo launchers for the Hobart class Air Warfare Destroyers is now underway at Babcock's Techport Australia premises, marking an important milestone in the contract. Babcock Pty Ltd, part of Babcock International Group, was awarded the contract in December 2008 by Raytheon Australia Pty Ltd, on behalf of the Air Warfare Destroyer (AWD) Alliance.

Two Mk32 Mod 9 torpedo launcher assemblies will be mounted in magazine compartments, port and starboard, on each of the three Hobart class AWDs. Originally designed for the US Navy, the Mod 9 launcher is a twin barrelled variant of the Mk32 launchers currently in operation on Anzac and FFG frigates in Australia and will be modified to discharge Eurotorp MU90 torpedoes.

Babcock engineers and technicians are now commencing assembly of the launchers, which will take around seven months for all six launchers (three ship sets), and will be followed by Factory Acceptance Testing (FAT) of each set at Babcock's newly developed facility at Techport, South Australia. FAT will involve safety and interlock checks and the measurement of additional system parameters during the discharge of a dummy weapon from the launchers into a specially designed rig.

TEAM OF EXPERTS TO PLAN WAY FORWARD ON AMPHIBIOUS SHIPS FLEET

The Gillard Government will appoint an independent team of experts to develop a plan to address problems in the repair and management of the Navy's amphibious and support ship fleet.

Mr Paul Rizzo, a Director of a number of major Australian corporations including the National Australia Bank and Malleson Stephen Jacques and the Independent Chair of the Defence Audit and Risk Committee, will lead the team.

He will be supported by Air Vice Marshal Neil Smith (rtd) and Rear Admiral Brian Adams (rtd) who have relevant experience in defence administration, engineering, maintenance, logistics, systems engineering, safety certification and the operation and support of amphibious ships.

On 1 February, the Government announced that HMAS MANOORA was to be decommissioned on the advice of the Chief of Navy. MANOORA was placed on operational pause by the Chief of Navy after the Seaworthiness Board in September last year. An examination of the 40 year old ship has revealed it requires remediation of significant hull corrosion and the replacement of both gear boxes. As this work would cost over \$20 million and take until April 2012 to complete, it is not considered value for money when MANOORA was scheduled to be decommissioned at the end of next year.

On receiving that advice the Minister for Defence asked Defence for further advice outlining the reasons for the early decommissioning of HMAS MANOORA and the extended unavailability of HMAS KANIMBLA.

04 The second Astute-class submarine, HMS AMBUSH, being launched at BAE Systems shipyard at Barrow-in-Furness on 16 December 2010. (BAE Systems)

05 The Royal Brunei Navy ship KDB DARUSSALAM after leaving Lürssen Shipyard in Germany for sea trials.



This advice identifies systemic and cultural problems in the maintenance of the amphibious ship fleet.

The Defence Minister The Hon. Stephen Smith said that advice about the amphibious fleet provided by the Secretary of Defence and the Chief of the Defence Force makes it clear that problems with the amphibious fleet have built up over the past decade or more.

It states that many of the seeds of the problems we now face were sown long ago, and insufficient resources have been allocated to address materiel and personnel shortfalls since the ships were brought into service many years ago.

It also states that the establishment of the Seaworthiness Board in 2009 was a long overdue means of providing Chief of Navy with an independent review of maritime systems and its review of the amphibious ships provided a focus on the situation that was not previously available.

05 BRUNEI RECEIVES TWO NEW PATROL VESSELS

The Royal Brunei Armed Forces recorded another significant milestone in its history with the official acceptance of two Darussalam class Patrol Vessels, namely KDB DARUSSALAM and KDB DARULEHSAN.

The handing over ceremony took place at Lürssen Shipyard, Germany.

The Darussalam class has a length of 80 metres and is 13 metres wide. It is propelled by diesel engines and has an endurance of 21 days. The ship is equipped with surface to surface missiles and a medium calibre gun. Both ships were expected to start their maiden voyage back to Brunei in March and

expected to arrive in May this year, in time for the 50th Anniversary of the Royal Brunei Armed Forces.

The day before the acceptance ceremony, the third Darussalam class ship, DARULAMAN, was launched. The ship will undergo Harbour and Sea Acceptance Trials before delivery in August this year.

The Darussalam class ships will also replace the Waspada Missile Gun Boat class which had been in service with the Royal Brunei Navy for more than 30 years.

06 CANCELLATION OF NIMRODS

The UK's Daily Telegraph has published an article about the cancelling of the Nimrod MRA4 project. The original contract was let to supply 21 Nimrod MRA4 aircraft at a cost of £2.8bn.

After delays of over nine years and spiralling costs, the number of aircraft was reduced to nine and the projected cost to UK taxpayers in 2010 increased to £3.65bn.

Chief of the Defence Staff, General Sir David Richards, said: "The decision to cancel the Nimrod MRA4 was not taken lightly by Ministers and Service Chiefs. Severe financial pressures meant we had to address the Department's spending and tough decisions had to be taken.

"This project was delayed and overspent; cancelling it will save £2bn over ten years. None of these nine aircraft were operational, only one was built and it had not passed flight tests. Since March last year, well before the SDSR [Strategic Defence and Security Review], the Nimrod MR2 has not flown and we have been mitigating the impact with

other military assets and by working with allies and partners where appropriate."

The MOD will ensure the integrity of UK waters by utilising a range of capabilities such as Type 23 frigates, Merlin anti-submarine warfare helicopters and Hercules C-130 aircraft.

FORECAST INTERNATIONAL PROJECTS A US\$106B+ SUBMARINE MARKET

Diesel-electric submarines are expected to account for about 64% of the world market by 2020 but only for 30% by value, according to a recent forecast. Forecast International's "The Market for Submarines" analysis projects that 111 submarines worth US\$106.7 billion will be produced from 2011-2020. The average value of these submarines will be US\$960 million, an indicator of the growing complexity of the modern submarine and the increasing use of air-independent propulsion, both of which add substantially to the cost of diesel-electric boats.

"Over the long term, constant shifts in the structure of construction costs and the steadily growing number of countries that are interested in nuclear-powered submarines mean that the average cost of submarines will continue to increase on an annual basis," said warships analyst Stuart Slade, author of the report.

The submarine market is divided into three subsectors. The first is the market for ballistic missile submarines, or SSBNs. There are 13 such submarines on order or under construction. These represent 11.7% of the total market in terms of numbers but are valued at US\$26 billion, representing 24.5% of the total value of the market. The average unit cost of the SSBNs is US\$2.0 billion.

06 An RAF Nimrod being broken up for scrap after the decision to cancel the MRA-4 upgrade to the aircraft, which would have made them the most technologically advanced maritime patrol aircraft in the world.





In the long term, both the British and US navies are evaluating possible successors to their existing SSBN units, the Vanguard and Ohio classes, respectively. The British programme is designated SSBN(R) or Successor; the US programme, SSBN(X). Both navies have elected to stay with the traditional SSBN concept, although both SSBN(X) and SSBN(R) will carry significantly fewer missiles than their predecessors did. Overall, the SSBN sector looks healthier now than it has in many years.

The second sector is the market for nuclear-powered attack submarines, or SSNs. The projections show sales of 27 such submarines, representing 24 percent of the total number and valued at \$48.32 billion. This represents 45.7% of the total funding for all submarines over the forecast period. The average unit value of the SSNs covered in this survey is \$1.79 billion. Interestingly, the differential in value between SSNs and SSBNs has fallen precipitously over the last few years.

The final sector is the market for SSKs, or diesel-electric submarines. From 2011-2020, 71 of these boats will be built, representing 64% of the total. They are valued at US\$32.4 billion, representing 30.36% of the total expenditure on submarines from 2011-2020. A notable factor this year is that the average cost of diesel-electric submarines has increased to US\$456 million.

07 GD TO STUDY CHEAPER VIRGINIA-CLASS SUBMARINES

General Dynamics Electric Boat has been awarded a USD\$60 million USN contract modification that funds continued design efforts to make Virginia-class submarines more affordable.

Initially awarded in 2008, the overall contract – known as Block III – calls for the procurement of eight submarines through FY 13, and has a potential value of US\$14 billion. The last Block III ship is scheduled for delivery in 2019.

Under the terms of the modification, Electric Boat will continue to develop and implement cost-reduction design changes, an effort called Design For Affordability (DFA). This work will enable the Virginia-class programme to reduce acquisition costs by 20% in time for the FY 12 submarines.

The most significant design change implemented in Block III is the modification of the submarine's bow, replacing the sonar sphere with a large aperture bow array and the 12 vertical-launch missile tubes with two Virginia Payload Tubes, each carrying six missiles. This redesign will save more than US\$40 million per ship, beginning with the submarine NORTH DAKOTA (SSN-784).

The DFA effort is supported by Electric Boat's engineering and design organisation, which comprises more than 3,000 employees. Possessing proven technical capabilities, these employees are engaged in all facets of the submarine life cycle from concept formulation and design through construction, maintenance and modernisation, and eventually to inactivation and disposal.

08 HMS QUEEN ELIZABETH STEPS OUT INTO LIME LIGHT

Construction of the first of the two new aircraft carriers for the Royal Navy, HMS QUEEN ELIZABETH, took a huge step forward on February 13 as workers at BAE Systems' Govan yard moved two giant sections of the hull together for the first time.

The structure is so big that it fills an entire hall at Govan and now extends beyond the doors onto the yard, providing a spectacular view from across the River Clyde.

It took a team of 20 employees and remote controlled transporters just one hour to move 1,221 tonnes of steel over 100 metres across the shipyard. The hull section was then manoeuvred carefully into position to line up with the rest of the block.

Steven Carroll, Queen Elizabeth class Project Director at BAE Systems' Surface Ships division, said: "Seeing the mid section of the carrier come together brings into sharp focus the sheer scale and complexity of this engineering feat.

"With construction underway at six shipyards across the country, it is one of the biggest engineering projects in the UK today – second only to the London 2012 Olympics – and we're all very proud to be a part of it."

The two sections brought together today form the mid section of the hull up to the hangar deck and is referred to as Lower Block 03. Workers will now continue to outfit the block, which on completion will weigh over 9,300 tonnes and stand over 23 metres tall, 63 metres long and 40 metres wide. She is set to embark on the next stage of her journey to Rosyth in the latter part of this year, where HMS QUEEN ELIZABETH will be assembled in the dry dock.

07

The USN Virginia class SSN USS NEW MEXICO on the surface. General Dynamics Electric Boat has been contracted to find ways to make the Virginia-class submarines more affordable. (USN)

08

A section of the new RN aircraft carrier QUEEN ELIZABETH on 13 February 2011 at BAE Systems' Govan yard being moved to join to another section of hull. (BAE Systems)



As a member of the Aircraft Carrier Alliance, BAE Systems is working in partnership with Babcock, Thales and the Ministry of Defence to deliver the nation's flagships. This huge massive engineering project is rapidly gaining momentum and employs over 8,000 people across shipyards in Glasgow, Portsmouth, Appledore, Rosyth, Merseyside and Newcastle, with thousands more across the supply chain.

BAE Systems is also constructing the main stern section at its yard on the Clyde, which is the largest and most complex section of the carrier. At its Portsmouth facilities, work is well underway to construct the forward and lower stern sections of the hull, as well as the pole mast, whilst integration and testing of the ships' complex mission system is underway at the Company's Maritime Integration and Support Centre. Another team of BAE Systems engineers on the Isle of Wight is testing the advanced communication systems. The Company is set to begin work on the two island structures, which house the bridge and traffic control facilities, towards the end of the year.

LOCKHEED MARTIN RECEIVES US\$218M FOR LRASM DEMONSTRATIONS

Lockheed Martin has received two contracts totalling US\$218 million for the Demonstration Phase of the Defense Advanced Research Project Agency's (DARPA) Long Range Anti-Ship Missile (LRASM) programme.

The programme encompasses the rapid development and demonstration of two distinct variants of the LRASM missile: LRASM-A is a stealthy air-launched variation and LRASM-B is a high-speed ship-launched missile.

Lockheed Martin's LRASM-A team received a US\$60.3 million cost plus fixed fee contract to execute two air-launched demonstrations, leveraging its Joint Air-to-Surface Standoff Missile - Extended Range (JASSM-ER) experience and demonstrating Navy and Air Force tactical aircraft employment.

Lockheed Martin's LRASM-B team received a US\$157.7 million cost plus fixed-fee contract to complete four Vertical Launch System (VLS) demonstrations, proving applicability to Navy surface combatants. Both LRASM-A and LRASM-B designs plan to support air-launch and VLS-launch configurations.

The joint DARPA/US Navy LRASM programme was initiated in 2009 to deliver a new generation of highly capable anti-ship weapons. Current anti-ship weapons possess limited range and lethality. As at-sea warfare advances, a new generation of standoff anti-ship weapons systems are needed.

During Phase 1 of the programme, preliminary designs of the LRASM-A and LRASM-B variants were successfully completed by Lockheed Martin Missiles and Fire Control. LRASM-A leverages the state-of-the-art JASSM-ER airframe, and adds additional sensors and subsystems to achieve a stealthy and survivable subsonic cruise missile. LRASM-B leverages prior ramjet development activities and a suite of supporting sensors and avionics to achieve a supersonic cruise missile with balanced speed and stealth for robust performance.

Phase 2 of the programme will continue the development of both missiles and culminate in flight demonstrations of tactically relevant prototypes of both missiles, including a common sensor system from BAE Systems.

09 RUSSIAN NAVY FINALLY SELECTS MISTRAL LHD

Throughout December 2010, press reports have been indicating that an agreement was made for the sale of two Mistral class amphibious assault ships (LHD) to Russia. The agreement for France's STX Shipyard at St. Nazaire to build two Mistral class LHDs for Russia was reported by French and Russian press on 24 December. The estimated US\$1.3B contract calls for the construction of the first two of the 23,000-ton LHDs in France, with options for two additional units that could be ordered and built in Russia.

Information received indicates that Russian technicians will be working alongside French shipbuilders in an effort to receive the technical expertise necessary to build the two additional warships in Russia.

It is anticipated that with the contract agreement coming in December 2010 as originally planned, unit one will begin construction in 2011 and will be delivered to Russia in 2013 for final fitting out prior to commissioning. Unit two, also built in France, will likely deliver in mid-2014.

The two Russian built units will likely be built at Admiralty Shipyards in St. Petersburg and will see the first steel cut in mid-2013 with a delivery date of 2015, followed by the delivery of unit four in 2016.

The Mistral class is 200 metres (656.1ft) in length, and displaces 20,000-ton. It has a full length flight deck with six spots for operating helicopters. Internally, it has 1,600 lane metres for various armoured vehicles. The stern dock is compatible with landing craft, air cushion (LCAC), of which it can carry two; or up to four conventional medium landing craft (LCM). The vessel will be able to embark up to

09

The French LHD MISTRAL. Russia has finally selected the design for its Navy. (Marine Nationale)





450 troops and 60 vehicles. Additionally, the Mistral class is capable of operating a 63-bed hospital, as well as being fitted as a flagship for joint task force (JTF) operations with a full range of communications.

The class features a full diesel-electric propulsion plant driven by four medium-speed Wartsila 5.2MW diesel-generator sets, with a fifth diesel-generator set for emergency power. In a significant innovation, the Mistral class uses twin Alstom Power Conversion Mermaid podded azimuthing propulsion units instead of propellers to drive the ship through the water.

While controversial due to the 2008 Georgia conflict and Russian naval amphibious power projection operations against Georgia during that conflict, the sale of the ships does not include the advanced electronic systems found on the French versions, and will not include any armament. Both measures are responding to international concerns over the sale, especially by some Eastern European, Baltic, and Black Sea countries. It must be noted however, that while many NATO members disagree with the sale, Russia is no longer considered an enemy of NATO in many circles, but rather a key economic and political player with significant influence. It is also apparent that the agreement addresses urgent needs of both sides--the French shipbuilding sector needed an economic boost at this time and Russian surface shipbuilders need the advanced technologies of western shipbuilding as well as future work in their own yards.

HMS YORK SAILS FOR SOUTH ATLANTIC

HMS YORK left Portsmouth, UK, bound for the South Atlantic, on Saturday 19 February 2011

where she will conduct maritime security patrols around the British South Atlantic Islands, including the Falklands and South Georgia.

On her journey south, the Type 42 destroyer will call at Gran Canaria and the Cape Verde Islands. She is due to arrive at East Cove Military Port on East Falkland in mid-March 2011.

The ship has undergone a considerable amount of maintenance and has been fitted with two new Rolls-Royce gas turbine engines. The ship also put her Sea Dart missile system to the test and fired seven missiles on the Navy's Hebrides firing range before the deployment.

Her Commanding Officer, Commander Simon Staley, said:

"YORK has been preparing hard for this deployment to the South Atlantic, a region of high profile political and joint military interest where the Royal Navy has had a continuous and significant effect over the last three decades.

"I am delighted with my ship's company's response to recent training and am hugely grateful for the first rate engineering support provided by Portsmouth Naval Base to ensure we sail in a safe and sustainable material state.

"By sheer distance from the UK, and in the face of a harsh South Atlantic winter, the deployment will present real operational challenges for us all, but this will be balanced by the visits to some wonderfully diverse countries and the opportunity for the Royal Navy to demonstrate its impressive global reach and versatility."

On completion of her tasking in the South

Atlantic, YORK will undertake a number of high profile regional engagement visits in South America, the Caribbean and the USA. She is due to return to Portsmouth in July 2011.

10 NEW RUSSIAN SSN ON WAY

The Russian Navy will receive a new Yasen, or Graney, class SSN by the end of 2011.

The class is based on the Akula II and Alfa-class submarines and are designed to replace Russia's Soviet-era attack submarines of the Akula and Oscar classes.

Construction of SEVERODVINSK began in 1993 at Sevmash Shipyard in her namesake city but has since been dogged by financial setbacks and was finally floated out in June last year.

"The submarine is undergoing harbour trials at the Sevmash Shipyard and is getting ready for sea trials in May," an official said. "It should enter service with the Russian Navy by the end of this year."

Graney class nuclear submarines are designed to launch a variety of long-range cruise missiles (up to 3,100 miles or 5,000 km), with conventional or nuclear warheads, and effectively engage submarines, surface warships and land-based targets. Armament includes 24 cruise missiles and eight torpedo launchers, as well as mines and anti-ship missiles. In 2009, work started on the second sub of the Graney class, the KAZAN, which will feature more advanced equipment and weaponry.

10 A model of a Russian Navy Yasen, or Graney, class SSN. The class is based on the Akula II and Alfa-class submarines and are designed to replace the Soviet-era attack submarines of the Akula and Oscar classes.

11 The RN aircraft carrier INVINCIBLE seen here in a state of almost disrepair at Portsmouth after lying idle for six years. INVINCIBLE has been sold to a Turkish scrapyard which will take eight months to dismantle her.



11 HMS INVINCIBLE SOLD TO TURKISH SCRAP YARD

The RN aircraft carrier INVINCIBLE has been sold to a Turkish scrapyard which specialises in recycling ships.

The carrier, which saw action in the Falklands war, was sold through an internet site.

Leyal Ship Recycling, which is based near Izmir, was chosen ahead of a bid by a UK-based Chinese businessman.

Lam Kin-bong - who owns restaurants in the UK's West Midlands - had offered £5m and wanted to turn the former warship into an international school in China.

But a Ministry of Defence spokesman said: "After 25 years of service HMS INVINCIBLE was decommissioned nearly six years ago and having reached the end of her distinguished career, it is right that we secure a good financial return for the taxpayer.

"The bid from Leyal Ship Recycling does this and also ensures she is disposed of in an environmentally friendly way."

Leyal has been involved in the scrapping of several Royal Navy ships - the destroyers CARDIFF, NEWCASTLE and GLASGOW and auxiliary ship RFA OAKLEAF.

INVINCIBLE is expected to be towed from Portsmouth by the end of March and is expected to arrive in Turkey four weeks later. It will take eight months to dismantle.

12 BOTH LITTORAL COMBAT SHIP DESIGNS SELECTED FOR SERIES PRODUCTION

In late December 2010, the United States Congress approved the plan for the USN to procure both designs of the Littoral Combat

Ship (LCS). The plan was approved as part of the Fiscal Year (FY) 2010 continuing resolution.

The LCS acquisition plan now calls for the construction of 20 new hulls under a split procurement programme; ten units for Austal USA (with General Dynamics acting as combat systems designer and integrator) and the remaining ten units by Lockheed Martin/Marinette Marine. Austal will build the ten Freedom class and Marinette ten units of the Independence class through 2015. Moving the deal forward will allow the USN to buy 20 units at today's prices essentially getting 20 hulls for the price of 19 over the next five years. The USN's Future Years Defense Plan (FYDP) 2011-2015 projected costs of the first 17 units at US\$10.8B, or US\$635.2M per unit (not including the two FY 2010 units). Under the 20 unit buy, the price per hull should average around US\$430M per hull, not including mission modules. As a reference to the cost of mission modules, the FY2011-2015 FYDP calls for the procurement of 16 mission modules for US\$1.1B.

Following the announcement of the split procurement acquisition plan, both contractors were awarded initial contracts for the first unit plus options for the nine follow-on units. Lockheed Martin was awarded a Fixed Price Incentive Contract (FPI) for the FY 2010-2015 LCS Flight 0+ buy. The FY 2010 Flight 0+ ship award amount is US\$436.8M. Austal USA was also awarded a FPI contract for its FY 2010-2015 LCS Flight 0+ buy. The FY 2010 Flight 0+ ship award amount was US\$432M.

In referencing the award contracts for the FY 2010 units, both bidders (Lockheed Martin and Austal USA) were well below the

Congressional cap of US\$480M per hull. The final prices offered by industry were obviously one of the driving factors for the USN to go with the split procurement. When considering the cost per hull in combination with the procurement of mission modules, it appears the USN may very well fall below its initial FYDP 2011-2015 estimates of US\$635.2M per hull.

This deal is a win-win-win for the USN, Lockheed Martin/Marinette Marine and Austal USA. The USN was considering the likely operational tempo of the current and future fleet and the declining number of general purpose combatants - specifically frigates - available to meet those commitments which increased the urgency in getting the new LCSs in service sooner.

The other part of the equation is the US shipbuilding industry. With consolidation of naval shipbuilding infrastructure driving reductions in skilled shipbuilders, the LCS bulk order will help stabilize the workforce at Tier II shipyards such as Austal Ships and Marinette Marine against further job cuts. This could be expanded further when the thirty additional units are ordered under the next FYDP, as AMI anticipates that the competition will be opened further. ■

12 The littoral combat ship USS FREEDOM, seen here passing the Nimitz-class aircraft carrier USS CARL VINSON at 40kts after refuelling at sea. Both competing LCS designs have won build contracts for the USN. (USN)





REBUILDING THE CRUISER FORCE: THE PURCHASE OF SYDNEY 1930 - 1935

By Petty Officer Peter Cannon

Petty Officer Peter Cannon, in this his 2nd place 2010 Navy League of Australia Professional Essay Competition entry, examines the purchase of the RAN's cruiser force just in time for World War II.

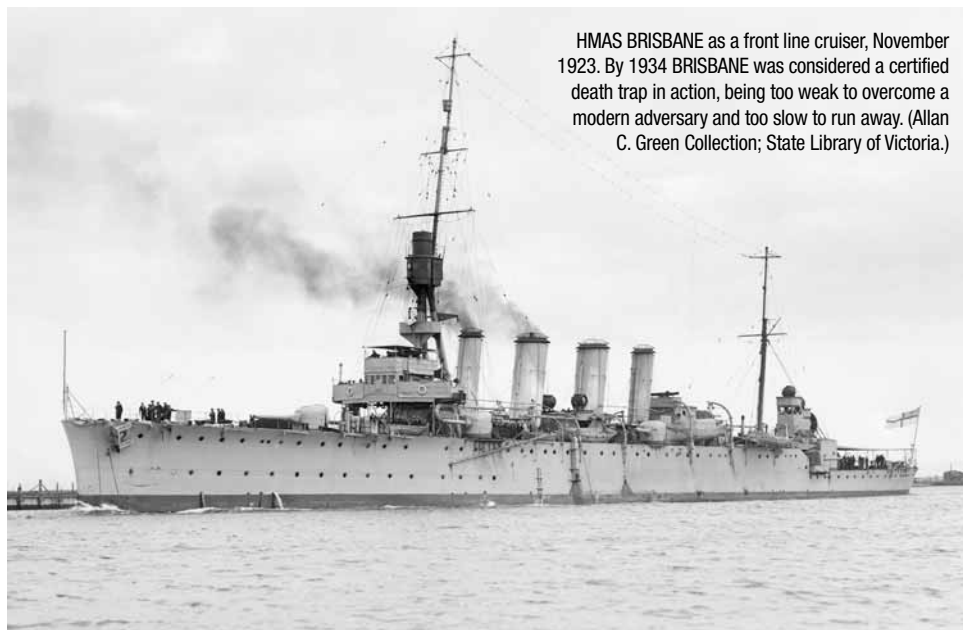
The light cruiser HMAS SYDNEY became the most well known RAN ship of the Second World War, from her victorious deployment to the Mediterranean in 1940 to the tragedy of her loss with all hands in November 1941. Over the last 70 years, numerous accounts have been written of her war service, the majority dwelling on the circumstances of her destruction. One aspect of her story that has been relatively neglected are the considerations surrounding her acquisition in the years preceding the conflict as well as the rationale for her place amongst the small Australian squadron with which the nation went to war against Hitler's Germany in September 1939.

When Australia followed the United Kingdom (UK) into what became the Second World War, the only armed service in the country fully equipped, trained and battle ready was the Royal Australian Navy. Australian defence policy during the inter-war period was based on the concept of Imperial Defence, the Dominions assuming a share of the responsibility for providing the overall defence of the British Empire whereas in the past it has been assumed that British forces would cover all contingencies. With Britain's Royal Navy (RN) traditionally seen as the principal defence of what was essentially a maritime empire, it should be no surprise that the Commonwealth Government chose to task its naval forces with the front line defence of Australian interests. The RAN's original concept of a fleet unit built around the battlecruiser AUSTRALIA ended with her scuttling in 1924. Thereafter the most powerful force in the navy's inventory for the next two decades would be the cruiser squadron. Australia's survival then,

as now, relied upon sea communications and in the early 20th Century the multi-role cruiser was the ideal type of ship with which to equip Australia's small navy. The cruiser's high speed, extensive endurance, sea worthiness and medium calibre armament saw them especially suited to the protection of trade. It was also of primary importance that such ships integrated seamlessly into a British battle fleet where they would undertake scouting duties and stiffen the destroyer flotillas against an opposing force.

Australia's modest defence spending at the onset of the 1930s was soon drastically reduced as the Great Depression took hold. The primary concern of the Australian Commonwealth Naval Board, as it struggled to hold on to a navy capable of future expansion in an emergency, was the cruiser squadron. Everything else was subordinate to that end and ruthlessly cut. The RAN entered the decade with two new 9,850 ton Kent class cruisers, AUSTRALIA and CANBERRA, in commission. Two older cruisers were in reserve, the 5,560 ton Birmingham class ADELAIDE, and the 5,400 ton Town class BRISBANE. Both ships were obsolete, their designs dating from before the First World War despite ADELAIDE only having been completed in 1923. BRISBANE had commissioned in 1916 and seen war service but both of her veteran sister ships had since been broken up for scrap. As the 1930s progressed and money remained scarce, the replacement of the aging BRISBANE became a political headache due to the convoluted terms of interwar naval limitation treaties to which Australia was bound.

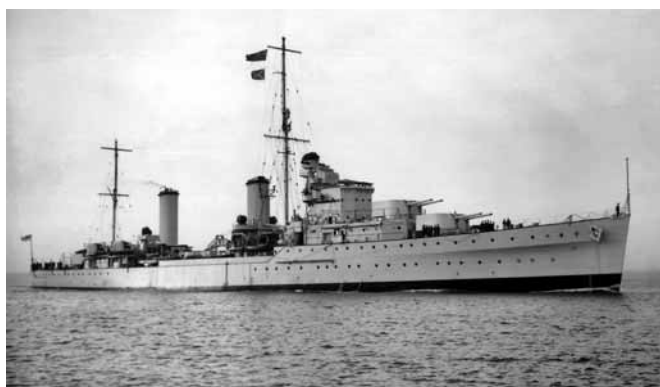
The process of building a first class naval force in Australia was being undertaken with the guidance and support of the RN, the world's pre-eminent and most respected navy. At this point in its history the Australian navy was virtually a detached squadron of the RN although funded and controlled by the Commonwealth Government. This along with Australia's status as a dominion of the British Empire saw the RAN considered internationally as a component of overall British strength. Therefore Australian ships belonging to categories limited by treaty found themselves making up a quota of that strength. The London Naval Conference of 1930 saw the British Government impose an upper limit of 50 cruisers on the Admiralty to ensure the success of the talks. This was despite the fact that the Admiralty considered 70 to be the minimum number of cruisers required for its world wide



HMAS BRISBANE as a front line cruiser, November 1923. By 1934 BRISBANE was considered a certified death trap in action, being too weak to overcome a modern adversary and too slow to run away. (Allan C. Green Collection; State Library of Victoria.)



HMS LEANDER whilst serving with the New Zealand Division of the Royal Navy, January – February 1938. (Allan C. Green Collection; State Library of Victoria.)



The Arethusa Class HMS PENELOPE in Portsmouth one month after her completion, December 1936. (Sea Power Centre – Australia.)



The heavy cruiser HMS YORK seen as completed in 1930. (Sea Power Centre – Australia.)

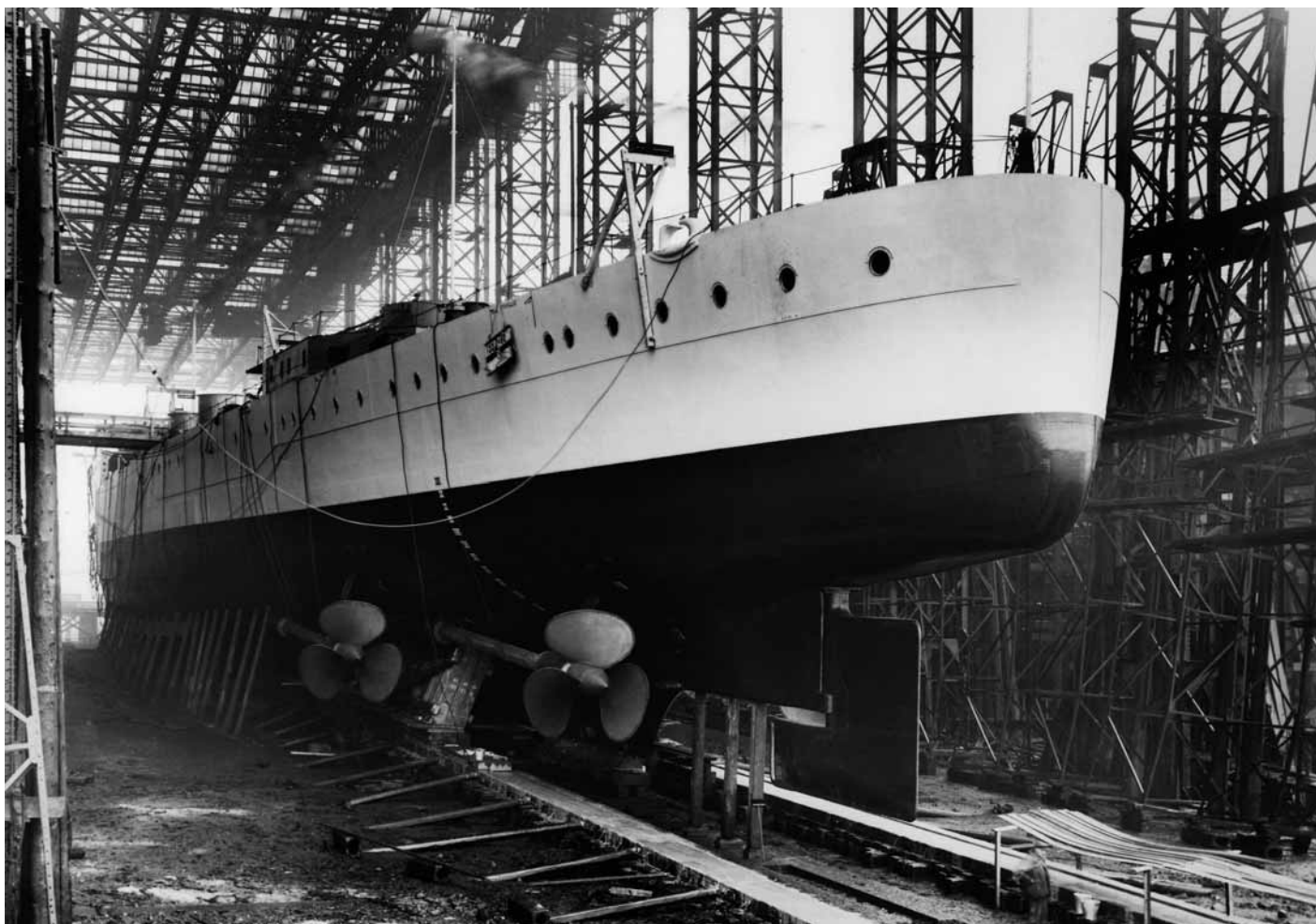


The Southampton Class HMS MANCHESTER painted for service with the East Indies based 4th Cruiser Squadron. Portsmouth, August – October 1938. (Sea Power Centre – Australia.)

commitments in a war against only one foreign power, at that time the most likely protagonist being Japan. As well as the 50 unit ceiling, total tonnage limits for cruisers were agreed to as well as the banning of further 8-inch gun ships which had been built by all signatories throughout the 1920s. This actually suited the RN due to the enormous price tags of these large vessels. The four RAN cruisers were included in these quantitative restrictions in two separate categories, the two 8-inch gunned ships AUSTRALIA and CANBERRA as heavy cruisers and the 6-inch armed BRISBANE and ADELAIDE as light cruisers. This saw the RAN's cruiser quota set at four of the maximum Empire total of 50 ships. Australia's position was unique in that New Zealand's naval requirements were still being met by a division of the RN while the Canadians didn't operate the type. With these circumstances in mind, it can be seen that Australian decisions regarding the maintenance of her cruiser force would have an impact on overall Empire security.

The question of replacing HMAS BRISBANE first arose in 1930. Under the terms of the London Treaty, cruisers laid down prior to 1920 were deemed to be overage and eligible for replacement 16 years after completion, which meant BRISBANE would be overage in 1932. To complicate matters, in order to comply with the same treaty, she would have to be scrapped by 31 December 1936 or another ship would have to be disposed of to keep the overall Empire tonnage within its limits. The Chief of Naval Staff (CNS) Rear Admiral Sir William Kerr RN, made the point to Albert Green, the Minister for Defence, that Australia was morally obligated to replace the cruiser or the RN would be forced to scrap a more modern and capable ship. Whilst the Labor Cabinet under Prime Minister James Scullin agreed in principle, there was no money available. The other option was to simply scrap BRISBANE and accept a reduced quota of Empire cruiser numbers as well as the political fallout such a decision would entail.

By 1933, the worst of the Great Depression had passed and the United Australia Party under Joseph Lyons was in power. Australia's finances were still far from healthy but the question of a replacement for BRISBANE was revisited. In February 1933 the British Government intended to announce four new cruisers as the last new ships it was entitled to build under the London Treaty until its expiry at the end of 1936. They suggested to the Commonwealth that one of these ships replace BRISBANE and that she could be paid for over a period of five years beginning in 1934. Built in the UK, she would cost approximately £1,800,000 Sterling, or £A2,250,000 (Australian currency, 25 per cent added to the Sterling cost). Despite wishing to replace the ship, the Commonwealth Government did not feel it could afford to do so as it had just decided to replace the existing destroyer force with five more capable ships from the RN as well as lay down a new escort sloop. It also needed to debate the issue of whether to build such a ship in a British yard or locally in Australia. Progress was made however with an agreement to announce one of the ships in the programme as a replacement for BRISBANE for the purposes of the London Naval Treaty. Then provision may be found in the 1934-35 naval estimates to begin paying for one of these new ships and take her over in 1935. Meanwhile the Naval Board liaised with the Admiralty in London to provide advice to the government as to what type of cruiser would be most suitable for Australian requirements. Prevailing Empire naval strategy in dealing with the only credible threat in the Far East, the Imperial Japanese Navy, relied upon the despatch of a British battle fleet to Singapore. Australia had undertaken to reinforce this fleet, as well retain responsibility for the protection of commerce in her own waters. It was thought unlikely that the Japanese would risk heavy forces as far south as Australia with the Singapore based British fleet



SYDNEY II on the slipway at Wallsend-on-Tyne prior to launching, 22 September 1934. (H.J. Watson Collection.)

poised to cut their communications. So the only threat considered likely in local waters would be converted Japanese merchant raiders reinforced by regular cruisers.

The best ships for the RAN to combat this likely scale of attack would be the most capable British cruisers available. In the 1920s this equated to the large Kent class, Australia duly acquiring two of them to offset the menace of Japanese heavy cruiser construction. By 1933, having built its full quota of 8-inch gun ships, Britain was replacing her obsolete cruisers with light cruisers but the tonnage cap was forcing the Admiralty to build two different designs. They considered ships of 7,000 tons the ideal all round design for duties with the battle fleet as well as their world-wide trade protection commitments but were unable to build the numbers required. Therefore it was decided to build a 7,000 ton ship as well as another smaller design in order to maximise the number of hulls that could be built within the tonnage limit. The larger type was the 7,000 ton Leander class armed with eight 6-inch guns in twin turrets, while the Arethusa class came in at 5,250 tons and was armed with six 6-inch guns. ARETHUSA was an admirable fleet cruiser but only met the minimum requirements consistent with seaworthiness and armament for trade route vessels. LEANDER was considered the superior fighting unit on account of her extra two main guns as well as eight torpedo tubes to the smaller ship's six. Another important consideration was LEANDER's superior endurance, a capability not lost on Australian naval authorities operating ships in the vast Pacific and Indian oceans. A memorandum from CNS, Vice Admiral G. Francis Hyde RAN, to the Minister for Defence, Sir George Pearce, in March 1933 outlined these views and recommended the

purchase of a Leander class ship as the most powerful 6-inch gun vessels available to counter modern Japanese construction.

In 1934, as BRISBANE's compulsory retirement age loomed, the issue of her replacement was again debated, this time against a background of improving Government finances. BRISBANE was now considered a certified death trap in action, being too weak to overcome a modern adversary and too slow to run away. It would take at least two and a half years to build a successor so a decision was urgently required if the RAN's already meagre effective strength was to be maintained. The Admiralty was also concerned that both the US and Japan had recently embarked upon the construction of much larger 6-inch armed cruisers forcing the RN to follow suit. Thanks to treaty restrictions, this reduced the number of projected hulls from 50 to 49 despite 70 ships remaining as the minimum requirement, this number remaining based on fighting a one-ocean war!

The Commonwealth also looked at the matter of either building in Australia or the UK. A vigorous debate on the subject had preceded the decision to build AUSTRALIA and CANBERRA in Scottish yards in 1925. In short it was cheaper and faster to build in British yards resulting in better value for money, very appealing in light of strained finances and a critical time frame. Work was however, provided for the Australian shipbuilding industry with the construction of the seaplane carrier ALBATROSS in Sydney. This was a political concession; the navy in fact saw little need for the vessel.

In a January 1934 paper prepared by the Naval Board it was estimated that a Leander built in Australia would cost a minimum of £A2,950,000

as opposed to the approximate price of £A2,250,000 in the UK. Building locally also included having to spend £A1,250,000 in the UK as most of the equipment for a sophisticated warship could not be provided by Australian industry. Furthermore, build time in Australia was likely to be three and a half to four years as opposed to two and a half years in the UK. As a result of these considerations, it was proposed that the Government acquire a cruiser from the UK and use the £A700,000 saved to build more escort sloops in Australia which, unlike ALBATROSS, were ships that the navy actually needed.

With the prospect of a purchase going ahead and the likelihood that the local build option would be defeated in Canberra, the Naval Board now curiously advocated the transfer of another heavy cruiser, either HM Ships YORK or EXETER, with a view to operating a homogenous force of three such ships. Both ships displaced 8,250 tons, were armed with six 8-inch guns and were already in service with the RN. The Admiralty however would have none of it, Australia already possessed two of the 15 Empire heavy cruisers and another would see a disproportionate number of these ships allocated to the Australian Station. Strong Admiralty advice during February 1934 was to replace BRISBANE with a modern light cruiser, either the already recommended LEANDER or a new class being built to compete with the large US and Japanese designs. These new ships were the Southampton or Town class and at 9,100 tons were larger and more powerful than the Leander type they were originally based upon. They mounted twelve 6-inch guns in four triple turrets and incorporated superior armour protection. The Town class cruisers were being built to stand up to the most recent Japanese designs and as such were very attractive to the Naval Board but the issue was that the RAN required a new ship as soon as possible to replace BRISBANE.

The first four RN Leander class cruisers were in commission by the end of February 1934 and a second group of four were under construction. The first of this second group, AJAX was to be completed to the original design whilst the remainder had a new machinery layout based on a unit system to aid survivability in the event of underwater damage. Named AMPHION, PHAETON and APOLLO, they would be known as the Modified Leander class. The Leanders were in service and therefore a known quantity, not to mention more than a match for any Japanese light cruiser then in commission. The first

pair of Southampton class ships on the other hand were yet to be laid down, their build time projected to begin in May 1934 and complete in April 1937. These ships would also be required to remain in UK waters for some time while the new type was thoroughly evaluated. Therefore in light of the pressing need to obtain a replacement for BRISBANE before the end of 1936, the Admiralty advised the Australian Government to request the transfer of a ship belonging to the most powerful class of light cruiser then entering British service, the Leander class.

The Admiralty and the British Government were prepared to transfer one of the four cruisers now under construction to the RAN, all being due for completion in 1935; AJAX in April, AMPHION in July, PHAETON in August and APOLLO in November. In light of the recent advice from London, with the idea of another 8-inch cruiser scuttled and the powerful Southampton class not a viable option for some years, CNS advised Pearce that the Government should aim to take over

the two best placed ships to be allotted to the Commonwealth were either PHAETON or APOLLO, both due to be launched in August of that year. They requested a decision as to which ship was preferred and whether her name was to be changed prior to the launching ceremony. The Naval Board met on 28 March and now recommended to the Minister that PHAETON, being built by Swan Hunter and Wigham Richardson's shipyard at Wallsend on the Tyne River, be chosen and launched as HMAS SYDNEY (II). 20 April 1934 saw Cabinet decide that the funds to begin paying for BRISBANE's replacement were available and that PHAETON should be allocated to the RAN and renamed SYDNEY '...in order to perpetuate the distinguished war service of the first ship of this name.'

The Defence Equipment Bill of 1934 allocated £A4,160,000 to a three year programme designed to recover from the drastic defence cuts between 1930 and 1932. Under this programme, £A2,800,000 was allocated to naval construction. This included the



SYDNEY II being launched into the River Tyne. The E Class destroyer HMS EXPRESS is fitting out in the background. 22 Sept. 1934. (Argus Newspaper Collection; State Library of Victoria.)

the vessel completing in July 1935, HMS AMPHION. The advice was accepted and an announcement made by Prime Minister Lyons that the Commonwealth must soon make provision for the replacement of the aging HMAS BRISBANE. The proposal was to be put to Cabinet as they debated a new defence programme. Further advice arrived from the Admiralty in March 1934 stating that

purchase of SYDNEY as well as laying down another sloop, HMAS SWAN, at Sydney's Cockatoo Island dockyard. The sloop would complement the YARRA which had been authorised under the 1933-34 naval estimates. Thanks to the recent reduction in naval personnel, an additional 600 men would also have to be recruited and trained to man the new cruiser. King George V approved



HMAS SYDNEY with HMAS BRISBANE alongside at Portsmouth, September – October 1935. BRISBANE sailed to the UK with the new crew for SYDNEY before being scrapped in the UK. (Argus Newspaper Collection; State Library of Victoria.)

the renaming of PHAETON and the ship was launched as SYDNEY (II) on 22 September 1934.

It was decided to sail BRISBANE to England with the crew for the new ship before being scrapped in a British yard. The old cruiser was brought forward from reserve for the first time since 1929 and sailed on 15 April 1935. HMAS SYDNEY (II) was finally commissioned into the RAN on 24 September. A detailed Admiralty estimate dated August 1934 calculated the overall cost of the new ship to be £A2,093,750 including a first outfit of guns, torpedoes, ammunition, sea stores, medical stores and equipment, mess gear, reserve guns, a twin 6-inch gun mounting, reserve ammunition and torpedos. The British treasury had hoped to see payments for SYDNEY made in three instalments over three years but the Commonwealth Government had budgeted the payment over five years before approving the purchase. In the end, negotiations saw the Commonwealth get its way, the fifth and final payment being made in March 1939 just prior to the outbreak of war. The total cost to the Australian taxpayer rounded out at £A2,100,400.

The acquisition of HMAS SYDNEY became politically possible at a time of crisis for the RAN. It faced the prospect of its cruiser squadron being reduced to two effective units along with being forced to accept a reduced quota of Empire strength under the London Naval Treaty. With the acquisition of another powerful 8-inch gun ship out of the question for strategic reasons, and the large 6-inch gun Southampton class only existing on paper, the choice of the most powerful light

cruiser then under construction for the Royal Navy, the Leander class, was the best possible decision to be made in the circumstances. As the international security situation deteriorated towards the end of the 1930s, SYDNEY's two sister ships, APOLLO and AMPHION would join the RAN as HMA Ships HOBART and PERTH. These decisions ensured that the Australian cruiser squadron would field a credible six ships in September 1939, with the whole force soon on task protecting shipping on the major Australian trade routes and ensuring their places in the war history of the Royal Australian Navy over almost six years of conflict to come. ■



HMAS SYDNEY II arriving in Melbourne for a three day visit, 24 September 1938. (Allan C. Green Collection; State Library of Victoria.)



HMAS ADELAIDE I: THE FAITHFUL SHEPHERD

By Nigel Beake

In this 2nd place 2010 Navy League of Australia Non-Professional Essay Competition entry, the author, Nigel Beake, examines the new but somewhat obsolete light cruiser HMAS ADELAIDE and her efforts during WW II in the Pacific.

HMAS ADELAIDE was a light cruiser in service with the RAN from 1922 to 1949. She is often overshadowed by the glamorous or tragic histories of the other RAN cruisers – SYDNEY being the most famous example.

Obsolete before she was completed, she was the oldest design of cruiser to serve the Empire in World War Two. Limited to a war of patrolling and escorting in Australian waters, ADELAIDE fulfilled this vital but unglamorous duty with aplomb. In the process she secured a key strategic territory for the Allies, sank a German blockade runner carrying critically important war material, and was the cause célèbre in a legal case still quoted today.

And at the end of the war, when she was destined for the breakers, having survived 211,000 miles of wartime cruising protecting Australia's sea lanes, she had proved to be a lucky ship too – not one life had been lost on her or her shepherded charges.

DESIGN AND CONSTRUCTION

The Australian Navy was formed in 1901 out of the separate colonial navies. A balanced small fleet was rapidly developed. The first two RAN light cruisers were built in Great Britain, and then the next two, BRISBANE and her half sister ADELAIDE, were built at Cockatoo Island dockyard in Sydney. This class of cruiser had a relatively long range and was ideal for commerce protection.

ADELAIDE was laid down on 20 November 1915. She was of the Birmingham class, a four funnel design, 463 feet in length, of 5,550 tons displacement. Propulsion was provided by Parsons steam turbines developing 25,000 SHP driving two screws, giving a maximum service speed of 25.5 knots. Steam generation was by mixed coal/oil fired boilers.

Main armament (as completed) was 9 x 6" guns installed in single open mounts provided with a splinter-proof shield only. Two were mounted side by side on the foc'sle, three on each beam and one on the quarterdeck. These guns were hand operated; with shells weighing 100 lbs this was a difficult task, complicated by being open to the weather, the motion of the ship, decks awash in rough seas and limited protection from enemy action. The main battery was supported by sixteen smaller weapons including machine guns. There were also two underwater torpedo tubes, one on each beam and two chutes for launching depth charges over the stern. Armour protection was provided by a 3" thick belt over the engineering spaces amidships. The deck was partially armoured with 2" plate.

The loss due to enemy action of important castings and machined items for her British-built turbines, plus changing war production priorities, delayed launching for

more than two years. Due to the favourable strategic naval situation in Australia's region there was then little urgency for her completion, and the opportunity was taken to incorporate various modifications from war experience into her design.

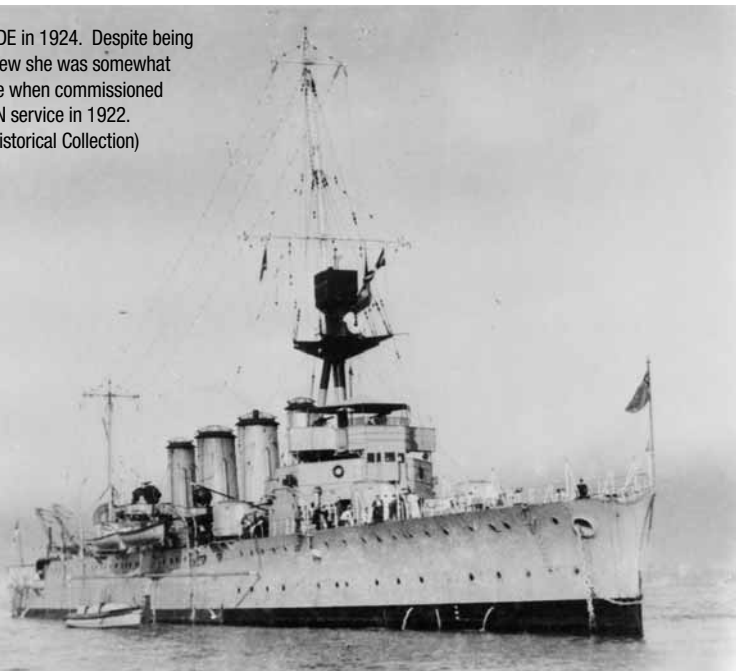
Unfortunately, the accumulated affect of these delays resulted in a completion date of 31 July 1922, earning her the nickname of HMAS "Long-delayed" – British built cruisers of the same class took less than two years to complete. Her cost of £1.3 million was also double that of a British built equivalent. More importantly, her relatively low speed, mixed coal/oil firing and open mountings already marked her as obsolete compared to the newest cruiser designs.

EARLY SERVICE

ADELAIDE was commissioned into the RAN on 5 August 1922. Her first six years of service were against a background of a declining national financial situation and increasing restrictions upon naval expenditure.

After 20 months of training and exercising ADELAIDE was selected to join the Royal Navy "Special Service Squadron" on the second half of its Empire Cruise. In April 1924, she joined the famous battlecruisers HOOD and REPULSE and their escorting cruisers as they departed Sydney on the five month trip to England. After visiting New Zealand, Fiji, Hawaii and San Francisco, ADELAIDE became the first RAN warship to pass through the Panama Canal. The cruise – known irreverently to its participants as the "Empire Booze" – continued with

ADELAIDE in 1924. Despite being brand new she was somewhat obsolete when commissioned into RAN service in 1922. (Navy Historical Collection)





HMAS/ADELAIDE at sea before her modernisation. (Navy Historical Collection)

a series of “showing the flag” visits to the West Indies and Canada.

Arriving in England in September 1924, ADELAIDE spent three months training and exercising in British waters before returning to Sydney in March 1925.

In 1927 ADELAIDE assisted in ‘colonial policing’ of the British territory of the Solomon Islands, when she was despatched to assist in the punitive expedition to apprehend the perpetrators of a massacre of European and native officials. ADELAIDE arrived off the Malaita district on the 16th October, with a mission to provide the authorities with logistics, communication and ground forces.

ADELAIDE provided fifty naval personnel to the ground forces, which consisted largely of loyal native policemen and European volunteers. The native policemen with their familiarity of the terrain and local customs took the lead in bringing the massacre perpetrators to justice, unfortunately with unnecessary bloodshed.

The RAN landing party were disciplined professionals (unlike the European volunteers whose behaviour was often deplorable), but suffered in the tropical conditions with 20% requiring hospitalisation through tropical diseases before ADELAIDE’s presence was no longer required. By mid November she had returned to Sydney.

With the delivery of two new County class heavy cruisers to the RAN in 1928 the budget situation dictated that ADELAIDE be placed in reserve – there was not the manpower to crew her.

Thus ADELAIDE languished in reserve throughout the navy’s low point of the 1930s, until the threat of a deteriorating European and Asian situation prompted the rebuilding of the navy late in the decade. Attention turned to the relatively new but obsolete ADELAIDE, and what could be done economically and technically to prepare her for a war for which she was never designed – particularly the increased threat of air attack at sea.

MODERNISATION

The modernisation of ADELAIDE was undertaken at Sydney and took five months.

Anti-aircraft artillery (AAA) was improved. Three 4” AA guns were fitted with a controlling HA (high angle) director in place of the previous two 3” weapons. This improved AA capability was still much less than the RAN’s new Perth class light cruisers, with even their initial AAA outfit proving inadequate when hostilities began.

The steam generating plant was modernised. Boilers were upgraded to oil firing only – the greater thermal efficiency enabled the forward boiler room to be decommissioned, with the space devoted to additional oil bunkerage, increasing the ship’s range. There was a modest reduction in power, with a slight decrease in maximum service speed to 24.8 knots. However, availability of the ship was improved with the slow, laborious task of “coaling ship” no longer necessary. Further gains were made by removing the fore funnel (reducing top

weight) and a reduction in engineering manpower – an important issue with accommodation required for the increased AA crews.

Fire control was improved. ADELAIDE was fitted with a main armament director in the much enlarged control and spotting positions on the foremast. However, her main guns remained outranged by 10,000 yards and slower firing than modern turret mounted weapons.

The underwater torpedo tubes were removed. These were a problematical weapon at best – requiring the ship to be “aimed” broadside at the target.

One 6” gun was removed from the foc’sle, with the remaining piece being repositioned on the centre line. Broadside gunnery strength was thus maintained, with ammunition supply being simplified and top weight reduced.

ADELAIDE was recommissioned into the RAN on 13 March 1939, and was in the Sydney area when World War II commenced. Although modernised, she could not be considered a front line unit – her speed, and main and secondary batteries were all deficient compared to modern cruisers. However, much useful work awaited her in an escort/patrolling role on the Australian Station. Based during the war at Brisbane, Sydney or Fremantle, ADELAIDE escorted tens of



ADELAIDE was a four funnel Birmingham class cruiser with a top speed of 25kts. (Navy Historical Collection)

thousands of Australian and New Zealand troops on the first part of their journeys to the battlefields of the world, as well as escorting vital merchant cargoes.

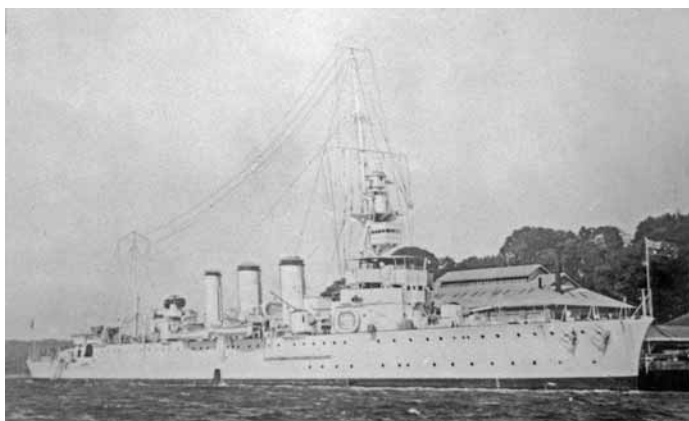
A testament to ADELAIDE’s success in the role is that not one life or cargo was lost whilst under her protective shepherding.

THE NEW CALEDONIA INTRIGUE

ADELAIDE also became involved in high level political manoeuvring early in the war. New Caledonia is a French colony 1,200km to the east of Australia. The governance of this colony became of vital importance to Australia’s strategic interests, as it occupies a strategic position across the US/Australia shipping lanes and was also a key producer of chrome and nickel.

With the collapse of France in June 1940 after the German invasion, an armistice was signed and the German-sympathetic Vichy government established in France. Loyalties of the French colonies in the Far East were divided between the Vichy regime and de Gaulle’s embryonic “Free French” movement. However, on 30 August 1940 the military commander of New Caledonia overthrew the legitimate governor, and with the assistance of the sloop DURMONT D’URVILLE declared allegiance to the Vichy regime. This was despite the majority of the colonies’ French citizens being pro-de Gaulle.

This posed a strategic problem for Australia, with a potentially hostile regime on her doorstep. The problem was also difficult to solve, as direct military intervention may have provoked the Japanese into an action supporting the Vichy coup.



HMAS ADELAIDE at Garden Island in Sydney post modernisation. Noticeable in that the ship now has three funnels from the original four. (Navy Historical Collection)

A plan was developed to install a de Gaullist regime. An Australian warship would escort a neutral vessel carrying a pro - de Gaulle governor, with a counter coup being staged by the local de Gaullists just as the governor arrived. ADELAIDE was assigned to escort the Governor – designate M. Sautot from Vila to Noumea, and to use her greater power to prevent the sloop DURMONT D'URVILLE from interfering.

ADELAIDE sailed from Sydney on 2 September – with the mission commencing very badly. In the early hours of the 3rd, off the coast of northern NSW, ADELAIDE collided with the steamer *Coptic*. Both ships were not showing lights under wartime conditions, with the *Coptic* southbound, and ADELAIDE following instructions to “make the best possible speed.” The ships’ starboard bows struck a glancing blow, with minimal damage to the ADELAIDE and considerable “cosmetic” damage to the *Coptic*.

On the 19th September, ADELAIDE, in company with the Norwegian merchantman *Norden* carrying Sautot, approached Noumea at 0600. Initially it appeared as though the coup had failed, as ADELAIDE was refused entry to the harbour by the sloop DURMONT D'URVILLE, and Captain Showers of ADELAIDE received intelligence that the Vichy were in control of the town and approaches. But Showers awaited developments, and ADELAIDE was approached by a de Gaullist boat at 1100 with the news that the military commander had acceded to public opinion. He agreed to hand over power to the de Gaullists – an event that occurred with much public acclamation at 1500.

However, another three weeks of tense diplomatic work awaited ADELAIDE before her mission was complete. Sautot survived two attempted counter coups, and it was several weeks before the Vichy sloop sailed back to Indo-China, with its presence a constant unknown quantity. At one stage it was rumoured a second Vichy sloop may be on its way to New Caledonia. This situation would pose a strong threat to ADELAIDE, since the Navy Board believed two sloops would outclass the Australian cruiser if a “shooting war” developed. However, by 5 October ADELAIDE could sail for Sydney – Sautot had consolidated his position, the sloops had returned towards Indo China and a vital strategic position was secured for the Allies.

THE RAMSES INCIDENT

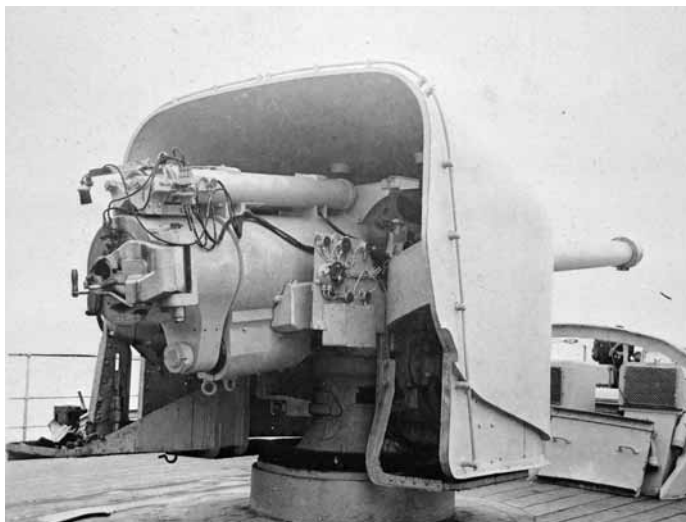
From May to July 1942 ADELAIDE was refitted. The automatic AA suite was strengthened by the installation of 6 x 20 mm Oerlikon cannons in single mounts. Allied navies’ war experience had shown that machine guns were inadequate AA weapons. She then returned to escort duty.

On one such escort in November 1942 ADELAIDE left Fremantle in company with the Dutch cruiser HEEMSKERCK, escorting a convoy of three merchant ships out to the Indian Ocean limits of the Australian station. On the 26th November the convoy merged with another escorted by two RAN corvettes.

In the early afternoon of 28 November ADELAIDE’s mast head lookout sighted a distant merchantman, and Captain Esdaile ordered increased speed and the two cruisers altered course towards the intruder. The unknown ship turned away and broadcast a distress signal in the name of *Taiyang* – a name that did not appear in the reference books held by ADELAIDE.

The intruder was in fact the German blockade runner *Ramses* – stranded in the Far East since the start of the war; she was making a run for Europe loaded with 4,000 tons of vital rubber for the German war effort. She was armed with light weapons only – but Captain Esdaile could not know that.

At 1450 Action Stations was sounded and the cruisers’ main batteries trained on the mystery ship. With the range closing, *Ramses* broadcast a further “distress” message at 1519, but failed to answer ADELAIDE’s various wireless and visual signals. By 1528 ADELAIDE’s bridge officers had correctly identified the stranger as the *Ramses*, despite her flying the Norwegian flag. *Ramses* then stopped and



One of ADELAIDE’s 6-inch guns from 1940. Her main gun armament didn’t change during her career. One gun was removed from the two on the foc’sle to help reduce top weight. The remaining gun being centred to provide a wider arc of fire. (Navy Historical Collection)

lowered two boats, a sudden explosion at her stern quickly obscuring her with smoke.

The two cruisers immediately opened fire, with ADELAIDE scoring hits with her third salvo at a range of 10,000 yards. Captain Esdaile had seen two possible scenarios when *Ramses* stopped - either the *Ramses* was an armed raider launching a “panic party” and smokescreen to lure ADELAIDE closer, or she was unarmed and had fired scuttling charges.

His answer in both cases was to immediately open fire –for obvious reasons in the first scenario, in the second case – essentially the true situation – to hasten the German’s demise and return quickly to the convoy.

The combination of ADELAIDE’s gunnery and the scuttling charges saw *Ramses* and its valuable cargo sink at 1552. ADELAIDE picked up all of *Ramses* seventy - eight crew and ten Norwegian ex-prisoners, along with a pig and a dog – the pig destined to be “supplementary rations”.

MID WAR REFIT

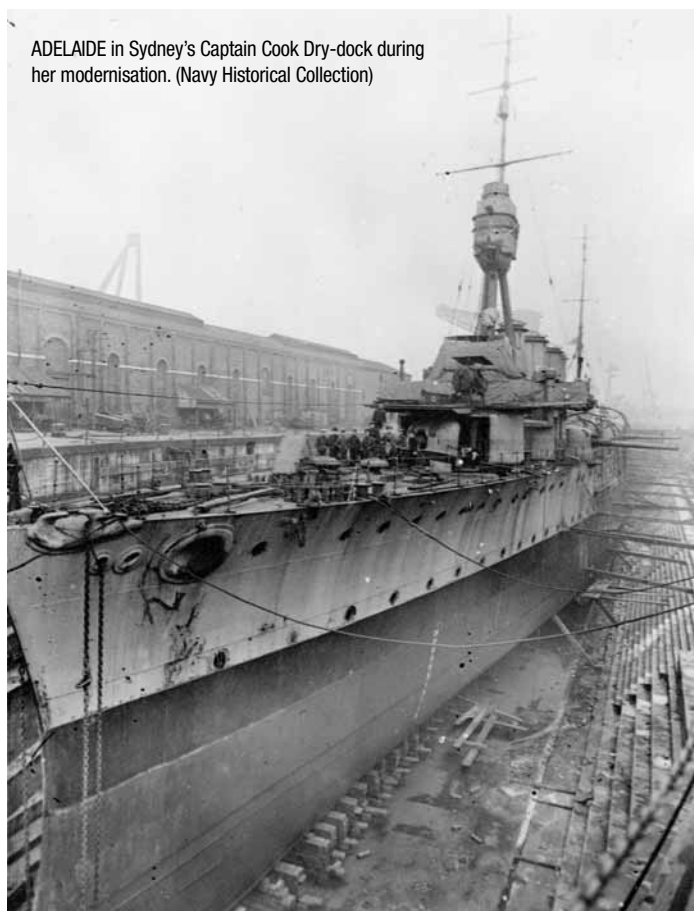
From June to September 1943 ADELAIDE was refitted. During this refit the anti-submarine capabilities of the ship were greatly strengthened at the expense of the main and AA batteries. The rationale behind this decision was based on an analysis of the likely threats facing ADELAIDE in her commerce protection role. Sinking of merchant vessels by Japanese submarines in the first 6 months of 1943 in Australian waters, were depressingly relentless with 16 ships sunk during this period. However, a slight weakening of her anti-ship and anti-aircraft armament would still leave ADELAIDE capable of handling the diminishing threats posed by German or Japanese surface raiders, a surfaced submarine, or long-range scout planes.

Hence, the two waist 6" guns were removed, with one being repositioned on the aft superstructure in place of one of the 4" AA guns. Four depth charge throwers were then installed midships, two on each beam, with the ship now being able to launch a much more effective pattern of six depth charges.

ADELAIDE had been fitted as early as July 1941 with a Type 271 surface search radar. Exact fitting dates are uncertain, but by the time she came out of the 1943 refit ADELAIDE also boasted air search and gunnery control radar.

Ironically, the timing of ADELAIDE's refit coincided exactly with the collapse of the Japanese submarine effort against shipping in Australia's waters – only two ships were sunk by submarine in the last two years of the war. Thus ADELAIDE's reconfiguration as a submarine killer was never tested in practice.

ADELAIDE returned to the service of coastal convoy defence, and briefly supported a multi nation Task Force in their operations against targets in the East Indies.



ADELAIDE in Sydney's Captain Cook Dry-dock during her modernisation. (Navy Historical Collection)

DECLINE AND DISPOSAL

By mid 1944 the naval situation had improved whereby little useful work remained for a second rank ship like ADELAIDE. The Axis powers were in retreat on all fronts, and the Allies' build-up of naval strength in the Pacific was overwhelming. ADELAIDE was recommended to be withdrawn from active duty, arriving in Sydney in January 1945 to begin a short career as a depot ship.

On May 13th 1945 she was paid out of the Navy, and in 1947 suffered the ignominy of being used as a target for night gunnery exercises. She was sold for scrap in 1948, being towed to Port Kembla in March 1949 for breaking up, with the work completed by January 1950.

However, a little of ADELAIDE still remains – her mainmast is preserved as a memorial in Ku-ring-gai Chase National Park, Sydney. ■

EPILOGUE

Shaw, Savill and Albion Co. Ltd vs the Commonwealth

The owners of the *Coptic*, damaged in the collision with the ADELAIDE in 1940, sued the Commonwealth of Australia to recover the costs of their ship's repair.

The plaintiff alleged negligence by the defendant's officers and servants relating to matters of insufficient lookout and excessive speed by ADELAIDE and the omission of the naval authorities to notify ADELAIDE of *Coptic's* assigned course.

The suite, heard in the High Court of Australia, was a celebrated case where it was established that in the words of Dixon J "to concede that any civil liability can rest upon a member of the armed forces for supposedly negligent acts or omissions in the course of an actual engagement with the enemy is opposed alike to reason and to policy". [Shaw Savill & Albion Co Ltd v Commonwealth]

However, the judges also determined that there was a real distinction between active operations against an enemy and other operations in wartime, and that a warship still had a duty of care. They further ruled that in this case the ships should have taken "all precautions practicable to avoid a collision". [Shaw Savill & Albion Co Ltd v Commonwealth]

Thus the shipping company was successful in its suite – with the Court Registrar negotiating with the parties to determine an agreed amount of damages – £24,263 7s7d.

However, the ghost of ADELAIDE was back in court again in 1953 – the Commonwealth having refused to pay interest on these damages – with the Commonwealth again losing.

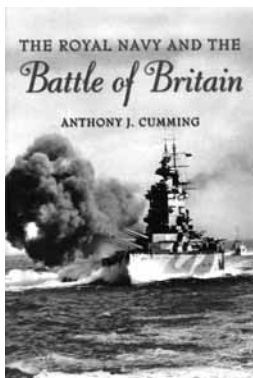
Interestingly, the case still shapes the law sixty years after ADELAIDE went for scrap. The case was quoted in the UK legal action of *Mulcahy vs the Ministry of Defence (MOD)* – where a gunner was injured by the alleged negligence of his gun captain during the First Gulf War, and sued the MOD for negligence. However, unlike the *Coptic* case, the parties involved were engaging the enemy. The UK judges took the view of Dixon J in the 1940 case where he stated that the concept of negligent acts in the course of engaging the enemy was "opposed to... reason" and the plaintiff lost the case.

And what of the *Coptic*? She outlived her old nemesis ADELAIDE by 16 years, not going under the scrapyard torches until 1965.

THE BATTLE FOR BRITAIN INTERVIEW

By Iain Ballantyne

Iain Ballantyne interviews Anthony J. Cumming, about his new book 'The Royal Navy and the Battle of Britain' (Naval Institute Press, hardback- see Product Review this edition).



A great storm blew up in the UK in late August 2006, as the 66th anniversary of the Battle of Britain approached. A number of prominent academics stirred up a hotly contested debate by suggesting that it was the Royal Navy which really prevented an invasion by Hitler's troops rather than the Royal Air Force. Regular contributor to *THE NAVY*, Commander David Hobbs MBE, RN, argued in our Volume 69 No.3 edition that while the RAF inflicted a tactical defeat on the Luftwaffe for the first time after its successes in Poland, Norway, the Low

Countries and France, it was the Royal Navy that prevented a sea-borne invasion from taking place.

Now a new book has emerged from that debate which goes into great detail about the battle. The following is an interview with its author and prominent naval historian and *WARSHIPS* IFR magazine editor Iain Ballantyne.

How well are you equipped to fend off accusations of 'heresy' that will surely be fired at you for having the audacity to claim that the RAF did not win the Battle of Britain all on its own?

"When I dared to criticise the low standards of Battle of Britain gunnery training in a 2007 article, a supposedly 'quality' national newspaper invited their bloggers to comment on whether it was right for 'The Few' to be criticised after all these years. The response was both hysterical and predictable. ITN News also asked a highly decorated veteran if he was upset to see what he did being questioned like this. It doesn't seem to matter how much you applaud the heroism and sacrifice of the pilots - any criticism of the RAF is automatically taken as criticism of 'The Few'. No doubt similar cheap tactics will be used again by those who don't like to be confused by the truth. So, yes - I'm ready for it!"

What path did you travel to produce the book?

"I started looking at the Battle of Britain when I wrote my BA dissertation back in 2001. I followed up this theme during my MA at Exeter University by looking more closely at the naval aspects. Finally, I pulled together the air, maritime and diplomatic aspects in my PhD thesis at the University of Plymouth. The book has been adapted from the thesis, so unlike a lot of books on the Battle of Britain, it has already received considerable academic scrutiny through the publication of academic articles and public lectures."

Was it published by an American imprint because nobody in the UK would touch it, due to its controversial take on the Battle of Britain?

"I did submit it to a number of UK publishers before taking it abroad. None of them gave this as a reason for rejecting it, but one does wonder. To be fair, it's hard for a new author to get published these

days because there aren't as many publishers as there used to be. I went to the NIP (Naval Institute Press) because it has a solid reputation as an academic publisher and there seemed more chance of a wider audience in America - not least because the Americans are part of the story."

In your view, what are the cardinal sins committed against the Royal Navy in relation to its role during the period of the Battle of Britain?

"Despite the fact that we have had a maritime defence strategy for generations, the Royal Navy has not received recognition for its centrality in national defence during this time. Many people think that because the Pacific war revolved around airpower, British warships must have been helpless in the face of the Luftwaffe. Nonsense! The Luftwaffe was not comparable with the Japanese Air Force in a maritime role because of substantial differences in equipment and training. It's also an insult to British sailors to suggest they could not stand up to air attack. All the naval campaigns of WW2, including Crete, show clearly that British sailors did stand up to murderous fire without the mass psychological breakdown that might have been expected. The legend also ignores the ordeals of the Merchant Navy sailors whose losses maintaining the vital logistical supply lines exceeded those of all RAF commands at this time. We also need to give more recognition to the maligned Admiral Sir Charles Forbes whose ships crippled the Kriegsmarine at Norway and who was one of the very few senior figures to retain an accurate strategic grasp of the invasion situation. Forbes helped build a powerful navy between the wars and despite tight financial constraints aggravated by the RAF's perceived need for strategic bombers, the Royal Navy was not the backward looking organisation that some writers portray. Rather it was a tough, pragmatic outfit that made successful tactical revisions to its operations throughout."

Is the primary guilty party the arch political spin-master Winston Churchill, whom you make perfectly clear actually didn't believe the UK could be invaded by sea?

"I don't think Churchill originally intended to mislead everyone into thinking it was all about the air - in fact his original Battle of Britain speech talked-up the Army, Navy and RAF. As far as invasion was concerned his official correspondence in August to the Commander-in-Chief Home Forces made it clear that Britain's tank force should be sent to North Africa, as he didn't believe the south coast was in serious danger at the present time. He also told his private secretary that he didn't think the Germans would invade but he would continue to talk about long and lonely vigils to keep everyone tuned to readiness. After the war he told Admiral Forbes that he never thought an invasion was possible. Despite this, I wouldn't call him an 'arch political spin-master' because his attempts at manipulation sometimes backfired, as happened when he tried to blackmail President Roosevelt into giving more aid by raising fears of the British fleet falling into German hands. This merely led to American press speculation about withholding war supplies in case they would later be used against America. Churchill's



A screen capture from the start of the MGM movie 'The Battle of Britain'. The excellent cinematography, access to period aircraft, an outstanding cast and fine acting have been quintessential in the myth and legend building surrounding the air battle. The movie has inaccurately taken on the mantle of a documentary. Only now is the battle being placed into the proper context. (MGM)

praise of 'The Few' was actually made at the urging of the Foreign Office because they recognised the air campaign was Britain's best propaganda asset at the time. He was also persuaded to film an introduction to a widely distributed propaganda film about the Battle of Britain made by the famous American director, Frank Capra. In this, he urged the British public to accept the film as 'the facts', but in reality it was riddled with exaggerations and dodgy facts. Of course, he was happy to go along with all this because he identified with the young pilots and knew the story would go down well at home and abroad. At least Churchill's memoirs admitted to him being more worried about the Battle of the Atlantic than he ever had about 'the glorious air fight called the Battle of Britain'."

You discuss the merits, or otherwise, of coastal artillery being able to close the Dover Straits, never mind the Luftwaffe dominating the air. Do you think the fear of coastal artillery is another example of myth-making, inspired, or reinforced, like the Battle of Britain legend, by a movie, in the former case by the Guns of Navarone?

"I hadn't thought of that, but you have a point. Sadly, many people get their perceptions of history from feature films like the 'Guns of Navarone' and the facts are frequently wrong. For example, another movie, 'The Court Martial of Billy Mitchell' has misled people into thinking that airpower would inevitably supersede seapower and fails to make clear that his experiments to sink old battleships by bombing during the 1920s were nothing more than contrived publicity stunts. As for the 'Battle of Britain' film being considered any kind of an objective account viewing events from both sides of the Channel - words fail me."

You contend that German bombers were not necessarily a match for British warships in 1940 - why is that? Is it not true that the Home Fleet was worried after its experiences in Norway about the effectiveness of 'bombers versus battleships'? During operations off Norway, the battleship HMS RODNEY was hit by a bomb that penetrated deep, hitting her armoured deck - even cracking it and almost penetrating a cordite handling room - but did not explode, only due to the detonator being separated from the explosive. Did this not act as a deterrent to deploying the scarce capital ships available to the RN at the time of the Battle of Britain to fight any cross-channel invasion attempt?

"I stand by my contention. Admittedly, the First Sea Lord was shaken by the damage caused to the heavy cruiser HMS SUFFOLK by dive bombing and both sides had taken heavy losses in the Norway campaign. This may also have contributed to the later decision to base the heavy ships of the Home Fleet in Scotland and leave the initial fighting to the powerful destroyer flotillas based in the Channel. Remember though,

no capital ships were sunk by bombing alone and while the Royal Navy losses were sustainable, the German losses in capturing Norway were not. One of the main lessons learned at Norway was the need for smaller ships to shelter under the anti-aircraft barrages of the larger ships. The new destroyer GURKHA was lost because she had detached from the main formation, it seems in order to improve arc of fire from her own guns. Furthermore, we have accounts from figures such as Admiral Hamilton, who praised the steadfastness of his ratings under salvos of bombs and remarked that 'so long as one has sea room and independence of manoeuvre in a ship of this size [a cruiser] one is most unlikely to be hit.' As for the RODNEY incident, I think this says something about the deficiencies of German bombs. My interview with a member of RODNEY's crew rated the ship highly in terms of her ability to withstand battle damage. Also, remember that the capital ships of the Home Fleet were based at Rosyth during September 1940 and the initial contact with poorly defended and slow invasion barges in the Channel would have been made by the night-fighting destroyer flotillas based at Plymouth, Portsmouth and The Nore. These destroyers were very nimble at dodging bombs, but as the Germans planned to cross at night, it is hard to see what role aircraft could have played against warships in this crucial initial phase. As the Germans recognised, even in daylight aircraft could not have done much once the warships had



The RN battleship HMS RODNEY. RODNEY and her sister ship NELSON were the most powerful battleships in the European theatre during 1940. They were placed on standby at either ends of the English Channel during 'The Battle of Britain' to repel a possible German invasion. They could have appeared very quickly to wreak havoc on the undefended German invasion fleet consisting of Rhine river barges.

got among the barges. If the Home Fleet had found it necessary to enter the Channel and cut the supply lines of any troops that made it ashore, then, as Admiral Doenitz later admitted, the Luftwaffe didn't have bombs of the right calibre to more than dent a capital ship. In any case, the Luftwaffe would have been distracted by the need to support their landed troops who lacked conventional artillery. Finally, it must be remembered that only three of the 12 capital ships sunk between September 1939 and November 1941 had been sunk by air attack alone and these were Italian battleships sunk in harbour by aerial torpedo. The Luftwaffe lacked both decent torpedo-bombers and reliable aerial torpedoes in 1940."

Can you explain to us the wider relevance of using the phrase the Battle for Britain rather than the Battle of Britain and who, in the end, won the former?

"I think historians will always have to contend with the fact that after 70 years, the perception of the Battle of Britain as the exclusive air campaign that prevented invasion is now indelibly stamped upon the British public. I think that by using the wider term Battle for Britain, we might get more recognition for 'the many' and a wider understanding of



The British Prime Minister Winston Churchill. His now famous speech about "the few" had six lines of text devoted to Fighter Command's effort during 'The Battle of Britain'. However, 22 lines were devoted to Bomber Command. As a skilful politician he later used the victory as a propaganda tool and made more of it than it was in order to boost morale and entice the US to join the war.

the complexities of combined operations. I would also like to see a Battle for Britain monument dedicated to a wider range of participants bearing in mind, for example, that the losses of Bomber and Coastal Commands easily exceeded those of the fighter boys at this time. Somehow, I doubt this will happen. Historians often summarily dismiss German ace Adolf Galland's claim that there never was a Battle of Britain as such, so Germany could not have lost it. However, this extraordinary claim makes some sense when you realise that Galland meant Operation Sea Lion, the invasion battle that was never fought. As to who won the Battle of Britain air campaigns - I see it as an inconclusive draw. The Luftwaffe focus on airfields containing the vital sector stations, superior German fighter tactics, the internal feuding of the main RAF commanders and the diminishing pool of experienced British fighter pilots during the 'critical phase' gave Germany a reasonable degree of air superiority over the landing grounds by early September. It wasn't that Goering frittered away this advantage by changing the focus to London, it was belated recognition of the fact that any advantage gained in the air could not compensate for the immense superiority of British naval forces in the crossing area. However, the refusal to acknowledge the Luftwaffe's success over Kent and Sussex gave Hitler and the German Naval Staff an excuse for not proceeding with an operation they didn't want to carry out anyway. The night bombing phase showed up Fighter Command's inability to protect the civilian population and the failure to break the British people can now be seen in terms of the failure of interwar airpower theorists to make accurate predictions. Later, German civilians stood up to even heavier bombing and after 70 years, bombing alone has yet to win a war. So how is the failure of the Luftwaffe to achieve the impossible a symptom of their incompetence? In the end, the Battle of Britain air campaigns alone could decide nothing, so that is why I say neither the RAF nor the Luftwaffe won it. In effect, the wider

Battle for Britain was more a victory for the 'fleet-in-being', but even this would be an over-simplification. It was certainly our 'finest hour', and the inability to invade may have cost Hitler the war, but this was a consequence of the Battle for Britain."

Has the Merchant Navy been unjustly ignored yet again in the context of those desperate months in the summer and autumn of 1940?

"I was glad to see that James Holland and Steven Bunghay gave recognition to the Merchant Navy on television recently but it is still rare for merchant seamen to get a mention. Few people seem to realise that around 1,730 merchant seamen were killed keeping the vital Atlantic lifeline open between 10 July and 31 October 1940 as compared to around 1,494 airmen in the air campaigns. This is not to demean the genuine sacrifice of RAF participants in any way, but serves to remind people that sacrifices were expected of all service organisations and sections of society. It is worth remembering that merchant seamen had to operate anti-aircraft guns in the teeth of ferocious Luftwaffe attacks and were sometimes accused of cowardice owing to their lack of a recognisable uniform."

Would you say in conclusion that the Battle of Britain was a necessary confidence trick perpetrated by Churchill and the media of the day in order to encourage America to support Britain in its darkest period of WW2?

"Yes, absolutely! The nation couldn't feed itself and was desperately short of most basic war materials, so we needed American support. Britain was also facing bankruptcy by the end of 1940. Unfortunately, a lot of Americans thought we had conned them in 1914-18 and made it illegal for the British to be given war materials on credit. President Roosevelt was sympathetic but even his attitude was ambiguous, bearing in mind his desire to weaken British imperialism abroad. Churchill's early attempts to blackmail America into helping backfired badly, so the British were desperate to convince Americans that Britain was their first line of defence. To begin with, the press evidence suggested that American concerns centred upon the fate of the Royal Navy shield, but as they realised Britain would fight on, they focused on the air campaigns instead. American cultural preferences were for the young men of Fighter Command and all the propaganda agencies worked towards promoting the image of the RAF, not least because some airmen were American volunteers. The American media was always friendly and Anglo-Americans collaborations such as 'London Can Take It!' were made by the British Crown Film Unit but with an American narration to disguise the fact that it was a mainly British production. Churchill's emotional appeals to the War Cabinet were never going to cut any ice unless he could hold out the prospect of substantial help from the USA. Without this, some kind of compromise peace with Germany would have been inevitable."

Finally, do you have any invitations from the RAF to go and explain yourself?

"Strangely, no. And if they issue any, I will require a tin hat and a substantial fee! Seriously, one can understand why the RAF is protective over these legends because the Royal Navy has a tradition going back hundreds of years and by comparison the RAF has little to compare if you take away the Battle of Britain. The air battles over Germany were far more intense but the bombing of Dresden will always be brought up. By the way, none of this means I think the RAF should be abolished or anything like that. Maybe their present role needs to be enlarged but I still think we should recognise that in 1940 air power was an adjunct of sea power, not the other way around."

Reprinted from WARSHIPS IFR magazine with the kind permission of its eminent editor.

HATCH: CANBERRA LAUNCHED IN SPAIN

On 17 February 2011 the hull of the first of two new amphibious ships was launched in Spain, heralding a new era for Australia's amphibious capability.

Chief of Navy Vice Admiral Russ Crane led the launch and said the event was enormously significant.

"These ships are officially known as Landing Helicopter Docks or LHDs and are the largest the Australian Navy has ever owned," Vice Admiral Crane said.

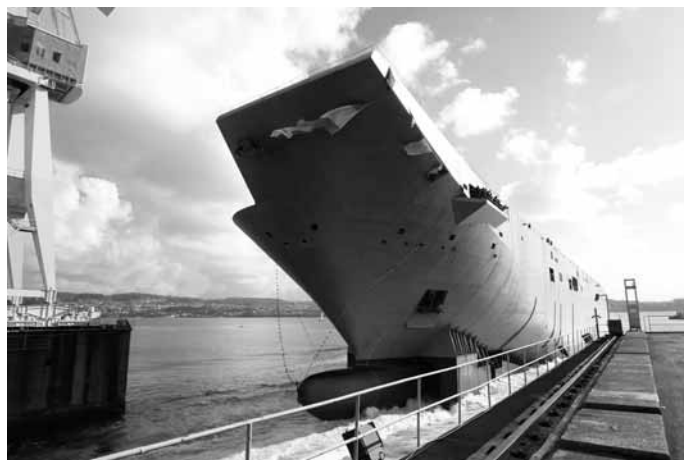
LHD01's hull launch was held at the Navantia dockyards at Ferrol in northern Spain with the event having a distinctly Australian feel, as children of Australian diplomats in Spain joined the official delegation, waving Australian flags. A Canberra regional sparkling wine was broken over the Canberra class ship's hull. Vicki Coates, wife of the late Rear Admiral Nigel Coates, who commanded the previous HMAS CANBERRA, was the 'launch lady'.

Vice Admiral Crane said that with a new generation in technology would come a new way of thinking in terms of how Navy would operate and crew this new capability.

"We are well progressed in our planning for the LHD arrival. I am confident we will have the people and the knowhow by the time the first LHD comes on line. Most importantly for now, this project is on time and on budget."

Both ships will be based at Garden Island in Sydney. Crewed by all three services, the LHD will mark a significant strengthening of the ADF's amphibious capability and tri-service culture.

First of class, HMAS CANBERRA (LHD-01) will arrive in Victoria next year where it will be fitted out before being accepted into service in 2014 with sister ship HMAS ADELAIDE (LHD-02) to follow the year after.



CANBERRA sliding into the water for the first time in Spain. (Defence)



CANBERRA at launch. Her island superstructure is being built in Australia and will be mated to the ship once it arrives by ship-lift in Melbourne in approximately two years. (Defence)

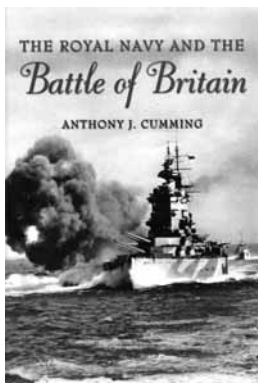
CANBERRA in the water. An appreciation of her size can be seen with the tug boat going down her port side. (Defence)



BOOKS

The Royal Navy and the Battle of Britain

By Dr. Anthony J. Cumming
 Hardcover: 256 pages
 Publisher: Naval Institute Press
 (31 Aug 2010)
 No images
 Reviewed by Dr Roger Thornhill



Since the 1969 movie *The Battle of Britain* was released it has taken on the stigma of a documentary with many of the facts of the day forgotten, and many misinterpretations made extending all the way up the academic chain. However, a new book has come along that tries to set the correct context of the events in the summer of 1940.

The Royal Navy and the Battle of Britain is an account of the period in military history known, possibly inaccurately, as the Battle of Britain, which puts the emphasise of Britain's survival in the hands of the Royal

Navy, rather than the RAF. This very persuasive study confronts the key myths surrounding the Battle of Britain to revise the relative status of maritime and aviation factors in the defence of Britain during the summer of 1940. Without denigrating the heroism of the fighter pilots, Anthony Cumming challenges the effectiveness of the RAF in 1940 and gives the Royal Navy much greater prominence than others have. He vigorously asserts the ability of British warships to frustrate German plans for Operation Sea Lion and to repel Luftwaffe attacks. The author argues that the RAF took the lions' share of the glory only because its colourful image could easily be used by Prime Minister Churchill to manipulate American opinion and thus involvement in WW II. Cumming contends that anniversaries of Battle of Britain should celebrate the contributions of the many rather than focusing on the pilot elite "few", an assertion that will hopefully provoke discussion.

I found the book to contain an impressive amount of detail to support the author's argument. He outlines nearly everything from that period such as fighter commands ability and competence to direct the air battle, pilot training, personal conflicts among the RAF's upper most officers, Operation Sea Lion, German air dropped bombs and their effectiveness against armoured ships to the performance of the RN against the Luftwaffe in Crete and Norway campaigns, just to mention some of the topics discussed.

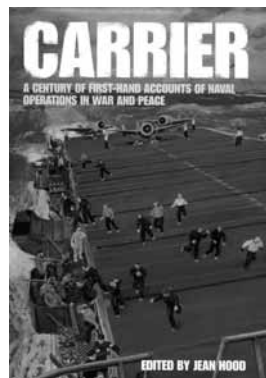
The Royal Navy and the Battle of Britain is a most influential read and a must for any historian wishing to learn from the lessons of history, in order to not repeat the mistakes of the past.

Dr Anthony J. Cumming; after a long career in the British civil service, he earned a PhD in history in 2006 and won the University of London's Julian Corbett Prize for his research. He lives in Devon, UK.

(For an interview with the author see earlier article '*The RN's Battle for Britain - Interview*')

Carrier: A Century of First-hand Accounts of Naval Operations in War and Peace

Jean Hood [Ed.]
 Publisher: Conway Maritime,
 London, (July 1, 2010)
 Hardcover: 456 pages
 Reviewed by John Jeremy



In the first decade of the 20th Century developments in naval warfare were occurring at a great pace. The battleship HMS DREADNOUGHT, completed in 1906, is well known as a revolutionary step in the design of the battleship, but it was the rapid development of the aircraft which was to have a much more profound effect on naval warfare. It is now over a century since an aircraft first flew from a warship. In that century the battleship has disappeared from the seas and the aircraft carrier has become the capital

ship of naval fleets and, together with the submarine, is a principal means of power projection by sea.

Much has been written about the development of the aircraft carrier, from the very simple and basic ships of the early years to the enormous nuclear-powered carriers of today's US Navy. Much has also been written about carrier actions in war but *Carrier* is different — Jean Hood has gathered together in one volume many recollections of the men and, more recently, women who have served in aircraft carriers in peace and war. Many of the stories are contemporary accounts drawn from archived memoirs and private papers. Others come from official reports, oral histories and other published material. Connected by an historical introduction at the start of each chapter they are personal stories and add a very human touch to the account of life in these ships and the perils, challenges and excitement of flying from them.

Recollections include considerable detail about the actions of World War II. For example, the achievements of HMS ILLUSTRIOUS and her aircraft at Taranto have been described many times, but the personal accounts of those who flew the aircraft or prepared them and waited for their return add a new and human dimension to the history.

The material in *Carrier* has come from those who served in many navies, including Australia. They include recollections of war, disaster relief, 'showing the flag', peacekeeping and training. The stories are inspiring and often sad, telling of tragedy and loss — but there is also humour. A visit in 1959 to HMS EAGLE by Queen Elizabeth and Prince Charles is recalled by a senior pilot in the ship at the time. Whilst Her Majesty was entertained in the Wardroom after their tour of the ship the young Prince, 11 years old, was taken to the Wardroom Anteroom by some of the officers. When asked if he would like a drink he replied "Yes, please, a gin and tonic." Unfortunately we are not told how this challenge was met.

Carrier is a large book, over 430 pages, but it is not a book which must be read from cover to cover at one time. It lends itself to browsing and is recommended for the bookshelves of all those interested in the history of naval aviation and life in aircraft carriers.

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.
- Advocates measures to foster a build-up of Australian-owned shipping 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 off both East and West coasts simultaneously and advocates a gradual build up of the Fleet and its afloat support ships to ensure that, in conjunction with the RAAF, this can be achieved against any force which could be deployed in our general area.
- Believes that the level of both the offensive and defensive capability of the RAN should be increased and welcomes the 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, recommends that the future force include 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.



THE NAVY LEAGUE OF AUSTRALIA FIFTH ANNUAL MARITIME AFFAIRS ESSAY COMPETITION 2011

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

TOPICS

- 20th Century Naval History
- Modern Maritime Warfare
- Australia's Commercial Maritime Industries

CATEGORIES

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

Professional, which covers Journalists, Defence Officials, Academics, Naval Personnel and previous contributors to *THE NAVY*; and

Non-Professional for those not falling into the Professional category.

Essays should be 2,500-3,000 words in length and will be judged on accuracy, content and structure.

PRIZES

- **\$1,000, \$500 and \$250** (Professional category)
- **\$500, \$200 and \$150** (Non-Professional category)

DEADLINE

15 September 2011

Prize-winners announced in the January-March 2012 issue of *THE NAVY*.

Essays should be submitted either in Microsoft Word format on disk and posted to:

Navy League Essay Competition
Box 1719 GPO, SYDNEY NSW 2001

or emailed to 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.



NUSHIP CANBERRA on the morning of her launch with the keel section of NUSHIP ADELAIDE on the slipway at the bottom of the image ready to be placed into position once CANBERRA is launched. (RAN)

