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THE NAVY

The Magazine of the Navy League of Australia

HMAS MELBOURNE (II) – 25 Years On

*A Defiant
Stand*

*Modern
Under Sea
Warfare*

Australia's Leading Naval Magazine Since 1938

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An ESSM (Evolved Sea Sparrow Missile) leaves the Mk-41 launcher of HMAS SYDNEY during sea trials off the NSW coast. This was the first ESSM firing from an FFG-07 class frigate. The ESSM was added to improve the class's ability to defend themselves against the latest generation of anti-ship missiles. (RAN)



(Front to back) The new Singaporean Delta class frigate FORMIDABLE and the Indian Navy Project 16A frigate INS BRAMAPUTRA together during a combined exercise in the Indian Ocean. The exercise, known as Malabar, involved ships from Australia, India, Singapore, Japan and the U.S. (USN)



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Volume 69 No. 4

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Front cover: The Anzac class frigate HMAS BALLARAT battling big seas on her return voyage to Australia after a successful deployment to the Persian Gulf (RAN)

The Navy

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Time to bring back the Pride

It has been reported that the Howard government may order a fourth air warfare destroyer (AWD), much to the delight of *THE NAVY* which has been pushing for a fourth for some time – although an upcoming election could have an affect on this. A fourth AWD would alleviate the capability shortfall in not acquiring the Gibbs & Cox Evolved AWD contender.

With a fourth AWD would come the inevitable and sometimes controversial issue of the ship's name. Politicians love to name ships after their home towns or cities, as we saw with the second LHD being named ADELAIDE given that the then Defence Minister hailed from that State. If a fourth AWD is acquired a name change of the second LHD might be appropriate.

As the AWDs are being built in Adelaide it would make sense to name the fourth AWD ADELAIDE in honour of the place they were made. That ship would then have a far better link to that city and State than the LHD which will be made in another State (possibly even in another country). The LHD that was to be named ADELAIDE could then be named HMAS AUSTRALIA.



The WW II RAN battle cruiser HMAS AUSTRALIA at sea. (RAN)

There is of course precedence for this. During WW II the RAN's biggest and most important ships were named AUSTRALIA and CANBERRA. As the first of the new LHDs is to be named CANBERRA it would make sense to have these matching pair of names for the new ships.

There are also 'spin offs' to national pride and international standing for having the name AUSTRALIA as a serving unit of the Navy. Apart from being the obvious Flagship its presence would be a very visible indicator of Australia's commitment to any situation the ship was sent to, from disaster relief to full scale military operations. Imagine people on the shore in a disaster zone being told that Australia was here to help and seeing a large naval ship off the coast named AUSTRALIA. Ceremonial duties such as fleet reviews and national days of neighbours and allies would also receive a boost from seeing our country's namesake involved. The positive impression that could be made for Australia's international standing having a major warship named after it would be priceless. As proud hard-working Australians we deserve a ship named after us and this great nation of ours. The name AUSTRALIA needs to be brought back into the RAN/ADF's order of battle. It is time to bring back the pride.

The Claws of the Bear

Is it just me or are others worried about what the Russians are up to? Despite there has been no change to the geo-strategic balance Russian President Vladimir Putin recently announced the resumption of strategic bomber patrols, something not seen since the cold war. The purpose of the strategic bomber patrols is to be airborne and ready with nuclear weapons in

case a surprise nuclear attack affects Russia's ability to respond with land based nuclear weapons. One of these patrols was recently intercepted as it strayed into US airspace at the Pacific island base of Guam.

More recently, and in a direct resemblance to the cold war, a 'Bear' reconnaissance aircraft was intercepted by RAF Typhoon fighters trying to enter UK airspace. 'Bears' have also recently been shadowing NATO and US maritime exercises in the North Atlantic.

The old Soviet style of 'Bear', 'Badger' and 'Backfire' regimental raids on fleets at sea are also starting to see a come back with training flights and live missile firing exercises recommencing after a 17 year break. Russia has also recently announced a building programme consisting of six large aircraft carriers. On top of this, Russia is already the largest exporter of arms around the world and recently sold Indonesia two Kilo class submarines, main battle tanks, attack helicopters and more multi-role Flanker fighter aircraft.

It is also worrying to see the Russians and Chinese now so closely aligned and conducting joint military exercises, including live fire demonstrations. Worrying as both see themselves as competitors to the US and thus the West.

Despite the end of the cold war the Russians have not lost any of there military technology prowess. While weapon and platform numbers have fallen most of these have been obsolete systems which could be discarded. Russian technology, and the doctrine developed to employ it, is still something we in the West do not fully understand or appreciate.

In the naval sphere Russian weaponry is impressive. Its new anti-ship missiles are much smarter than those employed in the cold war days and still pack a bigger punch than their Western counterparts, as well as retaining their supersonic pedigree. Their ships have been built with multiple layers of air defences. We in the West tend to follow the American model in warship design and have few layers or limited amounts of ammunition for those layers. This may prove disastrous as the US build naval ships as part of a system of systems approach. This naval system involves big nuclear powered aircraft carriers with nearly 100 fixed wing aircraft to form multiple layers of defences through air superiority at significant ranges. No one else in the West has this capability. So copying the US philosophy of warship design may prove unwise when going against Russian naval platforms that do not bank on air superiority, and whose designers have already developed systems and techniques to counter it.

If the above is anything to go on then it would appear the Russians want their former Super Power title back. If so then the Pacific Ocean battlespace just got more dangerous. Welcome to the new post new world order.

Themistocles



In a scene never thought likely to happen again, an RAF fighter (in this case a new Typhoon closest to camera) escorts a Russian 'bear' reconnaissance aircraft near UK airspace recently. (RAF)

The League has always encouraged and supported the participation of young people in maritime activities. Indeed, one of the League's principal objectives remains "to promote, sponsor, and encourage the interest of Australian youth in the sea and sea-services, and support practical sea-training measures". This year, 2007, the League is celebrating the centenary of the Australian Naval Cadets.

It was expected that the Australian Naval Cadet (ANC) organisation would also take part in centenary celebrations. Unfortunately, due to what was said to be some uncertainty as to what was the correct date, the ANC decided not to proceed with its planned commemoration. Despite the misgivings expressed by some in the ANC there seems little doubt that the Australian Navy Cadets began in 1907.

Private Navy cadet organisations had existed prior to the creation of the Australian Naval Cadets. They may have been inspired by the Boys Brigades which had existed in Britain since the end of the Crimean War.

Boys Naval Brigades, as they were called, were active in various places. They were supported by their local community, or in some cases churches. Early examples are the Ballarat Boys Naval Brigade and the Presbyterian Naval Boys Brigade.

The formation of an Australian Commonwealth Naval Cadet corps was authorised by the Defence Act 1903. Recruiting for this corps started in Victoria at Williamstown in March, 1907. The formal commencement was on the 1st July, 1907.

At about the same time a naval cadet unit was formed at Largs Bay in South Australia. The cadets trained at the Largs Bay Naval Drill Hall. Other units were subsequently established around Australia.

In 1910 the government passed the Universal Training Scheme legislation. As a consequence the Australian Navy Cadets in 1911 became part of what was then known as Royal Australian Naval Reserves (Obligatory). It seems that at this time the earlier private cadet organisations either ceased to exist or were absorbed into the RANR(O). The Church of England Naval Brigade may have continued until 1914.

These arrangements remained in place until the suspension of the Universal Training Scheme in 1929. Thereafter to the start of war in 1939 they were the RANR cadets, a greatly reduced volunteer force, operating much as they had in the period 1907-11.

The government cadet organisation, under whatever name or title it from time-to-time operated, was not alone.



Cadets from TS CANNING marching. Although not a recruiting organisation there is no doubt that cadets provide a substantial number of recruits to the RAN. (RAN)

In 1920, a new private naval cadet organisation was created. Consistent with its aim of encouraging the interest of Australian youth in the sea the Navy League of Australia established the Navy League Sea Cadet Corps (NLSCC). First begun in Sydney it spread over time to every State.

When WWII commenced in 1939, the RANR cadets ceased to operate. They did not resume until 1948. The Navy League Sea Cadet Corps continued throughout the war, albeit reduced to 12 units.

For the first 25 years after the WWII the cadet story really was the story of the Navy League cadets. The Corps was renamed the Australian Sea Cadet Corps. From 1950, it received support from Navy.

It grew rapidly. By 1970, there were more than 30 units and 2500 cadets. A consequence of this growth was to place an increasing strain on what was still essentially, and despite the assistance the Navy was providing, a volunteer organisation.

After several years discussion and negotiation it was in 1972 agreed that Navy would become responsible for the training of both the Navy League cadets and the RANR cadets. It was agreed that the two cadet organisations would be merged into one new entity, to be named Naval Reserve Cadets. At the time of the merger there were some 2000 Navy League Sea cadets and 300 RANR cadets.

The merged cadet organisation has continued to grow. In this centenary year of 2007, there are now 97 units. In 2002, there was a further name change. The Navy Reserve Cadets reverted to the original 1907 name, Australian Navy Cadets.

The cadets have served Australia well. They are a valuable community based organisation giving opportunities to young boys and girls. It has been said that in

many respects its primary role has been that of a character building, good citizenship training organisation.

Although it is not a recruiting organisation there is no doubt that the cadets provide a substantial number of recruits to the RAN. I was recently at a cadet unit where they had an honour board listing those cadets who had joined the RAN. I counted over 100 names, including a serving Commodore. When I mentioned this to another unit they proudly told me their board had over 200 names.

In many places in Australia the cadets are the only naval presence and the only naval uniforms their fellow Australians customarily see.

The success of the cadets is not simply the work of the Navy or the League. In many senses it is a tribute to the volunteer. Over the past 100 years the volunteers must number many 1000s of people, officers, instructors, the members of the League and of parents groups who all have made a contribution. Many people continue to do so today.

The League retains a strong interest in the welfare and advancement of the ANC. Many members are involved with cadet units. Financial assistance is provided by the League in appropriate circumstances. The League makes representations to Government, Parliamentary Committees, Navy and Defence in support of the cadets. Both at a State and Federal level the League offers prizes or awards. Each year the Chief of Navy presents to the best cadet unit in Australia the Navy League of Australia Annual Efficiency Award.

The League is glad to have made a contribution to the growth and development of the Australian Navy Cadets. We congratulate them on their first 100 years.

Mr. Graham Harris



Notice is hereby given that the
ANNUAL GENERAL MEETING
 of
THE NAVY LEAGUE OF AUSTRALIA
 will be held at the Brassey Hotel, Belmore Gardens, Barton, ACT
On Friday, 19 October 2007 at 8.00 pm
BUSINESS



1. To confirm the Minutes of the Annual General Meeting held in Canberra on Friday 13 October, 2006
2. To receive the report of the Federal Council, and to consider matters arising
3. To receive the financial statements for the year ended 30 June 2007
4. To elect Office Bearers for the 2007-2008 year as follows:
 - Federal President
 - Federal Vice-President
 - Additional Vice-Presidents (3)
 Nominations for these positions are to be lodged with the Honorary Secretary prior to the commencement of the meeting.
5. General Business:
 - To deal with any matter notified in writing to the Honorary Secretary by 9 October, 2007

ALL MEMBERS ARE WELCOME TO ATTEND

By order of the Federal Council

Philip Corboy, Honorary Federal Secretary, PO Box 2063, Moorabbin VIC 3189
 Telephone 1300 739 681 Fax 1300 739 682

HMAS MELBOURNE (II) - 25 YEARS ON



The RAN's most famous warship. The Majestic class aircraft carrier HMAS MELBOURNE. (RAN)

By Commander David Hobbs MBE, RN, (Rtd)

HMAS MELBOURNE served as the RAN's flagship for 27 years, longer than any of her predecessors. She was the third and most capable aircraft carrier commissioned into the RAN and was arguably the most potent weapons system ever deployed by the Australian armed forces. Her retirement 25 years ago this year left the nation with a gap in capability that has not been filled and is sorely missed.

Background

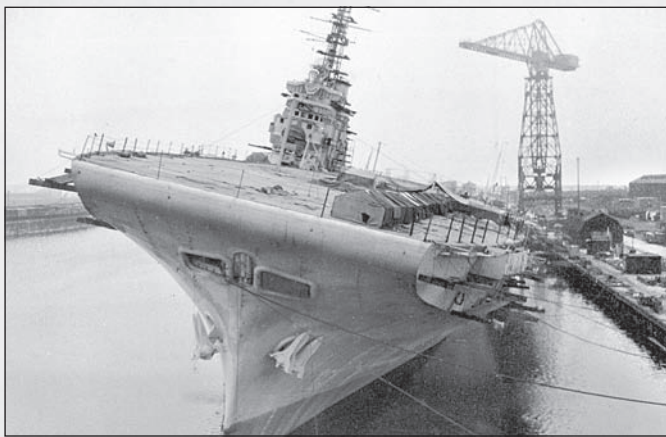
The hull that was to become HMAS MELBOURNE was laid down as HMS MAJESTIC; name ship of a class of six improved '1942 design' light fleet carriers at Vickers Armstrong's Yard at Barrow-in-Furness on 15 April, 1943. The UK's Admiralty Contracts Department instruction to proceed received by the shipbuilder stated simply "I have to request that you will proceed with the construction and completion in all respects of one in number light fleet carrier for His Majesty's Navy in accordance with the accompanying

drawings". In retrospect the emphasis that only one ship was to be built against the contract is amusing. The MAJESTIC's incorporated detail improvements in flight deck design and habitability over the earlier Colossus class, ten of which were laid down and four of which arrived in Australia too late to see action against the Japanese with the British Pacific Fleet in the last days of World War II. MAJESTIC was launched on 28 February 1945 by Lady Anderson, wife of Sir John Anderson the British Chancellor of the Exchequer.

In August, 1945, the Admiralty ordered work on MAJESTIC to be suspended and she was laid up, incomplete, in a basin at the shipyard. Work resumed in 1946 at a slow pace to incorporate lessons learnt in the operation of the Colossus class, which had been finished to an austere wartime standard, so that she could be completed for operational service if necessary. In 1947 she was bought by the Australian Government together with her sister ship TERRIBLE which was fitting out in HM Dockyard Devonport. The two carriers were purchased for the price of one, at a contract price of £2,750,000 plus £450,000 each for the initial outfit of stores, ammunition and fuel. TERRIBLE was more advanced and completed to the original design in December, 1949, commissioning into the RAN as HMAS SYDNEY. Work on MAJESTIC proceeded more slowly and the design was re-cast several times before 1952 when it was decided to incorporate all the post-war British inventions that improved the operation



The Royal Navy aircraft carrier MAJESTIC being launched. She would later become HMAS MELBOURNE. (RAN)



HMAS MELBOURNE undergoing heeling trials. (RAN)

of aircraft from carriers. These included the angled deck, steam catapult and mirror landing aid which enabled her to operate the new generation of British jet and turbo-prop aircraft that had been ordered for the RAN. The angled deck required the suppression of some of the close-range weapons mounted on sponsons on the port side and the substitution of a large structure to support the new deck. The catapult required cylinders to be fitted under the flight deck forward and the installation of a steam recuperator and a considerable amount of pipe-work. The mirror required a sponson on the port side aft and a structure to take the battery of source lights. A stand-by mirror was sited on the flight deck aft of the island with another set of source lights. The opportunity was taken to bring the aircraft direction facilities and radar outfits up to the latest RN standard and to improve the standard of accommodation, especially the junior sailor's mess decks, although these were to remain cramped throughout MELBOURNE's life. The amount of fresh water needed to provide steam for both propulsion and the catapult led to water rationing during the ship's early years.

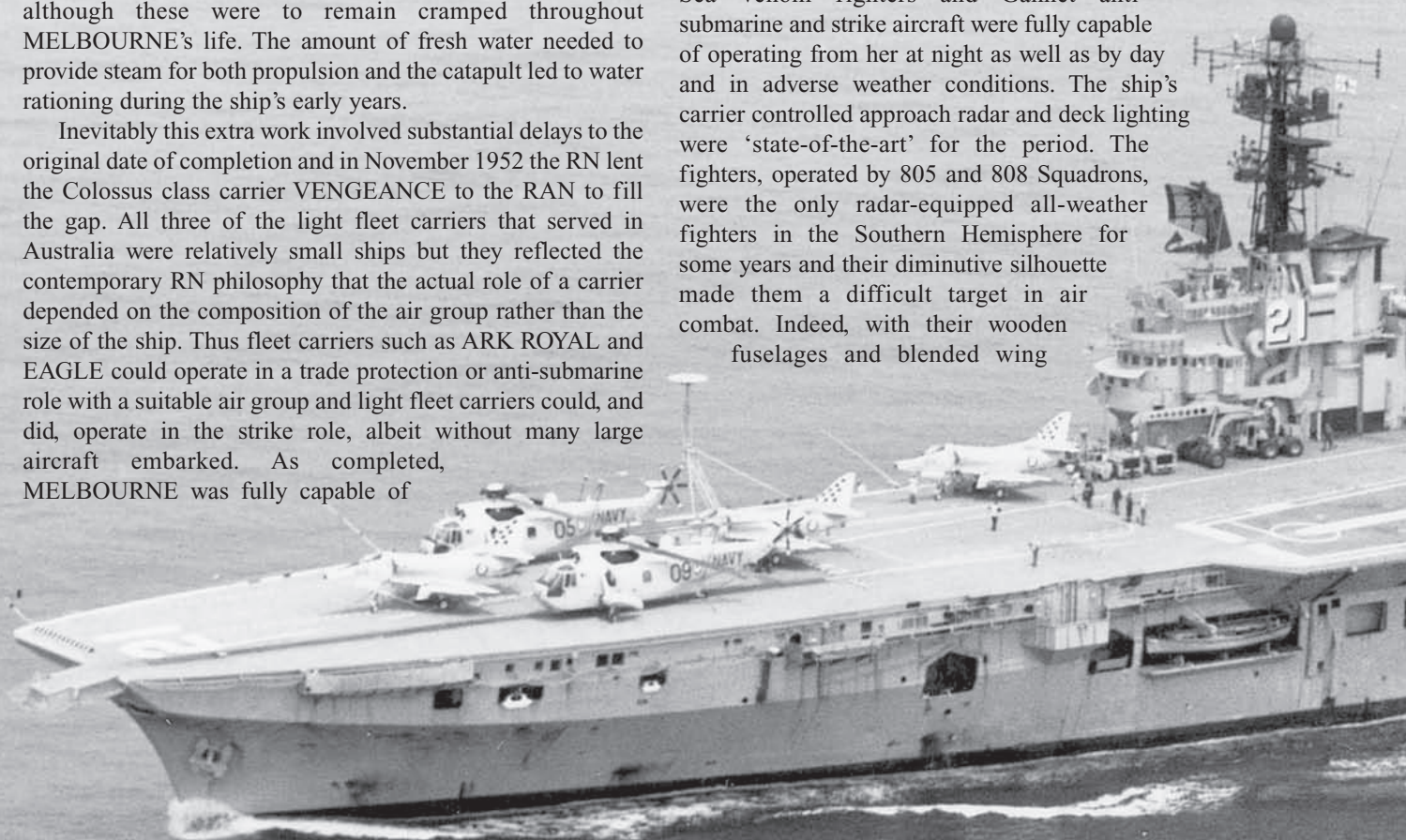
Inevitably this extra work involved substantial delays to the original date of completion and in November 1952 the RN lent the Colossus class carrier VENGEANCE to the RAN to fill the gap. All three of the light fleet carriers that served in Australia were relatively small ships but they reflected the contemporary RN philosophy that the actual role of a carrier depended on the composition of the air group rather than the size of the ship. Thus fleet carriers such as ARK ROYAL and EAGLE could operate in a trade protection or anti-submarine role with a suitable air group and light fleet carriers could, and did, operate in the strike role, albeit without many large aircraft embarked. As completed, MELBOURNE was fully capable of

operating second generation jet fighters such as the Sea Hawk, Sea Venom and Banshee. Admiralty plans to modify the light fleets to operate third generation jets such as the Scimitar had been prepared but were abandoned after the notorious 1957 Defence White Paper which cut deeply into the British order of battle. In the Korean conflict SYDNEY and her British sister ships had shown themselves to be effective carriers and flew large numbers of strike missions with the last generation of piston-engined fighters, the Sea Fury and Firefly. By 1953 the light fleet carriers were often flying over one hundred sorties in a day and the Australian Fleet Air Arm, which had only been formed in 1948, had won the respect of the Royal and United States Navies.

Despite early misgivings about their ability to operate later generations of aircraft, MELBOURNE and her sisters were a good investment for the RAN. Their Admiralty pattern machinery was similar to that in contemporary cruisers and destroyers and the need for manpower was reasonable. USN small carriers, such as the converted cruisers of the Cowpens class might have been made available but were less capable and would, at the time, have been more difficult to assimilate. Larger carriers such as the British '1943 design' light fleet carriers could have been procured but it was considered at the time that they would have been too expensive to man and maintain.

Operational capability

HMAS MELBOURNE was the third ship, after HMS ARK ROYAL and USS FORRESTAL, to be completed with the angled deck, steam catapult and mirror landing aid built in, as opposed to being added after completion. Her air group of Sea Venom fighters and Gannet anti-submarine and strike aircraft were fully capable of operating from her at night as well as by day and in adverse weather conditions. The ship's carrier controlled approach radar and deck lighting were 'state-of-the-art' for the period. The fighters, operated by 805 and 808 Squadrons, were the only radar-equipped all-weather fighters in the Southern Hemisphere for some years and their diminutive silhouette made them a difficult target in air combat. Indeed, with their wooden fuselages and blended wing



HMAS MELBOURNE in her final configuration. On her deck can be seen four S-2 Tracker ASW aircraft, four A-4 Skyhawk fighter bombers, two Sea King ASW helicopters and two Wessex helicopters. The capability that she brought to the ADF is still unmatched by any single ship in the RAN's current and future order of battle. (RAN)



HMAS MELBOURNE in 1967 with 10 Gannets and 10 Sea Venoms on deck. (RAN)

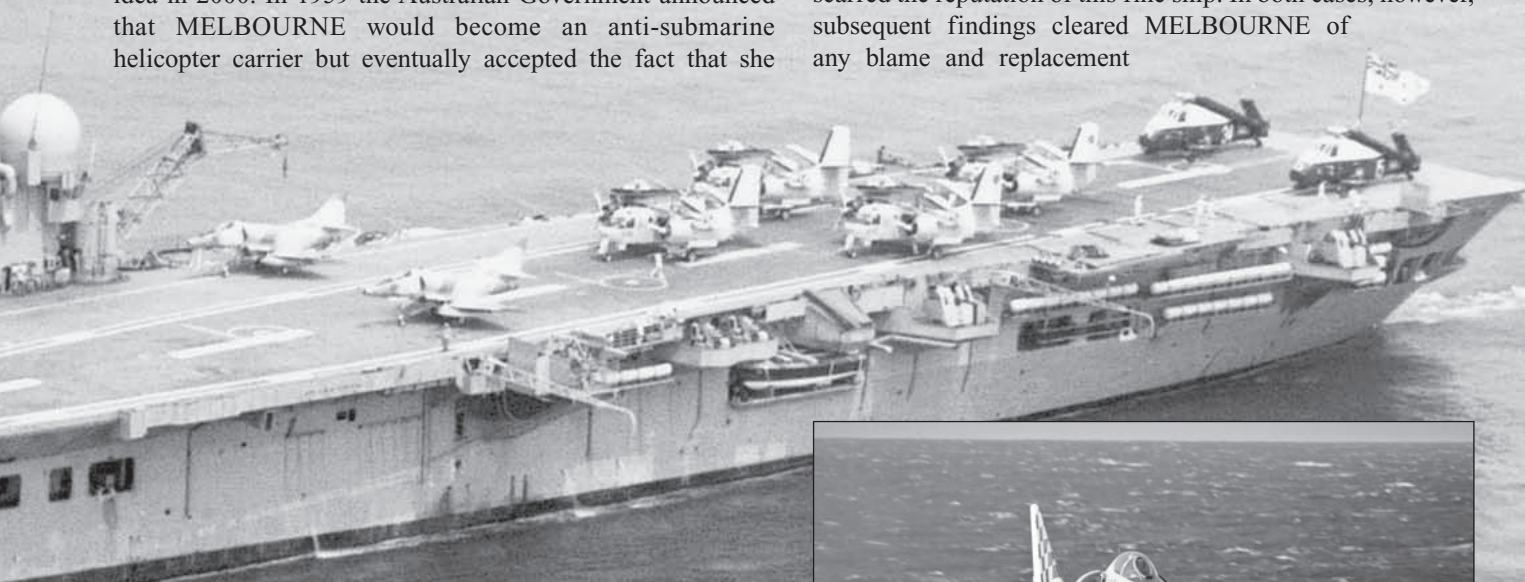
roots they were not an easy radar target and have a fair claim to be early examples of 'stealth' technology. The radar-equipped anti-submarine aircraft, operated by 816 and 817 Squadrons, combined a search and strike capability in a single airframe and were able to search over huge distances. Their large internal bomb-bay allowed them to carry a range of weapons for a useful night and bad weather anti-shipping capability that would have been difficult for the majority of regional Navies to counter. The acquisition of Wessex anti-submarine helicopters gave an important 'close-in' counter to submarines attacking the MELBOURNE battle-group day or night, in all weathers. They replaced the Gannets in 817 Squadron. Unlike the Royal Navy, the RAN retained fixed-wing anti-submarine aircraft and helicopters to give complementary 'outfield' and 'infield' capabilities. The 'home port' for all three types was RANAS Nowra (Royal Australian Naval Air Station Nowra) and the exact numbers embarked could be varied to suit the type of operation for which MELBOURNE was deployed. The concept of 'tailored air groups' evolved in Australia during the 1950s and was perfected some forty years before the RN adopted it as a 'new' idea in 2000. In 1959 the Australian Government announced that MELBOURNE would become an anti-submarine helicopter carrier but eventually accepted the fact that she

continued to be capable of much more than that and rescinded the decision in 1963.

By the mid 1960s, however, the air group was showing signs of its age and very capable replacements were procured. These included the A-4 Skyhawk and S-2 Tracker from the US Navy and the Sea King helicopter from the UK. The A-4 was one of the world's most successful designs and continued in production for twenty-six years. It remains in service in several countries including Brazil which operates them from its aircraft carrier SAO PAULO. It was used until recently by the USN as an 'aggressor' aircraft at the 'Top Gun' School at NAS Fallon and the version used by the RAN, the A-4G, had a good clear air mass fighter capability. It was capable of being upgraded with radar and air-to-air missiles that could engage targets beyond visual range, both Singapore and New Zealand carried out such work. In the strike role, at which it excelled, it could carry a payload of up to 10,000lb over a radius of action greater than the early models of F-18 operated by the RAAF. It could be fitted with 'Buddy' refuelling pods to extend the range of other Skyhawks, thus extending the battle group's effective radius of influence still further. The Tracker and Sea King were significant improvements on the aircraft they replaced in squadron service and added to the effects that MELBOURNE could deliver from her tailored air groups. Given the number of improvements incorporated into MELBOURNE and her air groups through time, her motto "She gathers strength as she goes" seems to be particularly apt. Skyhawks were operated by 805 Squadron, Trackers by 816 and Sea Kings by 817. The exact mix continued, as before, using the tailored air group principle.

An unlucky ship but always a happy one

The collisions with the two destroyers, HMAS VOYAGER in 1964 and USS FRANK E EVANS in 1969, both of which unaccountably turned across MELBOURNE's bow during night flying operations in frighteningly similar circumstances scarred the reputation of this fine ship. In both cases, however, subsequent findings cleared MELBOURNE of any blame and replacement



An A-4 Skyhawk fighter bomber about to trap aboard the RAN aircraft carrier HMAS MELBOURNE. The Skyhawk was in no way obsolete or ineffectual even towards the end of MELBOURNE's career. This was demonstrated in the Falkland's War of 1982 with most RN warship losses the result of the Skyhawk. The Skyhawk is still used today by many Navies and air forces. (RAN)





(From left to right) HMA Ships STALWART, SUPPLY and MELBOURNE. The image provides an interesting comparison to demonstrate that MELBOURNE was indeed a small/light fleet carrier. (RAN)

lower bow sections were fitted in Cockatoo Island Dockyard in Sydney. The incidents left their undeserved mark on the men who were involved and have generated a number of books and articles. In both cases the ship's company made heroic efforts to save survivors. After the FRANK E EVANS collision Lieutenant Bob Burns, MELBOURNE's diving officer, was awarded the George Medal for his efforts. As a former fixed-wing pilot who earned a bridge watch-keeping certificate in HMS HERMES while she served with the Far East Fleet, I have no doubt in my own mind that it is the duty of escorts to position themselves with extreme care while a carrier manoeuvres at night to operate her aircraft. It was MELBOURNE's misfortune to encounter two ships that, for whatever reason, fell below the standard required.

Throughout her long life, MELBOURNE was a great asset to Australia and deserves to be remembered with pride by the nation. For much of her life she formed part of the Far East Strategic Reserve and took part in a number of big exercises with other Commonwealth warships. These included JET 61, the biggest assembly of ships in the Indian Ocean since 1945 and FOTEX 65 when she operated as part of a huge task force with the RN carriers EAGLE, VICTORIOUS and ALBION. For a time, her former sister ship TRIUMPH, by then converted from an aircraft carrier into a fleet repair ship joined the other big ships for tactical manoeuvres as part of a force that stretched from horizon to horizon. MELBOURNE was a frequent participant in exercises with other Pacific nations which brought the RAN into close contact with regional Navies as well as the RN and USN. For many participants in the annual RIMPAC exercises, MELBOURNE was the only part of Australia with which they were familiar and she was the epitome of the Navy's ability to project power forward in a variety of different ways. Although she never went into combat, MELBOURNE escorted her sister ship SYDNEY, by then converted into a fast troop transport, on three voyages that carried Australian military personnel into Vung Tau in Vietnam. One of these was in 1965 and two in 1966.

In between the planned cycle of exercises that were typical of many Western warships during the cold war, MELBOURNE was always in demand for 'showing the flag'. Notably, in 1977 she represented Australia at the Silver Jubilee Review of Her Majesty Queen Elizabeth II at the historic Spithead anchorage off Portsmouth. The opportunity was taken afterwards to participate in the large-scale NATO Exercise 'Highwood' off Scotland. MELBOURNE carried out over thirty-five overseas deployments and visited more than twenty-two countries. She was probably seen by more people outside than inside Australia and her sailors were invariably good ambassadors on whom the standards of the nation were judged. She continued to show the latent power that her air group gave the RAN until the end of her life and in April 1980, she led the largest task force assembled by the RAN since the Second World War into the Indian Ocean for exercises and visits.

On Christmas Day 1974 Darwin was devastated by Cyclone Tracy and MELBOURNE showed the speed with which her ship's company could react to an emergency. Recalled from leave a day later, they sailed the ship from Garden Island Dockyard in Sydney at extremely short notice



The carrier MELBOURNE with two A-4 Skyhawks and three S-2 Tracker ASW aircraft on her deck. (RAN)

loaded with supplies for what became known as Operation 'Navy Help Darwin'. She stayed off the stricken city until 18 January, 1975, operating as a helicopter base and with many of her sailors ashore using their skills to help restore normality. After that she returned to Sydney to prepare for RIMPAC 75. The ability of ships like MELBOURNE to move easily from one situation to another that may be completely different, taking both 'in their stride' is something that I do not believe politicians have yet fully understood. This period provides excellent examples of diversity.

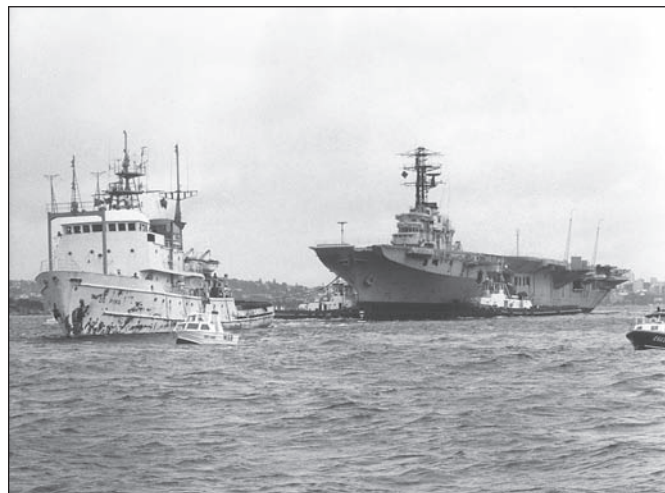
The replacement issue

The RAN sought a replacement carrier with increasing urgency as MELBOURNE grew older. The favoured solution was a USN Iwo Jima class amphibious helicopter design, modified to suit RAN requirements but in 1981 the British Government offered the new light carrier INVINCIBLE for sale at a bargain price of £175 million. She had only been completed in 1980 and was not even fully operational yet. This surprising offer 'out of the blue' followed the Review of the RN carried out by Defence Secretary John Nott who wanted to eliminate much of the surface fleet and concentrate on nuclear submarines based in the North Atlantic. In February, 1982, the Australian Government announced that it had agreed to buy INVINCIBLE, that she was to be re-named AUSTRALIA and operated, initially, as a helicopter carrier. A decision on whether to buy Sea Harriers for her was to be taken at a later date, but since the RAN already had pilots flying them in the UK, it was confidently expected that this logical next step would happen. It was not to be, however, since only weeks later INVINCIBLE together with the larger HERMES distinguished themselves in the South Atlantic War to liberate the Falkland Islands and South Georgia. The whole campaign would have been impossible without the carriers and their embarked fighters and helicopters; the Nott Review was shown to be fatally flawed and the UK Government elected to keep INVINCIBLE after Australia volunteered to withdraw from the deal. Surprisingly, the opportunity to purchase HERMES was not taken up and she was bought by India in 1985.

There was an earlier possibility of replacement, however. In 1968 I was serving in HERMES when the ship took part in Exercise 'Coral Sands' off the east coast of Australia. A number of RAN and Government VIPs visited the ship and after the exercise we carried out deck landing practice with Skyhawks and Trackers from RANAS Nowra. At the time, MELBOURNE was in refit at Garden Island and it was no secret that HERMES was being offered to Australia after yet another ill-considered UK Defence Review, this one carried out by Dennis Healey in 1966. I understand that she was rejected because of the increased manpower and running costs, over MELBOURNE, that she would have incurred and would be interested to know if this is true. Whatever the reason, it was a magnificent opportunity missed as the ship is still running as the INS VIRAAT and the Indian Navy hopes to keep her running for another five years by which time she will be fifty-three-years-old. She could have spent over forty of those in the RAN and despite her higher initial operating costs, her purchase at a bargain price would have been less than a new-build replacement and in retrospect she represented a lot of capability at a reasonable investment.

In March 1983 the newly elected Hawke Labor Government announced that, in accordance with its pre-election pledge, it would not replace MELBOURNE. At the

time she was undergoing a period of self-maintenance in Sydney, symptomatic of the fact that her age was making her increasingly difficult to maintain. Without hope of replacement, she was paid off on 30 June, 1982, having steamed a total of 868,893 miles in her busy life. In February 1985 she was sold to the China United Shipbuilding Company for AUD\$1.4 million and towed to China where she was to be broken up for scrap. Before she was cut up, it is believed that she was carefully examined by a team of Chinese naval architects charged with evaluating potential future carrier designs for the People's Liberation Army-Navy.



A sad day for the RAN. The former HMAS MELBOURNE is seen here departing Sydney Harbour for the last time in 1985. She was towed to China where she was to be broken up for scrap metal. However, rumours soon emerged that she was being kept up an isolated Chinese river for many years. It was surmised that Chinese naval architects were studying every inch of the old carrier so as to potentially build their own light fleet carriers. The rumours also suggested that she was finally broken up in 2002. (RAN)

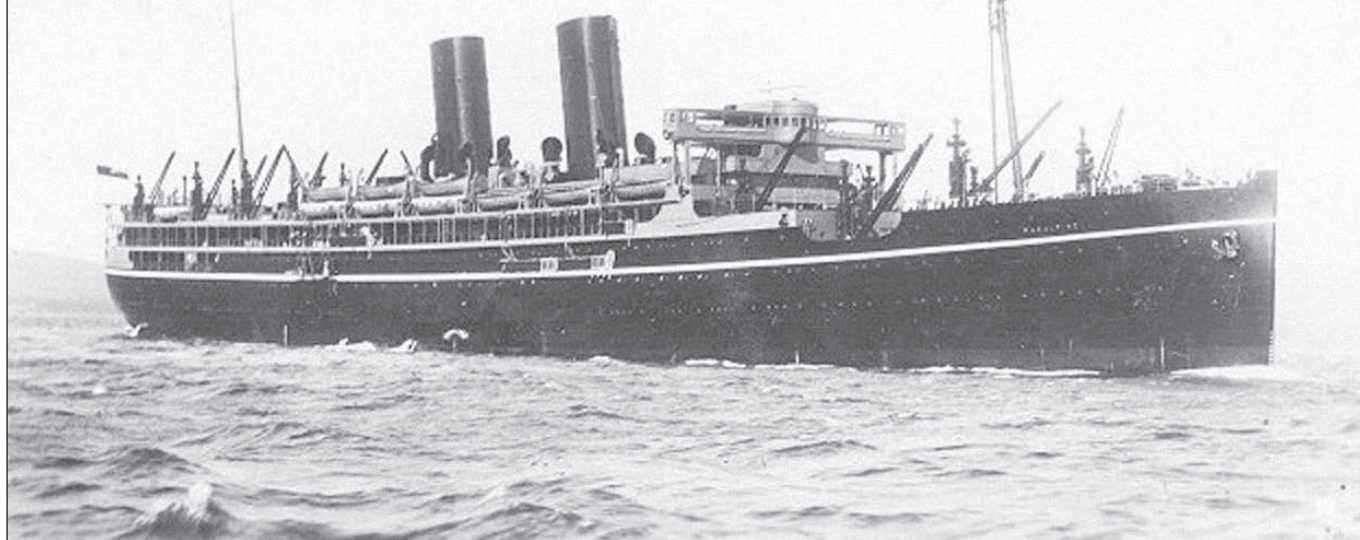
The end of an era

I have referred to MELBOURNE several times in this article as a weapons system. This is to emphasise that she was not just a large warship capable of operating a variety of aircraft but a sovereign base, secure from many forms of attack capable of concentrating appropriate force or relief capacity in the right place at the right time to the right effect. She could react quickly, travel large distances with her battle-group and fulfil any directed task on arrival. She had the logistic support to persist in any task for some time. By comparison, land-based air forces lack the ability to deploy and persist without assistance from Navies or other outside agencies such as airlines or allied forces. They can be thought of more as garrisons that take longer to react but may eventually stay in an area carrying out low-intensity operations using fuel and munitions ferried in by sea.

MELBOURNE's tailored air groups were capable of a great range of operations from strike to long-range search; from fleet fighter defence to search-and-rescue and many others in between. When she paid off, the RAN lost more than just a flagship. It lost the ability to fight from the sea in the first echelon of naval forces and would need the assistance of allies to project power beyond the range of fighters based in Australia. As the twenty-first century progresses and the value of integrated forces able to project power from the sea using floating bases becomes more obvious, that is a status that must concern the RAN. Is the RAAF capable of providing the air effects that the nation needs as part of its deployed forces? If the answer to that question is 'no' then what should be done about it?

A DEFIANT STAND

By Ian Johnson



The converted Armed Merchant Cruiser HMS RAWALPINDI before her conversion.

In the late afternoon of 23 November 1939 in the cold waters off South East Iceland an Armed Merchant Cruiser, HMS RAWALPINDI, engaged in a futile battle with two of the most advanced German battleships built. Within forty minutes SCHARNHORST and GNEISENAU had sunk the converted passenger liner with overwhelming firepower. Ian Johnson takes up the story of a Defiant Stand.

Just days before the outbreak of the Second World War the Kriegsmarine (German Navy) sortied two panzerschiffe (pocket battleships) into the Atlantic Ocean. The ships, GRAF SPEE and DEUTSCHLAND, steamed quickly with their support vessels to their pre-designated war stations to conduct operations as surface raiders.

In Britain, as the war rapidly approached, the RN began to requisition ships from civilian companies such as Cunard, Red Star, and Peninsular and Orient Steam Navigation Company (P&O) among others for use in wartime roles, including that of the Armed Merchant Cruiser (AMC).

One such ship the Admiralty requisitioned was the RAWALPINDI. Built for P&O, the ship was one of a class of four 16,000-ton passenger ships built by Harland & Wolf shipbuilding yard in Belfast. Launched on 26 March, 1925, RAWALPINDI began her sailing days on P&O's Britain to India route, via the Mediterranean and Suez Canal.

After an uneventful fourteen years of service RAWALPINDI was formally requisitioned by the Admiralty for use as an AMC. A week later as the passenger liner began to be fitted out for war service by R&H Green & Silley Weir at Royal Albert Dock, London, Germany invaded Poland.

After the war began on 3 September 1939 both GRAF SPEE and DEUTSCHLAND began to wreak havoc to merchant shipping. As a major threat to the Atlantic supply routes, the RN had every available warship searching the ocean for any ship acting as a surface raider, as well as for German U-Boats. To fill gaps in patrols normally conducted by warships, several AMCs began to patrol these areas, but more were needed.

During RAWALPINDI's refit she was placed under the command of Captain Edward Kennedy RN. A veteran RN officer, he was 60-years-old and had retired when recalled to active duty, the Admiralty believing his years of service would be needed on the RAWALPINDI. His crew of 302 were mostly RAWALPINDI's civilian crew who were part of the RN Reserve. A few full time members of the RN were also embarked.

During her refit RAWALPINDI was armed with eight 6-inch guns built in 1900 and two 3-inch gun mounts, the crew learning that they saw service in the First World War. The passenger liner's aft funnel was removed, as were most of the civilian luxuries leaving a bare bones passenger liner. By mid September HMS RAWALPINDI was out of the yard as an AMC, heading for the RN Base at Scapa Flow to begin conducting patrols in the Atlantic, that would last three weeks at a time.

As RAWALPINDI began her first patrol in late September, the chaos caused by surface units and submarines of the Kriegsmarine was apparent, sinking merchant ships as far east as the Indian Ocean. British Intelligence sources were in the dark about how many surface raiders there were, or the identity of the ships involved. Reports from vessels of neutral countries that encountered a German pocket battleship in the South Atlantic incorrectly believed that the panzerschiffe was the ADMIRAL SHEER or DEUTSCHLAND, rather than the GRAF SPEE. As more merchant ships were sunk in the South Atlantic the continuing confusion on which ship or how many ships were actually out there began to hinder the search, and stretch the RN's resources.

During the RAWALPINDI's second northern patrol the AMC intercepted the German merchant freighter *GONZENHEIM* in the North Atlantic on 19 October, but as the boarding party moved towards the freighter, she was scuttled by her own crew. RAWALPINDI headed back to port to intern the *GONZENHEIM* crew as prisoners of war.

Early November, 1939, saw Captain Kennedy receive orders to the south east of Iceland to begin her third northern patrol.

The head of the Kriegsmarine, Grand Admiral Erich Raeder, noting the effects of both panzerschiffes on RN operations, ordered Vice-Admiral Wilhelm Marschall on 13 November, to sail for a position south east of Iceland with the Kriegsmarine's most modern battleships, the sister ships *SCHARNHORST* and *GNEISENAU*, to maintain pressure on the RN and to engage targets as they presented themselves.

SCHARNHORST and *GNEISENAU* were launched in 1936. Although these ships were to be 10,000 tons under the Treaty of Versailles, both ships were 38,000 tons and armed with nine 11-inch guns as their main armament and twelve 5.9-inch guns as their secondary battery. With a speed of 31 knots and a crew of over 1,450 sailors, they were at the time the most advanced battleships built by Germany.

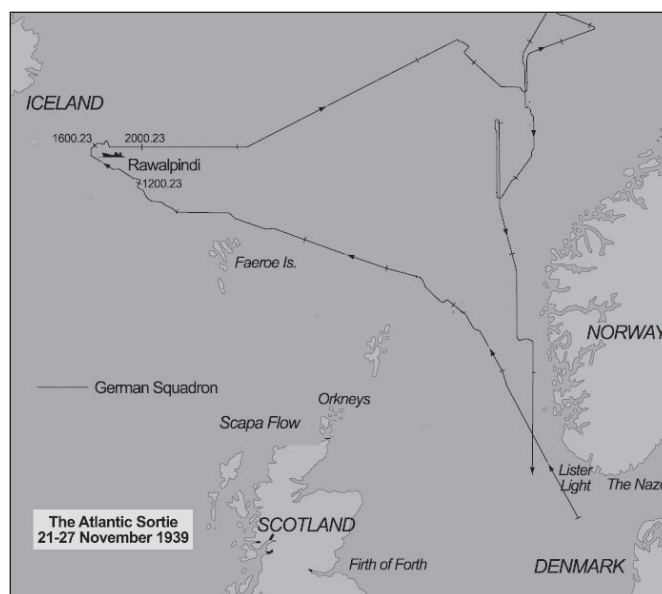
After evading the RN east of Scotland, *DEUTSCHLAND* arrived back in German waters on 14 November. But the actions of *GRAF SPEE* became the main focus of the RN and it sent ships from Britain to deal with the threat.

On 21 November, the *GRAF SPEE* sailed into the South Atlantic after operations in the Indian Ocean. The same day saw *GNEISENAU*, *SCHARNHORST*, two cruisers, three destroyers and three torpedo boats sail from Wilhenshaven for Iceland. The fleet was not spotted and after a day the cruisers, destroyers and torpedo boats detached from the battleships for a rendezvous off the north of Denmark. *SCHARNHORST*, under the command of Captain Kurt Hoffman, and *GNEISENAU*, then proceeded alone in deteriorating weather of gale force winds, heading north.

Positioned in the Northern Patrol area between Iceland and the Faeroes Islands were Her Majesty's cruisers *NORFOLK*, *SUFFOLK*, *NEWCASTLE*, *DELHI*, *DUNEDIN* and *CHITRAL*, another P&O liner converted to an AMC. RAWALPINDI arrived in the Northern Patrol area to begin her third patrol at 0730 on 23 November, relieving *DUNEDIN*, which had been there for two and a half months. *DUNEDIN* headed south for the shipyards on the Clyde in need of a major refit after a battering by heavy weather and constant high speed steaming.



An example of the sort of gun fitted to RAWALPINDI which she used to try and defend herself from the German Navy's two most advanced battleships.



A map showing the route of the German battleship group and the position of HMS RAWALPINDI's sinking.

Shortly after *DUNEDIN*'s departure, RAWALPINDI intercepted a Swedish freighter. After a boarding party commandeered the freighter, RAWALPINDI continued on. During the day Captain Kennedy received reports that the *DEUTSCHLAND* was at large. The Admiralty's orders to Captain Kennedy were to avoid combat and report *DEUTSCHLAND*'s position back to Home Fleet HQ so that a battle squadron could sortie to intercept her.

Midway between Iceland and the Faeroes on 23 September, 1939, at 1530hrs the sun was beginning to set after a cold but calm afternoon. As the northern twilight began, a fog bank was beginning to form, with the occasional iceberg making an appearance.

After 36 hours sailing in appalling weather at 12 knots *GNEISENAU* and *SCHARNHORST* were approaching the RN's Northern Patrol area of operations. With the weather masking their movements and visibility less than a mile, Vice-Admiral Marschall, still cautious, ordered both battleships to fly the RN's White Ensign in a further attempt to deceive other ships. As the afternoon ended lookouts onboard *SCHARNHORST* spotted a ship. Captain Hoffman ordered an increase in speed to identify the ship and shortly after signalled VADM Marschall on *GNEISENAU*: "*SCHARNHORST to Fleet Commander. Large steamer sighted on parallel course. Distance plus 25 kilometres. Have altered course to 355°.*" *SCHARNHORST* continued to close on the ship, which Captain Hoffman identified as an Armed Merchant Cruiser. *GNEISENAU* increased speed to catch her sister ship.

RAWALPINDI was headed eastwards when a lookout on the forward crow's nest informed the bridge that an unknown ship had been sighted on the starboard quarter on the horizon. Captain Kennedy, on sighting the ship through his binoculars came to the conclusion that it was either an enemy battlecruiser or the intelligence reports were correct and the *DEUTSCHLAND* was in the area. "*Action Stations!*" rang out and the Captain ordered the helm to port.

On *SCHARNHORST* Captain Hoffman treated the encounter as he did with any unknown warship. He ordered a signal sent: "*What Ship?*"

Captain Kennedy received the signal and in a last vain hope that the ship is friendly, sent the ship's identification code

to the German warship. He tried to lay a smokescreen but the chemical canisters proved to be faulty. He then ordered a small increase in speed and a course to port.

The reply made no sense to Captain Hoffman, but the increase in speed and a course change suggested hostile intent. The distance between the three ships closed quickly. When the range between SCHARNHORST and RAWALPINDI was less than 4 nautical miles, the battleship used a signal lamp to flash the signal 'Heave to'. To reinforce the message, SCHARNHORST fired a warning shot that sent up a fountain of salt water some two hundred yards in front of the AMC's bow.

Captain Kennedy ordered a distress signal to Home Fleet HQ stating that a German warship had intercepted RAWALPINDI.

SCHARNHORST again flashed the signal 'Heave to' which was ignored. Lookouts on RAWALPINDI then saw a second battleship on the horizon closing fast. As the first battleship came into clear view Captain Kennedy thought it to be the DEUTSCHLAND.

But time for the RAWALPINDI had run out. Kennedy knew the odds. A converted passenger liner with no armour and limited weapons against two battleships with heavy guns and armour piercing shells had little chance. His ship could only manage 17 knots, while his adversaries could at least double that. At that moment the Chief Engineer arrived on the bridge. After a quiet word, Kennedy shook the Chief's hand, and then said; *"We'll fight them both, they'll sink us - and that will be that. Goodbye"*. Captain Kennedy then began to clear the decks for action.

After ignoring the 'Heave to' signals from SCHARNHORST, Captain Hoffman ordered the signal 'Abandon your ship'. Again, there was no reply. Hoffman watched as the RAWALPINDI continued her futile effort to escape and wondered what that captain was thinking? There was no way this ship can escape from him, nor could it outfight SCHARNHORST, let alone the approaching GNEISENAU. Hoffmann ordered the 'Abandon ship' signal be repeated. Twice the signal was sent, and both times it went unanswered.

Captain Kennedy ordered a second signal to Home Fleet HQ: *"Under attack by DEUTSCHLAND"*. Kennedy then ordered RAWALPINDI's gun batteries to open fire. It was 1545hrs. RAWALPINDI's first salvo of 6-inch shells from the port guns burst harmlessly against GNEISENAU while a second salvo missed SCHARNHORST.

Captain Hoffman could not believe what he was seeing, the near misses with splashes of water marking how close they came to his ship. There were no more options. SCHARNHORST unleashed a salvo from her forward 11-inch



The German battleship SCHARNHORST

gun mounts, smashing into RAWALPINDI's starboard boat deck under the bridge, destroying the radio room, fire control and killing everybody there as well as causing damage and injury on the bridge.

RN ships and bases heard the distress call from RAWALPINDI, then the second announcing the presence of the DEUTSCHLAND. RN warships moved towards the action, including DUNEDIN, who despite her mechanical problems still headed back north at 20 knots. When no more signals came from RAWALPINDI, many throughout the fleet began to fear the worst.

Onboard RAWALPINDI the bridge crew were recovering from the blast underneath them. Captain Kennedy watched as GNEISENAU manoeuvred aft of his ship. At that moment the second salvo arrived from SCHARNHORST, shells ripped into the engine room, destroying the dynamos that provided power to the shell hoists in the magazines that were supplying desperately needed ammunition. Every spare man was now used as shell carriers, manhandling 6-inch shells from magazine to gun turrets.

SCHARNHORST's third salvo crashed into the superstructure, starting fires in unused cabins long since stripped of luxuries.

SCHARNHORST's fourth salvo obliterated the bridge killing everyone. As the starkness of the situation became clear, some people started heading for lifeboats, while others fought fires in darkened parts of the ship, not realising that there was fire everywhere.

GNEISENAU, now moving parallel to RAWALPINDI on her port side, opened fire, joining with her sister ship in tearing the RAWALPINDI to pieces. The many fires onboard were now joining into one big fire from stem to stern. The ship's water supply was out, the steering controls were destroyed, and the engines were finished.

While all of this was happening RAWALPINDI's guns continued to fire, scoring a hit on SCHARNHORST. But one by one, either by German fire or depleted ammunition stocks, the guns fell silent. For most of the crew, the battle with the Germans was over. The battle with the sea had begun.

Both German battleships watched RAWALPINDI burn, but continued firing. Onboard the crew were loading the wounded into lifeboats. As they were lowered some capsized, leaving wounded men in the freezing water. Other boats were lowered full, but just as they believed that they had made it, at 1600hrs a massive explosion rocked the ship. An 11-inch shell from SCHARNHORST had hit the forward magazine, breaking RAWALPINDI's back causing her to start sinking. SCHARNHORST, which was within 6000 yards, reversed course at high speed and generated an unintentional wave that



The German battleship GNEISENAU at anchor December, 1939

swamped many of the lifeboats near the RAWALPINDI, capsizing them and putting more men into the water.

Onboard RAWALPINDI a lone sailor sent out a message with a hand held signal lamp; *'Please Send Boats'*. VADM Marschall on GNEISENAU did not hesitate. German sailors from SCHARNHORST that were moments ago shooting at the RAWALPINDI's crew now tried to save them.

As the sun set, and while rescue operations were underway, RAWALPINDI slowly sank. Where there was fire, the cold seawater hissed it out. A column of smoke rose from the ship before it disappeared at 1610hrs.

The sailors of the Kriegsmarine pulled 27 sailors from the freezing waters before a lookout on GNEISENAU spotted a warship on the northern horizon. It was the cruiser HMS NEWCASTLE, the closest RN warship to the battle. VADM Marschall ordered both battleships to depart the area heading west into the twilight. NEWCASTLE was later joined by DELHI. As both RN ships knew they were outgunned they shadowed both German battleships, reporting their position back to the Admiralty.

Wreckage littered the battle site, along with a lifeboat with 11 men aboard. Forced to endure a cold Atlantic night, they were saved by another AMC, the former P&O liner HMS CHITRAL, which took them to Scarpa Flow. Two hundred and thirty-eight men had died as a result of the action.

With NEWCASTLE and DELHI informing the Admiralty of the German battleship's location, a fleet of warships, along with battleships WARSPITE and the French DUNKERQUE and battlecruisers HOOD and REPULSE, began to converge. But a storm off Greenland moving eastward on 25 November, allowed GNEISENAU and SCHARNHORST to escape the hunters, and on 27 November, they arrived at Wilhelmshaven to a hero's welcome. The 27 survivors that were pulled from the water by the crew of SCHARNHORST spent the rest of the war as POW's. The admiration of the German sailors of RAWALPINDI and her crew remains even today.

The battle between RAWALPINDI, SCHARNHORST and GNEISENAU lasted for 40 minutes, demonstrating the futility of placing an AMC alone against modern warships. What makes RAWALPINDI unique was the magnificent defiance of her last stand. She was a lookout without backup. However, her sinking had the effect of foiling the German attempt to break out into the Atlantic as GNEISENAU and SCHARNHORST were forced to return to base in order to avoid interception by the British Home Fleet. Many ships and sailors were thus saved from the two marauding battleships.

The courage of her crew stands out. Captain Kennedy (his son is BBC TV legend Ludovic Kennedy) and his men did

everything possible in the hope of keeping GNEISENAU and SCHARNHORST in the area so the RN's heavy units could finish them off. But due to no fault of theirs, that was not to be. Captain Kennedy's actions were recognised by the RN when he was awarded the Victoria Cross (Posthumously), several other crew members were also recognised with honours.

GNEISENAU and SCHARNHORST would remain thorns in the RN's side, including the embarrassment of the Channel Dash in February, 1942. SCHARNHORST met her fate on Boxing Bay, 1943, when HMS DUKE OF YORK sank her off North Cape. RAF bombers hit GNEISENAU in late February, 1942 and after a few months the battleship was towed to Poland where by 1945 GNEISENAU was nothing but a rusted hulk, scuttled as a blockship at Gdynia on 27 March.

RAWALPINDI's magnificent last great act of defiance became the standard that those on AMC's held for themselves, as AMC HMS JERVIS BAY proved while defending a convoy of 38 ships against the pocket battleship ADMIRAL SCHEER on 5 November, 1940. JERVIS BAY fought the pocket battleship, allowing all but five of her convoy to escape before JERVIS BAY met the same fate as RAWALPINDI.

It is worth noting that during the Second World War, the Allies converted 57 civilian ships to Armed Merchant Cruisers (Including HMAS WESTRALIA, MANOORA, and KANIMBLA). While all served with honour, fifteen Armed Merchant Cruisers were lost; three to German battleships, one to shipboard fire, one to Japanese carrier aircraft and 10 to U-boats.

Scharnhorst class Characteristics

Displacement:	31,552 tonnes (standard) 38,900 tonnes (full load)
Length:	235.4 m (772.3 ft) overall 229.8 m (753.9 ft) waterline
Beam:	30 m (98.4 ft)
Draft:	9.93 m (32.5 ft) at 37,500 long tons (38,100 tonnes)
Armament:	9 – 283 mm (11.1 inch) 12 – 150 mm (5.9 inch) 14 – 105 mm (4.1 inch) 16 – 37 mm 10 – 20 mm 6 – 533 mm (21 inch) torpedo tubes
Aircraft:	3 Arado Ar196A-3, 1 catapult
Propulsion:	3 Brown-Boveri geared turbines; 3 three-bladed propellers, 4.8 m (15.75 ft) diameter; 161,164 shp (120.18 MW) = 33 kt
Range:	10,100 nm at 19 kt (18,700 km at 35 km/h)
Complement:	1,968 (60 officers, 1909 enlisted)

RAWALPINDI Characteristics

Displacement:	16,697 tons
Length:	167 m
Beam:	21 m
Draft:	9 m
Speed:	17 knots
Complement:	276
Armament:	8 – 6 in guns 2 – 3 in (Anti-Aircraft guns)



Some of the few survivors of the sinking of HMS RAWALPINDI in London.

Orion replacement closer

The Government has given first pass approval for AIR 7000 Phase 2 – a \$4 billion project for Defence to acquire a manned Maritime Patrol and Response Aircraft (MPRA).

The manned MPRA, in conjunction with the Multi-mission Unmanned Aerial System being acquired by Defence under AIR 7000 Phase 1, will replace the capability currently provided by the RAAF AP-3C Orion.

The AP-3C Orion is planned to be retired in 2018 after over 30 years of service.

First pass approval has been granted to allow Defence to commence formal negotiations with the USN to participate in the cooperative development of the P-8A Multi-mission Maritime Aircraft (MMA).

Following an exhaustive examination of available options, the USN chose the Boeing Company to develop the P-8A MMA based on its 737 commercial aircraft. The P-8A MMA offers a modern, highly reliable commercially-proven airframe with the latest maritime surveillance and attack capabilities.

The P-8A will be equipped with modern Anti-Submarine Warfare, Anti-Surface Warfare and Intelligence, Surveillance and Reconnaissance sensors that have evolved from proven systems. The P-8A will be capable of broad-area, maritime, littoral and limited overland operations.

Through its participation in the proposed cooperative development of the MMA, Australia will assist in providing opportunities for Australian industry as well as gain an ability to positively influence development of the MMA Programme.

Aussie Nulka celebrates century

Last July marked a very important milestone for the collaborative Australian/US Nulka Programme with USS GONZALEZ (DDG-66) being the 100th ship to be fitted with the Nulka Active Missile Decoy System.

BAE Systems Australia have produced over 700 Nulka decoys for the RAN, USN and Canadian Navies achieving regular sales of \$40-50m per

year. This makes Nulka Australia's most successful regular defence export, having earned \$700m worth of work in Australia.

The award-winning Nulka system protects naval ships from the threat of anti-ship missiles (ASM). It uses a unique combination of rocket motor and electronic warfare technologies to mislead or seduce enemy missiles away from the target ship. BAE Systems Australia and its partners in the Programme have for many years produced the world's 'gold standard' active missile decoy system – to achieve this milestone is a credit to all those people in industry and Government who have worked on Nulka. The decoy is assembled in Australia from subsections produced in both the US and Australia. The programme originated from DSTO's early work in ship self defence against new generation missiles such as Exocet.

The production decoy system was developed in Australia with a payload developed in the USA leading to initial sea trials on HMAS BRISBANE and USS JOHN HANCOCK in 1992. The operational system underwent many evaluations at sea leading to introduction into the USN fleet in 1999 and acceptance into RAN service in 2001.

Nulka has been fitted to 83 USN, 14 RAN and 3 Canadian Navy vessels with a further 50 USN units planned to be fitted in the near future.

It will also be fitted to the RAN's new Hobart class ships and is being considered for the new LHDs HMA Ships CANBERRA and ADELAIDE.

The Australian and US Governments have granted permission to market the decoy system to New Zealand, UK, Japan and seven other NATO member states. Approvals will be on a case by case basis.

Tributes to flow for HMAS SYDNEY (I) mast

The RAN has initiated what will become a Naval tradition by announcing that all Australian and foreign naval vessels proceeding into Sydney Harbour will render ceremonial honours to the HMAS SYDNEY (I) Memorial Mast that is located at Bradley's Head.

The HMAS SYDNEY (I) Memorial Mast is considered to be one of Australia's premier naval monuments and a memorial of national significance. The Mast was removed from SYDNEY (I) when she was decommissioned in 1928 and erected at Bradley's Head in 1934. The ceremonial will represent a mark of respect and recognition of the Australian officers, sailors and ships lost at sea and in combat.

The actual ceremonial conducted by the ships will consist of bringing the ship's company on the upperdecks to attention, and then 'piping' the Mast. 'Piping' is the prolonged sounding of the Boatswain's call, a special naval whistle, that was once the only method other than the human voice of passing orders to men on board ship. Today more sophisticated communications systems exist but the Boatswain's Call is still used in ceremonial as a mark of respect and for emphasising important orders.

HMAS SYDNEY (II) sailor remains unidentified

The bid to identify the remains of an unknown sailor, almost certainly from HMAS SYDNEY (II), has reached a critical stage.

HMAS SYDNEY (II) was lost in November, 1941, off the Western Australian coast following an engagement with the German raider KORMORAN. All 645 crew members were also lost.

The sailor's remains were recovered from Christmas Island last November. Since that time the RAN has overseen a painstakingly thorough and methodical forensic and historical investigation in an attempt to identify the remains.

As a result of this extraordinary work, the field of potential matches has narrowed considerably. An initial short-list of three possible HMAS SYDNEY (II) crew has emerged as potential matches:

- Lieutenant Allan Wallace Wilson,
- Sub-Lieutenant Allen James King and
- Sub-Lieutenant Frederick Harold Schoch.

All three were Engineering officers.

The next phase of the investigation involves seeking additional

biographical, physiological or medical information on the short-listed officers that may assist the identification process. To this end, surviving relatives of Sub-Lieutenants King and Schoch have been contacted by phone, the Minister Assisting the Minister for Defence, Bruce Billson, has also written to them to seek their assistance. The investigating team is yet to locate relatives for the third officer, Lieutenant Allen Wallace Wilson. Mr Billson said he was very keen to hear from any surviving relatives of Lieutenant Wilson or anybody else who may be able to provide information.

The identification process to date has been a complex undertaking, conducted in a number of phases. Firstly, a post-mortem dental examination of the remains was carried out. Regrettably, only half the crew dental records are available, the remainder having been lost with the ship.

While no positive match was achieved, this analysis resulted in more than 300 of the crew being excluded.

The next stage involved an anthropological examination of the skeleton.

This effectively excluded a further 200 crew members on the basis of indicative age at death and height. This left about 100 of HMAS SYDNEY (II) crew as potential matches for the remains.

In attempting to reduce the number of potential matches to a manageable level for the purposes of possible DNA testing, the outcomes of analyses conducted on artefacts found with the remains in the grave were also considered.

In particular, Australian War Memorial (AWM) analysis of cloth fragments found within press-studs resulted in the assessment that the man had been buried wearing white coveralls.

Historical research by the Australian War Memorial and the Navy's Sea Power Centre-Australia concluded that the sailor was therefore most likely to be an Officer or Warrant Officer from one of the technical categories.

Mike Cecil of the Australian War Memorial said this conclusion is based on the assumption that the sailor was dressed in accordance with Naval regulations and was indeed wearing his own coveralls.

"It must be noted that it remains quite possible that these assumptions may prove to be incorrect," Mr Cecil said.

RAN forensic team leader Commander Matt Blenkin said while the clothing analysis has considerably reduced the number of potential matches for the unknown sailor, more information is required to achieve positive identification. DNA testing of the remains will be conducted soon, and if successful, will enable a DNA comparison against any surviving relatives to be made.

"DNA testing may provide the breakthrough the team is looking for, however, it is possible that we won't be able to extract viable DNA from the remains," he said.

Mr Billson said despite the progress to date it must be stressed that an individual identification still remained a long-shot.

"The process to date has been extremely thorough in order to ensure the integrity of the findings, and to provide the greatest possible chance of success in finally identifying the unknown sailor. It is my sincere hope that we will be able to identify him, and bring a sense of closure to his family," Mr Billson said.

South Korean LHD commissioned

The South Korean Navy commissioned its first LHD on July 3, after two years of trials (see *THE NAVY* Vol 67 No 4. p14)

The 14,000-ton DOKDO HAM, named after South Korea's easternmost islets in the East Sea, can carry up to 700 troops, seven helicopters, six tanks,

seven armoured vehicles and two small landing craft.

The 199-metre long, 31-metre wide ship, the largest in the South Korean Navy, is equipped with a 30mm Goalkeeper close-in weapons system and a RAM anti-missile system.

South Korean Navy officials said the DOKDO, launched by Hanjin Heavy Industries & Construction in 2005, will play a leading role in the Navy's efforts to become a blue-water Navy, together with the country's first Aegis warship, SEJONG THE GREAT, launched in May (see *THE NAVY* Vol 69 No. 3 p21).

The DOKDO can also be used for United Nations peacekeeping operations and international relief activities.

The South Korean Navy plans to acquire another LHD of the same class as the DOKDO by 2010.

Sea King BOI findings released

Chief of Navy, Vice-Admiral Russ Shalders AO, CSC, RAN, has released the Board of Inquiry (BOI) Report into the loss of Navy helicopter 'SHARK 02', which crashed on Nias, Indonesia on 2 April, 2005.

Nine Navy and Air Force members were killed and two seriously injured in the accident. The flight crew and medical personnel were providing humanitarian aid as part of Operation SUMATRA ASSIST II following the Nias earthquake.

Under the wide-ranging Terms of Reference, the Navy Appointing Authority empowered the BOI to not only examine the factors that directly contributed to this tragic accident, but to also critically examine many other



The South Korean Navy's newly commissioned LHD DOKDO HAM. (RoK Navy)



The lost 'SHARK 02' Sea King seen here (front) onboard one of the RAN's LPA ships before the accident on Nias island that claimed nine ADF lives.
(RAN)

associated areas including operations, flight safety, logistics support and personnel management.

"After a meticulous examination of the evidence presented during the inquiry, the Board concluded that the primary cause of the accident was a failure of the flight control system. A key component of the flight control system was not properly secured during maintenance, which resulted in the pilots losing ability to control the aircraft. This was the result of a series of errors and non-compliances with Maintenance Regulations," Admiral Shalders said.

"In the opinion of the Board, change is required to improve aviation safety. I agree with this conclusion and the ADF views the recommendations as an opportunity to further improve Defence's current high standards of operational performance and safety.

"The loss of nine Navy and Air Force personnel is deeply felt. This accident was a tragedy and only by learning from our mistakes can we demonstrate that they did not die in vain. We will honour their memories by making flying safer," Admiral Shalders said.

The report includes several far-reaching recommendations for cultural and organisational change to improve Navy Aviation safety performance and to make improvements in some areas of ADF aviation that will require the engagement and commitment of senior leaders.

Chief of the Defence Force, Air Chief Marshal Angus Houston AO, AFC, said he was personally committed to ensuring the implementation of all the Board's recommendations.

"I have established a dedicated Implementation Team headed by a Senior Officer to ensure that the recommendations are properly implemented. I have also directed that the Implementation Team provide a quarterly report on their progress to the Chiefs of Service Committee, the most senior management group in the ADF.

"Defence will continue the policy of openness and transparency that it has maintained throughout the BOI period by providing routine public updates on its progress in implementing the Board's recommendations. This progress will also be detailed in subsequent Defence Annual Reports.

"A review of the airworthiness system is currently underway. The review is wide-ranging and will look at, among other things, the need to improve and strengthen the auditing, compliance and intervention aspects of the system," Air Chief Marshal Houston said.

Navy has not waited for the release of the report to begin the process of improving safety practices. A Maintenance Reinvigoration Programme was launched in 2005 with 72 specific aims for improving aviation safety. By 30 June, 2007, all but four of the tasks had been implemented.

Subject to independent verification by the implementation team, 30 per cent of recommendations made by the Sea King Board of Inquiry have been completed and a further 60 per cent will be completed by December, 2007.

Improvements to date include adjusting Navy flying rates to ensure safe operations; the institution of programmes to educate Navy staff about human factors in maintenance and correct maintenance practices; and the alteration of Navy Squadron maintenance structures to ensure appropriate levels of supervision.

The Sea King's manufacturer, Westland Helicopters, has also been commissioned to improve fuel system components and install new crashworthy seats into Sea King aircraft by December, 2007.

Next of Kin and the NSW Coroner have been briefed on the Board's findings and recommendations. The Defence Community Organisation will continue to offer ongoing support to the families of those who were killed and also to the survivors of the accident.

A copy of the Report and the Defence response to each of the recommendations can be found at: www.defence.gov.au/sea_king_boi

Last blast for Bofors

After 62 years' service to the RAN, the last three 40/60 Bofors guns were fired for the final time at West Head Gunnery Range at HMAS CERBERUS on July 19.

It took about an hour for staff to fire 432 rounds of ammunition from the AN4 Mod 2 guns.

"These weapons have provided outstanding service to the RAN. A very simple weapon to operate, the gun operated on a feed pull mechanism and was easy to maintain," Weapon Training Officer Lieut Mal Bonehill said.

The Fremantle class patrol boats were the last in the RAN fleet to have operational 40/60 guns but, and with the decommissioning of the last two boats, HMAS IPSWICH and TOWNSVILLE in 2007, the only remaining firing gun

mounts were retained at West Head Gunnery Range.

One gun will be retained at West Head Gunnery Range; one will be donated to the HMAS CERBERUS Maritime Museum; and the other one will be returned to stores.

Prior to WWII the RN and RAN anti-aircraft weapon of choice was the 2 Pounder or 'Pom Pom' in a variety of mounting up to eight barrels for capital ships and some cruisers. The British Army adopted the Bofors 40/60 and it proved so successful an anti-aircraft weapon in the Africa campaign, the RN began to fit it also.

With a breech capacity of eight rounds and taking four round clips, the gun could achieve a rate of fire of 120RPM and a range of 5000 yards. Ammunition retained a contact fuse and a tracer making it easy to aim.

At one stage nearly all RAN ships carried some form of Bofors 40mm gun in their life. The Battle class destroyers ANZAC and TOBRUK retained up to 12 Bofors Guns, while the early Type 12 destroyer escorts were originally fitted a twin mounting in lieu of Seacat Missile System.

"The Daring class destroyers VAMPIRE, VENDETTA and VOYAGER mounted two twin and two single 40/60 guns. The carriers SYDNEY, VENGEANCE and MELBOURNE mounted up to eight single and eight twin guns, which included a twin gun being mounted forward of the island on the flight deck.

Commissioned in the RAN in 1955, the fleet oiler HMAS SUPPLY retained

two twin mounts. STALWART also mounted 40/60 mounts forward and aft, while SUCCESS and TOBRUK had their mounts removed in the mid nineties. The old Attack class patrol boats and Ton class mine sweepers mounted the old AN 2 Mod forward, while the survey ship HMAS MORESBY mounted two single guns in 1965.

From NAVY NEWS

SM-2 Blk IV now targets ballistic missiles

US company Raytheon has delivered the first Near Term Sea-Based Terminal weapon to the U.S. Navy for use in defending against short-range ballistic missile threats. Raytheon, the US Navy and Johns Hopkins University's Applied Physics Lab partnered to update the Standard Missile 2 (SM-2) Block IV weapon with unique modifications to provide this significant capability.

This production delivery follows the successful 'Pacific Phoenix' sea trial, where a Near Term Sea-Based Terminal missile successfully intercepted a Lance target in May, 2006. Sea-Based Terminal is the Navy's operational concept to intercept short-range ballistic missiles as they reach the terminal phase of their trajectory. The near term solution uses Standard Missile 2 Block IV to provide this capability until a more capable system can be fielded. These weapons will be deployed on the US Navy's Aegis-class warships.

Raytheon is also developing an active radar Standard Missile 6. Standard Missile 6 (SM-6) will deploy in 2010 and deliver a transformational long-range, over-the-horizon counter to the ever-evolving cruise missile threat. SM-6 will also have an inherent capability to fulfill the sea-based terminal ballistic missile defence requirement.

Two new aircraft carriers for RN

RN First Sea Lord, Admiral Sir Jonathon Band, has welcomed the announcement made on Wednesday 25 July, 2007, that the RN is to receive two new 65,000 tonne aircraft carriers.

The decision, announced by UK Defence Secretary Des Browne in Parliament will see two new ships in service by 2014 and 2016 respectively.



AB Steven Moyle and LS Josh Wraight, the last two sailors in the RAN to fire the Bofors 40/60 Gun at West Head Gunnery Range on Thursday, July 19, 2007. (RAN)

The aircraft carriers will be named HMS QUEEN ELIZABETH and HMS PRINCE OF WALES.

This unique project will be a very considerable test of the UK maritime shipbuilding industry. It creates a through-life entity managing major surface warships from design to disposal. The order will be placed with an alliance of companies (including the Joint Venture) and will cost around £3.9Billion, although the alliance and MOD have agreed to work together to reduce this figure before a final price is settled in 2009.

Osprey lands on ILLUSTRIOUS

Ahead of a US-led Joint Task Force Exercise (JTFX) on the Eastern seaboard of the United States, HMS ILLUSTRIOUS welcomed the very first embarkation of a US Marine Corps Bell/Boeing MV-22 Osprey onto the RN aircraft carrier on Tuesday, 10th July. It is the first time that an Osprey has embarked in a non-US vessel.

With US Marine Corps Major Frank Conway piloting the aircraft, the visit gave the Osprey's crew a unique opportunity to demonstrate the aircraft's flexibility as well as the versatility of the UK's primary Maritime Strike capability. Whilst there are no current

plans to operate the MV-22 from UK Ships, close co-operation of this kind is vital should the need arise for ILLUSTRIOUS to conduct operations in a coalition environment.

Commander Henry Mitchell, the Commander (Air) in HMS ILLUSTRIOUS stated that "The Osprey visit gave the ship a unique opportunity to work with this impressive aircraft" further adding "We have been planning this for some time and although it is a departure from normal operations, the landing demonstrates the truly flexible nature of the UK Strike Carrier and the Osprey. It is hugely important to recognise the opportunities this type of event brings with it and how it reinforces our ability and willingness to operate with the widest possible range of aircraft anywhere in the world."

Indonesian Navy on the move

The Indonesian Navy has received the first of four corvettes it ordered from the Netherlands.

Indonesian Navy Chief Admiral Slamet Soebijanto visited the Royal Schelde Naval Shipbuilding in Vlissingen to witness the handover ceremony and inaugurate Lie. Col. Arsyad Abdullah as the first commander of the corvette named KRI DIPONEGORO 365.

Indonesia placed the order for four corvettes from the Netherlands in 2002, each is priced 139 million.

Soebijanto said the Navy was hopeful that all four corvettes would be handed over to Indonesia by March 2009.

Indonesia will also take delivery some time in the future of two Russian Kilo class diesel electric submarines. On his way to APEC in Sydney, Russian President Vladimir Putin stopped off in Indonesia to sign a line of credit agreement with Indonesia for Russian military equipment. Included in the deal are main battle tanks, helicopters and more advanced Flanker multi-purpose fighter aircraft.

It is unknown at this stage if the Kilos will be used or which version they will be if made new. A delivery date is also unknown at this stage.

HMS CLYDE Falklands bound

HMS CLYDE, the first warship to be launched in Portsmouth Naval Base for almost 40 years, was commissioned into the RN at a ceremony in Portsmouth Naval Base on Thursday 5 July, 2007.

CLYDE, an 80m-long enhanced River-class ship designed to patrol the waters of the Falkland Islands, had been undergoing trials and sea training since



The first embarkation of a US Marine Corps Bell/Boeing MV-22 Osprey onto the RN aircraft carrier HMS ILLUSTRIOUS. (USN)



The new Falklands guard ship HMS CLYDE. (RN)

her launch at VT Group's shipbuilding facility in the Base just under a year ago.

HMS CLYDE spent two weeks undergoing aviation training before departing for the Falkland Islands in mid-August, 2007 to relieve HMS DUNBARTON CASTLE. She will remain there for at least five years.

CLYDE is a highly capable and versatile vessel, with the ability to operate a variety of helicopters from her flight deck. She has air and surface surveillance radars and has a 30mm gun mounting. Besides her normal ship's company, she has accommodation for an embarked land force.

One of the features of the ship is that she is owned and will be maintained by VT Group and chartered to the UK Ministry of Defence (MOD) for five years. At the end of that time, the MOD will have the option to extend the charter, return the ship or purchase her outright.

So, without needing to make capital expenditure, the RN has one modern ship to replace two older vessels – DUNBARTON CASTLE and the former LEEDS CASTLE, the latter having already been decommissioned. CLYDE will be able to operate for 282 days of the year, thanks to a system of

crew rotation and maintenance carried out in the region with the support of Portsmouth Naval Base.

French Tiger at sea

From 21 May to 7 June, 2007, under the supervision of Eurocopter and the French General Delegation for Armaments (DGA), a Tiger attack helicopter took part in sea trials on two

French Navy vessels, the Amphibious Landing Dock (ALD) SIROCO and the Lafayette-type frigate GUÉPRATTE.

The capability of the Tiger to operate on a ship was put to the test in extreme weather conditions, with 6-metre swells, winds close to 100 km/h, and deck angles up to 12 degrees. The aim of the sea trials was to evaluate deck landing capability and to define the operations for helicopter tie-down after landing,



A French Army Tiger attack helicopter approaching the French Navy Amphibious Landing Dock ship SIROCO for first of class sea trials to evaluate the Tiger's ability to operate from ships at sea. (Marine Nationale)

blade folding, and handling on the deck, hangar and well deck of the ALD. In the 13 days at sea, the Tiger accomplished 300 deck landings and 80 logistic operations, confirming its outstanding suitability for ship-based operations.

The trials were part of the 'standard 1' qualification of the Tiger to determine its capability to operate from French Navy ships. The sea trials were a major challenge for the French Army and an important milestone in the programme schedule. From late 2008 on, French Army Tigers must be able to operate from deployment and command ships, aircraft carriers and ALDs. The evolution in the helicopter's definition covers the folding of two and four blades, engine rinsing, modifying the hydraulic pressure system, as well as the tools and equipment necessary for the Tiger operation.

Australia and Spain expressed a keen interest in the trials. Australian Department of Defence representatives from Army and the DMO project office were on board during the tests as Australia will perform similar trials in the not too distant future.

DARWIN leaves dock

Thales Australia's FFG Upgrade Project continues to make progress, with the third frigate leaving dry dock ahead of schedule at the company's Garden Island facility on 8 June.

The docking phase of HMAS DARWIN's upgrade installation was completed on Friday 8 June, 2007 as planned, thanks to efficiency gains achieved since Thales Australia completed similar installations on sister ships HMAS SYDNEY and MELBOURNE.

Back in the water, DARWIN will be berthed at Garden Island for the remaining platform modifications and combat system software installation.

DARWIN is programmed to commence harbour trials later this year. Hand back to the RAN is anticipated early in 2008.

A further encouraging sign for the programme is the current upgrade of the Australian Distributed Architecture Combat System (ADACS) software on the first ship, SYDNEY, to support the first of class firing of the Evolved Sea Sparrow Missile (ESSM) from the installed Vertical Launch System.

CHARLES DE GAULLE helps JSF-programme

The UK's QinetiQ and the MOD Joint Test and Evaluation Group, which comprise the UK Aircraft Test and Evaluation Centre, are currently undertaking a series of landing trials of a short take-off vertical landing (STOVL) aircraft on to the French Navy's CHARLES DE GAULLE carrier, using QinetiQ's Vectored-thrust Aircraft Advanced Control (VAAC) experimental Harrier.

Undertaken as part of the US Joint Strike Fighter (JSF) programme on behalf of the UK MOD Joint Combat Aircraft Integrated Project Team (JCA IPT), the trials were designed to expand the limits and knowledge of ship rolling vertical landings (SRVL) as a possible aircraft recovery technique for the RN's

two new aircraft carriers (CVFs) QUEEN ELIZABETH and PRINCE OF WALES.

Land based Rolling Vertical Landings (RVL) are routinely used on legacy STOVL (Harrier) aircraft, rather than vertical landings on unprepared surfaces, in order to avoid ingestion of debris into the engine. A requirement for JSF to perform land based RVLs has therefore always been a feature of the contract specification. However, the development of new RVL procedures for the F-35B aircraft, with its greater useable wing-lift at low speeds, means that either increased payloads can be returned and landed on the ship or the stress on the propulsion system can be reduced, leading to increased operational flexibility and propulsion system life.





Previous page and above: QinetiQ's Vectored-thrust Aircraft Advanced Control (VAAC) experimental Harrier conducting a Rolling Vertical Landing (RVL) on the French aircraft carrier CHARLES DE GAULLE. These tests will help with the UK's JSF programme and its new CVF carriers. (QinetiQ)

The MOD has stated "Consideration of the aerodynamic performance of JSF, together with the available deck area of the Queen Elizabeth class CVF design, has shown that significant benefits could be realised by extending the principles of land based RVL to ship borne operations and the UK is keen to exploit this opportunity."

This series of trials involves the first ever piloted evaluation of the SRVL manoeuvre onto an aircraft carrier, and comes on the back of a number of studies undertaken over the past few years into the feasibility of the SRVL concept. The MOD has also stated that the increasing maturity of this body of analysis and simulation indicates that SRVL could be performed safely by JSF on CVF although the effects of equipment failures and adverse conditions require further investigation. Work into this will continue to be undertaken by QinetiQ at the MOD's Boscombe Down site and using VAAC simulators at its Bedford site.

"The CHARLES DE GAULLE carrier, at around 40,000 tonnes has a similar deck size to the Queen Elizabeth class carriers, made it the ideal choice for this series of trials", stated Richard Watson, QinetiQ's VAAC programme Manager. "As the French are likely to play a key part in the development and fabrication stages of the CVF programme it was also logical and beneficial to include them at this stage.

The French team members in this trial have provided outstanding support in a challenging programme, and have been incredibly generous with their time, energy and overall contribution to the success of these test flights."

In 2005 a world first was also achieved when a fully automatic landing of the QinetiQ VAAC Harrier was conducted on HMS INVINCIBLE. QinetiQ's team of engineers with RN and Royal Air Force test pilots successfully demonstrated that the technology it has developed as part of its work for the Joint Strike Fighter programme could automatically bring a STOVL aircraft into land. This clearly demonstrated how exploiting advanced technology can reduce programme risk and bring real benefits for the pilots.

QinetiQ is also conducting ongoing work in maturing flight control concepts for the F-35B Lightning 2 and the Aircraft Test and Evaluation Centre recently completed an evaluation of advanced STOVL flight control concepts in collaboration with the JSF Programme Office and test pilots from the JSF programme. This ongoing work follows the pioneering development of Unified Flight Control, a novel STOVL control concept which was adopted for the F-35B in 2002.

Unified Flight Control enables the pilot to simply command the aircraft to go faster or slower and up or down whilst the fly-by-wire control system

does all the hard work. QinetiQ's autoland technology took this capability a step further and the autoland technology also opened up the door for operating Unmanned Air Vehicles (UAVs) from ships.

DARING sea trials

The RN's newest and most sophisticated destroyer – to be called HMS DARING – has successfully completed demanding sea trials off the Scottish coast.

UK Minister for the Armed Forces, Bob Ainsworth, said: "DARING's success at sea – she exceeded her design speed of 29 knots – is an excellent start to the intensive trials phase that will now begin as we bring her world-leading missile defence system into full operation.

"I have spoken to her crew and they are delighted with the capability of the ship and pleased with the high standard of accommodation on board."

A further five ships of this class are on order. One, DAUNTLESS, was launched earlier this year and another, DIAMOND, is due to be launched in November.

BAE Systems is the prime contractor for the delivery of the first six Type 45 destroyers. The ships are being assembled and launched from yards on the Clyde VT at Portsmouth and BAE Systems Surface Fleet Solutions will both build and outfit substantial sections of the ships.

The class is to be known as the 'D' class. HMS DARING, DAUNTLESS, DIAMOND, DRAGON, DEFENDER and DUNCAN have been announced as the names of the first six ships.

All ships will be equipped with the Principal Anti-Air Missile System (PAAMS), which is designed to deal with multiple attacks by anti-ship missiles. The ships will be powered by the WR21 Gas Turbine.

Statistics

Displacement: approx 7,500 tonnes

Length: 152.4m

Beam: 21.2m

Speed: 29 knots

Range: 7000 nautical miles at 18 knots.

Complement: approx. 190 (with space for 235) whilst providing significantly better accommodation standards than hitherto in destroyers/frigates.

Weapons and Systems:

The Principal Anti Air Missile System (PAAMS) with the BAE Insyte SAMPSON Multi-Functional Radar (MFR) (for surveillance and fire control) and the Thales S1850M Long Range Radar (LRR) for air/surface search,

SYLVER launcher and combination of 48 Aster 15 and/or Aster 30 missiles,
One 4.5" Mk-8 (Mod 1) Gun;
Two 30mm guns

Helicopter: 1 Westland Lynx MHA 3/8 or 1 Merlin EH101 HAS 1.

Her onboard power plant can supply enough electricity to light a town of 80,000 people.

Her fuel tanks have a volume equivalent to approximately half the volume of an Olympic swimming pool.

The ship's crew will enjoy much better onboard conditions than their predecessors – including IT access, 5-Channel recreational audio and larger berths.

She contains 110 bunk beds, 26 sofa beds, 22 single beds and has her own hospital facilities complete with operating table. She is fitted with 1 bath, 44 showers, 54 toilets and 100 wash basins.



NUSHIP DARING departing for her first sea trials off the Scottish coast. (RN)



An F2000 class corvette at sea formerly of the Brunei Navy. The Brunei Navy had purchased three of these ships from BAE Systems in the UK. However, a disagreement over the ships specifications has seen them remain in the UK and undelivered. A German broker has since been appointed by Brunei to sell the corvettes on the open market. Britain is naturally concerned as to who the final buyer may be as a fair amount of its latest weapon and sensor technology went into the ships. (BAE Systems)

Observations

By Geoff Evans

Will SYDNEY (II) ever be found?

The reported discovery of a shipwreck off Dirk Hartog Island, Western Australia, in August and claimed to be that of the light cruiser SYDNEY (II), lost with her entire complement after an engagement with the German raider KORMORAN in November, 1941, naturally created headlines in the media; few World War II warships in any navy have been the subject of such lasting professional attention and public interest. Although a subsequent examination by the RAN indicated the wreck was not SYDNEY, neither attention nor interest have abated.

The reasons are understandable: The SYDNEY-KORMORAN action was unusual in several respects;

1. A converted merchant ship, well armed, was able to overcome a supposedly much better-equipped warship;
2. While the merchant ship also sank, over 300 of her 393 crew survived but the warship's complement of 645 perished; and
3. SYDNEY was Australia's best-known warship, with a well-deserved reputation for her leading role in an action in the Mediterranean less than 18 months earlier in which the Italian cruiser BARTOLOMEO COLLEONI was sunk.

To date, spasmodic attempts over the years to locate SYDNEY and/or KORMORAN have failed, sparking numerous theories as to the circumstances that may have caused SYDNEY to disappear after her encounter with KORMORAN, speculation, published in books and papers and given voice at inquiries. The most exhaustive inquiry was that instigated by the Minister for Defence in August, 1997 and carried out by the Federal Parliament's Joint Standing Committee on Foreign Affairs, Defence and Trade (JSCFADT) which, reported its findings in March, 1999.

The situation on board SYDNEY and the circumstances that resulted in loss of the cruiser and her people will never be known: the JSCFADT inquiry did however dispel some of the more imaginative theories and reached a conclusion on other debatable matters. The committee of course had to keep in mind the fact that the only witnesses to events on 19 November were the German survivors, enemies at the time, but considered their account to be feasible (the majority of survivors were rescued at sea by several ships between 23 and 27 November, while some landed at Cape Cuvier, north of Carnarvon).

The JSCFADT inquiry received over 400 submissions and conducted interviews in all State capitals except Adelaide. Many of its findings were tentative, indeed they had to be in the circumstances; some theories were however rejected no matter how sincerely held. The committee was satisfied that:

- there was no Japanese (submarine) or third-party involvement,
- there was no evidence to suggest KORMORAN's minelaying speedboat played any part in the action,
- SYDNEY survivors (if there were any) were not killed in the water after the action, and
- there was no evidence that any signals that may have been sent by SYDNEY were received by naval authorities and ignored (i.e. there was no 'cover-up' by the RAN or by the Admiralty).

On a more constructive note, in the view of the writer, the location of the SYDNEY/KORMORAN engagement and the area of search for possible wreckage of either or both ships has been determined with a small plus or minus factor. Hermon Gill in the World War II history *ROYAL AUSTRALIAN NAVY 1939-1942* notes the first sighting of the cruiser by KORMORAN was "150 miles south-west of Carnarvon: the position of the engagement attributed to the raider's Captain, who was among the survivors was at 26°34'S, 111°E and by the Navigator 27°S, 111°E. The West Australian Maritime Museum and JSCFADT subsequently recommended a search area at or near 26°32-34'S, 111°E.

The close range at which the battle was fought would appear to be confirmed by the extent of damage the ships inflicted on each other in a relatively short time – the action was over in about 30 minutes according to Gill, with both ships on fire and crippled. The first hits on SYDNEY (on the cruiser's bridge and director) were claimed to have been obtained at 1640 yards (1500 metres) after and ranging shot at just over 1400 yards (1280 metres) was short.

Ever since the wartime encounter, some people including relatives of those who died in SYDNEY have indicated their preference for the ship not be found but to be left undisturbed with all those who sailed in her last voyage. Others, it would seem a majority either for understandably sentimental reasons or for a wish to discover if possible what caused the ship to finally founder, want a search to proceed. This will happen.

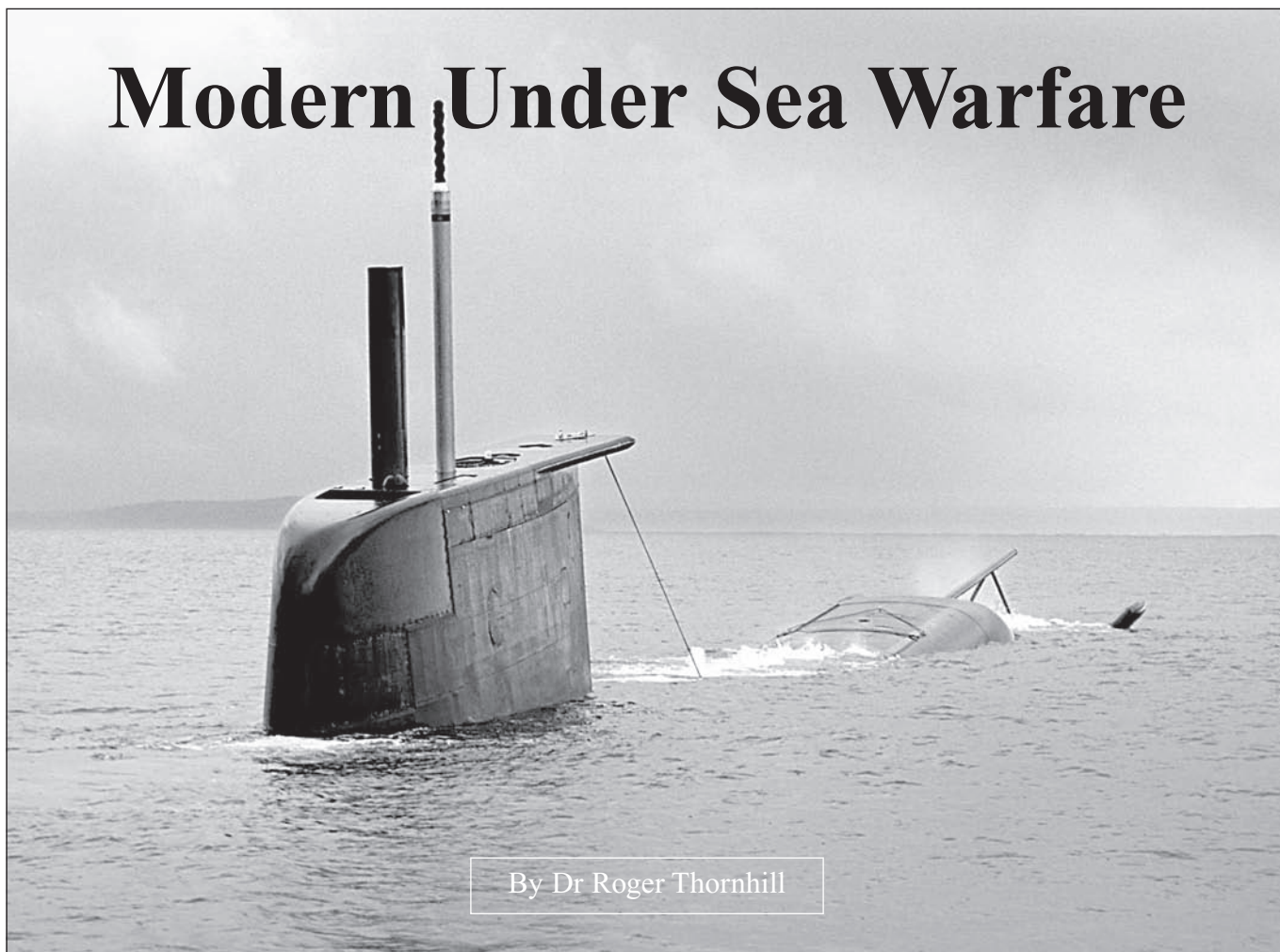
Recently it was announced that the Federal, Western Australian and New South Wales governments will contribute some \$5 million for a search to find the two ships: the search will be carried out by the RAN together with salvage divers who located the sunken World War II battle cruiser HMS HOOD and the German battleship BISMARCK. It has been pointed out however, that the search area for SYDNEY/KORMORAN is far larger than that of HOOD, BISMARCK or the liner TITANIC.

The foregoing comments relate in the main to those aspects of the November, 1941 encounter that have attracted considerable attention over the years. The recovery in February, 1942 of a carley float bearing the body of a possible member of SYDNEY's crew is another story altogether, a story that also continues.



The RAN cruiser HMAS SYDNEY (II) at Sydney's Circular Quay. (RAN)

Modern Under Sea Warfare



By Dr Roger Thornhill

The RAN Collins class submarine HMAS WALLER diving. (RAN)

A recent report on Anti-Submarine Warfare (ASW) by the Australian think-tank ASPI (Australia Strategic Policy Institute) stated that the ADF's ability to conduct ASW could be much better – this report was indecently published months before the recent announcement that Indonesia is acquiring two Russian Kilo class submarines.

About the only thing capable of effective ASW is the current fleet of six Collins class submarines.

Dr Roger Thornhill takes a look at some of the important aspects of modern undersea warfare.

For the past 40 years, there has been a broad consensus among Western submarine-operating navies that the primary role of the submarine is Anti-Submarine Warfare (ASW) i.e. set a thief to catch a thief. However, non-Western Navies see the submarine as primarily an anti-surface asset useful in controlling chokepoints and strategic waterways to deter the passage of hostile surface forces. This mis-match is due in part to the cost of systems needed for ASW such as sonars and signature reduction measures. For navies wanting to do the ASW role this cost now means that the modern diesel-electric submarine (SSK) is more expensive than a warship.

Effective submarine based ASW is also very difficult and cannot be achieved with the introduction of a new submarine as an 'off the shelf' purchase (such as with Indonesia's purchase of Kilo class submarines and Malaysia's Scorpene class from France). It takes decades of submarine service to develop the tactics, techniques, procedures and doctrine, backed up by experience, to be effective.

In the anti-surface role the submarine is still the king. Nothing sinks ships faster than a torpedo. To put it simply, modern anti-ship missiles essentially let air in the top, while a torpedo lets water in the bottom. For a ship, keeping the water out is imperative.

Thus the modern Western submarine will be tasked with ASW in order to protect surface fleets from potential enemy submarine activity. This makes them vital to any operation for despite the lower levels of technology and signature reduction still found in some Russian designs and certainly in nearly all Chinese designs, it is still a very difficult prospect for a surface ship to locate a submarine. Particularly so with new European SSKs such as the German Type 212 and French/Spanish Scorpene currently on the market. With Western submarines taking on the land attack role through the employment of Tomahawk cruise missiles, this may act as a distraction to the vital ASW role and have a greater impact on future maritime operations.

The Torpedo

Despite being invented over 130 years ago the torpedo remains the principal submarine weapon, but it has advanced a long way from the unguided 'tin fish' of the two world wars. These 'brilliant' weapons can remain under positive command throughout an attack run, using a two-way fibre optic command wire paid out from dispensers in the tube and in the back end of the torpedo. Control signals are sent from the fire

control system to the torpedo. Alternatively, sonar information gathered by the torpedo's seeker head can be fed back to the fire control system on the submarine. The torpedo can thus be made to act as an off-board sensor, allowing greater flexibility in submarine tactics.

Wire-guidance has, however, some disadvantages. A 10,000-metre run at 30 knots, for example, takes ten minutes, during which time the tube cannot be reloaded. The risk of mutual interference in a large salvo means that some current weapon control systems are designed to control no more than two torpedoes. Part of the early problems with the RAN Collins class submarine was that its fire control requirement was for six torpedoes to be controlled in the water simultaneously and against individual targets. Unfortunately this requirement was somewhat ambitious for the level of technology of the day.

Modern torpedoes can also be used in the fire-and-forget mode. They home in on the target's noise or use their own active pinging sonar to locate the target. When a contact is lost or cannot be acquired the modern torpedo can initiate its own search pattern for the target. Some are capable of loitering at slow speed to conserve energy or in an attempt to 'wait out' the target if it has gone silent. They can also be programmed with a fail safe so as the launching submarine will never be targeted (even without the wires attached).

Most modern torpedo seekers can operate simultaneously in both high and medium frequencies in passive mode, allowing the torpedo to discriminate between signals from the real target and signals from acoustic countermeasure decoys. In active and passive mode, both frequencies are independently processed to aid in accuracy.

Most modern torpedoes like the US Mk-48 Mod 6/7, the UK Spearfish and European Black Shark can conduct multiple re-attacks if the target is missed. Some seekers have an active electronically-steered 'pinger' that enables the torpedo to avoid having to manoeuvre as it approaches its target.

The modern anti-ship/submarine torpedo is by far the smartest weapon to be found in the maritime battlespace.

Missiles

The newest addition to submarine warfare is the underwater-launched missile, which is either ejected from a torpedo-tube in a neutrally buoyant capsule or fired from a vertical launcher.

When it comes to the surface it broaches at a pre-set angle, allowing the missile to fly clear of the water and assume a



The former HMAS TORRENS being attacked by a Mk-48 torpedo from a Collins class submarine proving the torpedo is still the best anti-ship weapon available. (RAN)



USS FLORIDA launches a Tomahawk cruise missile off the coast of the Bahamas. FLORIDA is one of four Ohio class ballistic missile submarines (SSBN) converted to guided missile submarines (SSGN). Submarines generally dislike the underwater launched missile as it tends to give away the launch submarines position. (USN)

normal flight profile. There are two types of missile in service, anti-ship missiles such as Sub-Harpoon and SM-39 Exocet, and cruise missiles like the Tomahawk or its Russian counterpart, the SS-N-21 Sampson (dubbed Tomahawski by the US Navy). The Russians have even crossed these two modes of operation with the SS-N-27 'Sizzler' anti-ship cruise missile and the Shkval rocket torpedo.

The disadvantage of the submarine launched missile is the plume of smoke and spray kicked up when the missile broaches the surface. This acts as an unwelcome beacon to hostile ASW forces. The other disadvantage of the anti-ship missile is that its full range cannot be exploited as the submarine's sensors are limited in range and thus accuracy.

It has been said that RN submarines no longer carry the sub-Harpoon for the disadvantages mentioned, that and the fact that the modern torpedo is very effective, and to make room for Tomahawk land attack cruise missiles.

Tactical Advances Since WW II

Underwater tactics in Western Navies' submarine forces changed radically after the Second World War. The disappearance of the Axis Navies was followed by a dawning realisation that Stalin's plans for a big-ship Navy were largely fantasies of the intelligence community. The reality that emerged was the Soviet Navy's obvious commitment to expansion of its submarine fleet, so emphasis was switched to ASW.

The objective in underwater ASW during the cold war was generally to ambush hostile submarines attempting to penetrate or pass through a barrier such as the Greenland-Iceland-UK (GIUK) Gap, or a similar chokepoint such as those that litter the archipelagic regions to Australia's north. Ambushing was the tactic of choice as trying to find a submarine in the vast expanse of the ocean is difficult to say the least. The ambushing submarine would lie motionless or nearly motionless, thereby reducing self-noise and enhancing the range of its sonar. The speed of the approaching target would be estimated by counting its propeller-beats, and in conjunction with bearing and rate-of-change data, the fire control system could compute target-range and course. In theory at least, this provided a firing solution but in practice the accurate measurement of bearings was a lengthy process.

Within a few years the scene changed, as a new generation of sonars like the US Navy's AN-BQR-4 extended detection-ranges to tens of miles, well outside the range of contemporary

torpedoes. The USN perfected a new technique of varying the listening submarine's speed or course to change the bearing rate to the target. Known as Target Motion Analysis (TMA), it had to assume that target course and speed were constant, but it had the advantage of eliminating the need to rely on the turn-count of the target's propeller beats. Later TMA was improved by precise manoeuvring to measure changes in the target bearing. Precise location of the target could be achieved by a single 'ping' from the active sonar, but Western submariners tend to rely on a fully passive engagement to avoid mutual detection.

With ASW established as the principal mission of Western submarines, the design of torpedoes and their launch-tubes underwent radical changes. One solution was the 'swim-out' tube; the torpedo propels itself out of the tube to reduce the noise of discharge. This type of tube imposes several constraints on the choice of weapon. The torpedo must be dynamically stable at low speed, to ensure that it runs straight after firing. The bow of the boat must be carefully designed to reduce hydrodynamic interference with the outer doors of the tubes, and cross-flow across the tubes must be eliminated to prevent the torpedoes from being deflected.

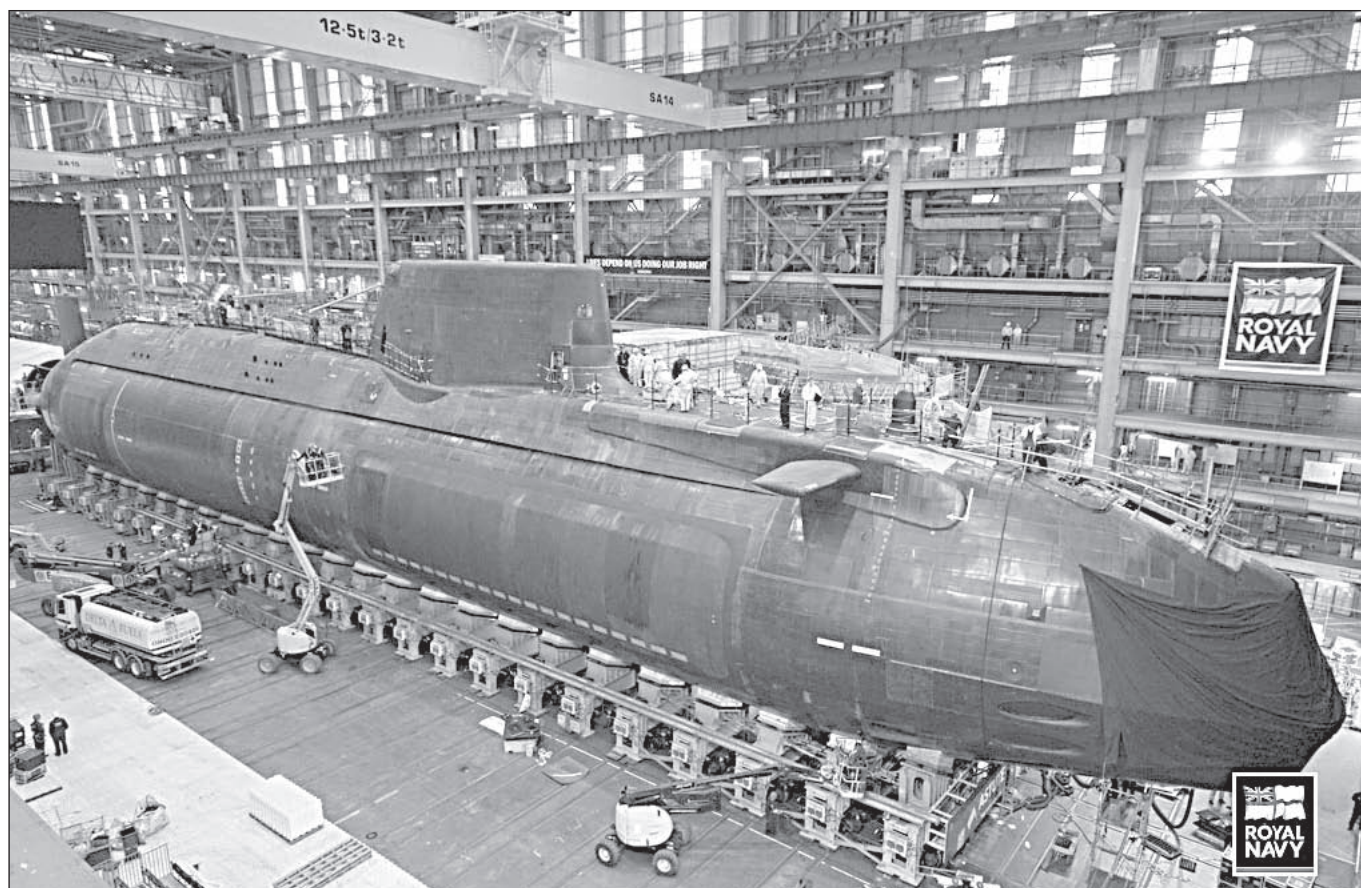
Swim-out tubes are compact and simple, so they proved popular in small submarines such as the German Type 209, but they cannot launch inert weapons such as mines or encapsulated subsurface-to-surface missiles. American and British submarines, including the RAN's Collins class, adopted water-pulse ejection, a more complex method requiring more internal volume. Before firing the tube is flooded to equalise pressure; a hydraulic pump then forces a 'water slug' into the breech end of the tube, forcing the torpedo or missile capsule out. French submarines adopted an interim system first tried by the Kriegsmarine in 1939-45; a

piston in the tube ejects the torpedo without generating an air bubble. Like the old-fashioned method of air-discharge, it is limited in depth.

Larger tubes have also been experimented with. In theory many benefits flow from an increase in the dimensions of launch-tubes from the traditional diameter of 533mm: mainly longer ranged torpedoes and a more destructive warhead. But in practice larger weapons are hard to handle and require more internal volume. Much alarm was generated in the early 1980s by reports of a Soviet 650mm 'super-torpedo'. As a counter the US Navy replaced two 533mm tubes in the SSN USS MEMPHIS with an experimental 762mm tube in 1989. This experiment proved successful and was adopted in the USN Seawolf class SSN with eight 762mm tubes. While the Mk-48 torpedo remains a 533mm weapon the increased size of the tube allows for greater flexibility in launching new weapons, unmanned underwater vehicles, mines or special forces equipment. Smaller diameter weapons, such as the Mk-48 533mm torpedo are accommodated through a sleeve mounted in the tube.

Command and Control

Although submarines have been effective weapons of war since 1914, the concept of a true command system is relatively recent. Its origins lie in the Second World War, when submarines first used sonars, radars and electronic support measures (ESM) under operational conditions. Up to that time the main sensor was the periscope, usually operated by the Commanding Officer (CO). The tactical picture remained, therefore, in the mind of the CO, who required only external assistance from the operators of weapon control and discharge sub-systems.



The newly built Royal Navy SSN HMS ASTUTE. The RN submarine is the latest SSN to take the water. The RN gave up carrying sub-Harpoon in favour of torpedoes and land attack cruise missiles, of which it can carry 38 weapons. (BAE Systems)

During the 1950s, sonar, radar and ESM performance improved so dramatically that a team of plotters became necessary to keep track of information about contacts. Movements were predicted by using simple numerical calculations and graphical construction. As torpedoes became more and more sophisticated they demanded modern techniques to control them.

Thus, in the early 1960s the electro-mechanical analogue computers used to control straight-running, steam-driven torpedoes gave way to digital computers and electronic displays, capable of tracking and directing wire-guided torpedoes.

However, it was not until the early 1970s that digital computing techniques and electronic displays began to displace manual plotting in the compilation of the tactical picture. By the mid-1970s the combination of a computerised Action Information Organisation (AIO) and a Fire Control System (FCS) began to emerge as the integrated Combat System which is now standard for major submarine operating Navies.

Of the two main components of a combat system, the AIO is the biggest challenge to the submarine designer. FCS design, by comparison, is driven by the requirements of the weapon system with which it is to interface. The main purpose of the AIO is to present the tactical picture to the command team (the CO and his subordinates), to show the position and identity of all contacts, and to predict their movements.

It is unfortunate that production of an ideal tactical picture is a goal which is not easy to attain underwater. If the submarine is to remain undiscovered, she must rely on passive sonar as her main sensor. This could be problematic in the littoral battlespace as salinity, temperature and turbidity affect both active and passive sonar accuracy and performance.

From this sonar's data must be extracted not only the position of contacts but their identities, motion and mode of operating. Unlike radar, which locates and tracks targets within seconds, passive sonar is imprecise and slow. The determination of the contact's location and motion may take some minutes, even hours depending on range. At times a contact may be detected, but without being positively identified and located before it passes out of detection range.

The type of information produced by even the most modern passive sonars does not produce a display which can be easily interpreted by the command team. The information must be manipulated and processed to produce a clear tactical picture.

Compiling the tactical picture can be divided into three main areas: track-management, TMA and display-management. The track-management process consists of sorting sensor data into discrete sets which must correspond to the platform from which the data emanated. The sorted data must then be stored in a database for rapid access by other sub-systems within the main combat system. There are five problems encountered in this process:



The USN's newest SSN USS VIRGINIA. Virginia class submarines have non-hull penetrating periscopes allowing the Captain to be the user of the technology and not the operator. They have 12 vertical launch cells in the bow for Tomahawk land attack cruise missiles and capacity for 38 other weapons in the torpedo room. (USN)

- The bearing resolution of many sonars is low; a stream of data ostensibly from the same bearing may in fact originate from more than one submarine.
- New contact data rarely has any distinguishing characteristics; it may take some time to determine the identity of the contact.
- Modern submarines have many different types of sensor; a single target may be detected by several sensors, and stored in the database as multiple tracks.
- Determining the identity of the contact is achieved by a gradual assembling of clues over a long period; it is therefore necessary to provide a database capable of storing all classification clues on all tracks.
- TMA is also a process conducted by using positional data over a protracted period.

In current systems, track-management places a heavy work-load on operators. Sensors may have the ability to carry out data-fusion for a single noise-source, presenting an identified data-stream to the command system, but the process of associating multiple data-streams into one track is still a task needing initiation by the operator. Recognition of poor data and the subsequent task of editing that data are also functions of the operator.



The control room of a Collins class submarine. Merging passive sonar data is still performed manually and requires great skill, training and experience to be effective. (RAN)

I Can See You

It may seem out of date but the periscope remains a valuable submarine sensor. However sophisticated the sonar suite, a quick look is required by most COs to verify the tactical picture. However, the modern periscope is a very sophisticated electro-optical instrument, using thermal imaging, low-light TV cameras, GPS, laser rangefinder and with integral ESM. They are also coated in radar absorbent material and shaped to reduce their radar cross section. Optronic technology advancements allow the command team to gather optical information quickly (minimum exposure of the masthead), record it, and then study it slowly, in safety. Some periscopes even have an automatic 'quick look' function to further reduce the time the mast is above the water.

Current periscope technology consists of the non hull penetrating mast, using a fibre-optic link to transmit data to a tactical console. This has the benefit of allowing the CO to be the user of the sensor's output, rather than the operator. It also allows more space and a more rational layout in the Control Room/Attack Centre by moving the periscopes and their hoisting mechanisms to a more convenient compartment. The USN's new Seawolf and Virginia class SSNs and RN's new Astute class SSN's use this new technology.

The Future

The number of SSKs finding their way into Third World Navies makes it inevitable that submarine warfare will be a feature of future regional conflict. In 2003 there were 53 new SSKs at sea worldwide. There are thought to be approximately 300 SSKs operating in the world's oceans.

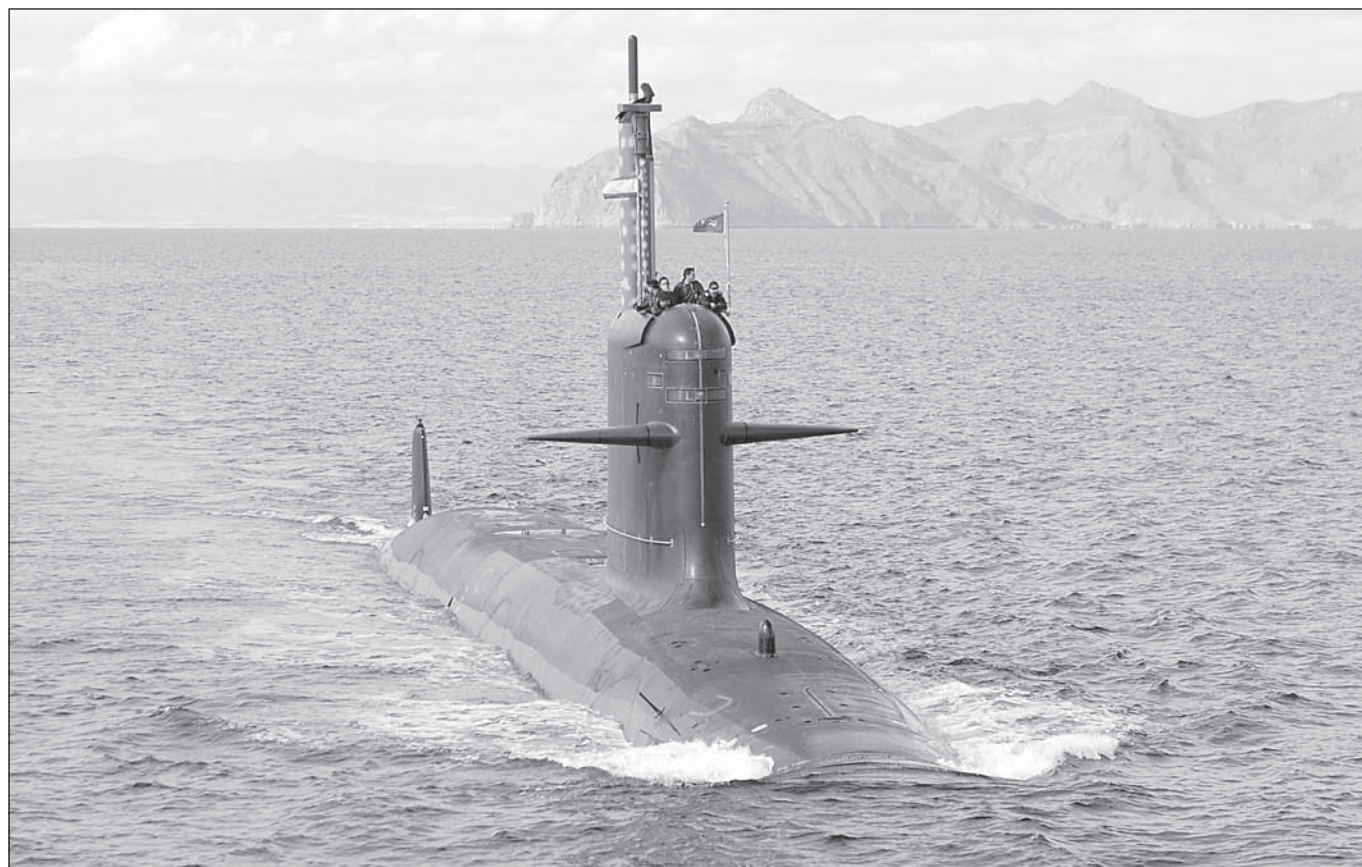
Right now SSKs are still very vulnerable to air attack while snorkelling. Twenty minutes is thought to be the maximum for safety, before a maritime patrol aircraft detects the noise and infra-red emissions of diesel engines recharging batteries.



The commanding officer of an RAN Collins class submarine looking through the periscope to get a better idea of the tactical picture above the surface. Periscope technology now incorporates radar absorbent material and stealth shaping to avoid detection by radar. (RAN)

To try and reduce the time spent snorkelling or snorting designers have spent years developing air-independent propulsion systems (AIP). The Stirling engine has been successfully employed by the Royal Swedish Navy, as has IKL's fuel cell system by the German Bundesmarine. Other systems are also well advanced, and AIP-driven submarines will be operational in significant numbers by the end of the decade.

Whatever the outcome, the submarine's unique blend of strength and offensive power ensures its survival in modern sea warfare. It is not, whatever its proponents claim, a 'dominant weapon' to the exclusion of all others, but it poses a threat which no navy can ignore. Torpedo defence is also an area that has been neglected for far too long, despite the brilliant and devastating nature of new torpedoes.



The new Scorpene class SSK O'HIGGINS for the Chilean Navy seen on sea trials. There is currently a world-wide boom on for new SSKs with new and improved technology over submarines such as the RAN's Collins class. Skill and experience will be the RAN submariner's main advantage. (Navantia)

HATCH, MATCH & DISPATCH

HATCH

God bless MARYBOROUGH

Her hands trembled a little but Marilyn Burgess took the scissors and firmly cut the ribbon moments after she had pronounced the words, "I name this ship MARYBOROUGH, may God bless her and all who sail in her".

To tumultuous applause, the ribbon ran through the pulleys and a bottle of champagne described a graceful arc to shatter on the bow of the Navy's latest Armidale class patrol boat NUSHIP MARYBOROUGH.

The RAN Chaplains Paul Raj, Barrie Yesberg and Rowan Strong had conducted a service inviting the blessing of Almighty God on the ship and her future endeavours on behalf of Australia.

The audience had warmed up, joining LSMUSN Kirsty Cameron singing the National Anthem at the beginning of the ceremony, and later joined her in the Naval Hymn, 'For those in peril on the sea'.

John Rothwell, executive chairman of the Austal Group, had begun the day's events with a welcome to the facility at Henderson just outside Fremantle, making particular reference to the veterans of MARYBOROUGH (I) who were in the audience.

RADM John Lord (ret'd), Chairman Defence Maritime Services, led the toasts saluting the Queen. Senator David Johnston, Minister for Justice and Customs, who represented the Minister for Defence, followed with a toast to the ship MARYBOROUGH and the Lady naming her to which Marilyn Burgess responded.

"My mother and father are in the audience today and it is because dad [Keith Young] was a crew member of MARYBOROUGH (I) that I was invited to be naming Lady. I want to thank VADM Russ Shalders the Chief of Navy for giving me this very great honour and pleasure," she said.

CN VADM Shalders AO CSC RAN proposed the toast to the cities of Maryborough and to the veterans of MARYBOROUGH (I).

The mayors of Maryborough Queensland, Barbara Hovard, and of Central Goldfields Shire Victoria, Geoff Lovett, responded with Dr Alastair Cole, a former crew member, responding for the veterans.

The final toast, "To the shipbuilders and contractors" was proposed by RADM Boyd Robinson, Head Maritime Systems Division DMO; to which John Rothwell responded. He warmly thanked all those who had attended.

The final ship of her class, GLENELG, will be named on October 6.

By Hugh McKenzie, NAVY NEWS

Match

Tenth Armidale WOLLONGONG Commissions

In a centuries old tradition, HMAS WOLLONGONG, commissioned at Sydney's Garden Island on Saturday 23 June, 2007.

WOLLONGONG is the tenth of 14 state-of-the-art Armidale class patrol boats to be commissioned into service and built by Western Australian ship builder Austal Ships. The first Armidale, HMAS ARMIDALE, was commissioned in June, 2005 and several of her sister ships are already operational.

During the ceremony, the ship's Commissioning Order was read and the Australian White Ensign was hoisted for the first time. The ensign used was the same one hauled down from the

previous WOLLONGONG, a Fremantle class patrol boat that decommissioned in January, 2006.

In attendance was Senator Concetta Fierravanti-Wells, representing the Minister for Defence and the now former Commander Australian Fleet, Rear Admiral Davyd Thomas, AM, CSC, RAN.

"This is a joyous occasion for my crew and the Navy – the result of many months of hard work preparing WOLLONGONG for her introduction into service and commencement of border protection role". Commanding Officer of HMAS WOLLONGONG, Lieutenant Commander Mark Taylor RAN said.

HMAS WOLLONGONG is the second of four Armidales to be based in Cairns, Queensland. She is part of the ARDENT Division that consists of six crews. The multi-crewing concept is designed to maximise platform availability without compromising crew respite and training periods.

In attendance were veterans from the first ship to bear the name WOLLONGONG, a Bathurst class corvette, which served with distinction during World War II.

Eleventh Armidale CHILDERS Commissions

The Navy's Armidale class patrol boat, HMAS CHILDERS, commissioned alongside Trinity Wharf in Cairns on July 10, 2007.

CHILDERS is the 11th of 14 state-of-the-art Armidale class patrol boats to be commissioned and built by Western Australian shipbuilder Austal Ships.

In attendance representing the Minister for Defence was the Parliamentary Secretary to the Minister for Defence, Mr Peter Lindsay and the Commander Australian Fleet, Rear Admiral Nigel Coates AM, RAN.

"This is a great day for the Navy, my crew and the two towns of Childers. Today marks the culmination of many months of hard work in getting CHILDERS ready for her mission." Commanding Officer HMAS CHILDERS, Lieutenant Commander Mal Parsons, RAN said.

"HMAS CHILDERS, with her state-of-the-art design, will provide considerable improvements in both operational capability as well as crew habitability," Rear Admiral Nigel Coates said.

"The Fremantle Class Patrol Boats conducted sterling work over the past 27 years, but these new vessels will add a new dimension to border security."

Like sister ship WOLLONGONG, CHILDERS is the third of four Armidale class patrol boats to be based in Cairns, Queensland as part of the ARDENT Division.



'Three cheers for CHILDERS'. The crew of HMAS CHILDERS give three cheers for their newly commissioned patrol boat. (RAN)

PRODUCT REVIEW

The Australian Cruiser Perth 1939-1942

By Dr Ian Pfennigwerth
Rosenberg Publishing Pty Ltd, 2007
263 pages
ISBN 9781877058523

Reviewed by Steve Bennet

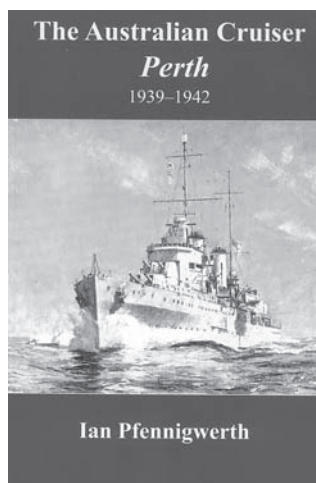
The Australian Cruiser Perth 1939-1942 is one of the more fascinating accounts of this major warship's WW II service in the RAN. This service would have to rate as one of the shortest for a major fleet unit in Australian naval history.

The author Dr Ian Pfennigwerth has interviewed many of PERTH's WW II survivors and brought their first hand accounts together in a well researched and very interesting book. This cradle to grave account covers PERTH's Caribbean, Mediterranean, Aegean and Java Sea operations and her last ditch fight against the odds in company with the USN cruiser USS HOUSTON.

PERTH's wartime operations are described and include the blockading of German merchant ships in neutral ports, escorting vital troop convoys to the Middle East, attacking shore positions in Libya and Syria and providing air defence of convoys, especially from the feared Stuka dive bombers of the German Luftwaffe. PERTH participated in several pivotal battles, especially Matapan and Java Sea, and in the evacuation of Commonwealth forces from Greece and Crete in April-May 1941. Despite this very active service, she had lost fewer than a dozen of her company to enemy action before her sinking.

This book is not just an account of the cruiser's war service. Using diaries kept by members of her ship's company to supplement British, Australian, German, Italian and Japanese official sources, Ian Pfennigwerth has provided a picture of the men who contributed to the ship's proud record and the conditions under which they did so.

The book is a story of adventure and courage in adversity, written as a tribute by a former commanding officer of the cruisers namesake, the guided missile destroyer PERTH (II) and is thoroughly recommended.



Osprey Combat Aircraft Series 52: US Navy F-14 Tomcat Units of Operation Iraqi Freedom

By Tony Holmes
Osprey Publishing
96 Pages.
Price \$35.00 + Postage & Handling
The Armchair Aviator.
8 James Street Fremantle WA 6160
Ph and fax (08) 9335 2500
Reviewed by Ian Johnson



Another of the Osprey Combat Aircraft Series Books by Tony Holmes, and like the 20 others he has produced over the years, 'US

Navy F-14 Tomcat Units of Operation Iraqi Freedom' is a goldmine of information. With rare and exclusive access to the Tomcat Squadrons and the personnel that took part in Operation Iraqi Freedom (OIF) 'US Navy F-14 Tomcat Units of Operation Iraqi Freedom' is just as much a history of an air campaign as it is an eye witness account on modern air warfare.

This book begins with the role played by Tomcat squadrons during the years of Operation Southern Watch, the "Shock and Awe" of the invasion of Iraq, to operation in the north of Iraq, ending with operations up to 2004 in the Gulf, and the beginning of the end of the F-14 Tomcat in USN service.

Tomcat Aviators that conducted OIF missions described in the book fill much of the text, which includes rare personal photographs. These personal stories add to the rich vein of information Tony Holmes has collected for this book. Holmes also mentions the visit to Western Australia by Carrier Air Wing Fourteen (NK) and VF-31 "Tomcatters" onboard USS ABRAHAM LINCOLN (CVN-72) prior to the beginning of OIF and the use of RAAF Base Pearce north of Perth.

With outstanding artwork showing the various colour schemes and squadron artwork worn by those F-14 squadrons involved with OIF, this book is a great reference on an aircraft type no longer in US service, as well as showing the beginning of the Iraq war that continues today.

For both aviation and military history buff, an outstanding publication to own!

Bye Bye Baby...! Grumman F-14 Tomcat

By Dave Parsons, George Hall, and Bob Lawson
Price \$27.00USD + P&H
By Zenith Press.

200 Pages.

From www.Amazon.com

Reviewed by Ian Johnson

With the removal of the F-14 Tomcat from USN service many books will be written about the greatest and last fighter aircraft to fly off an American supercarrier.

'Bye Bye Baby...! Grumman F-14 Tomcat', is the first of these books to be released, but be warned, it is not a facts and figures book. Photographs and memories are the themes of this publication as former Tomcat Aviators, many legends within US Naval Aviation circles, bring both their thoughts and images of their time in service alongside the Tomcat's 35 years of USN operations. As the patch states on page 180, "When You're Out Of F-14's, You're Out Of Fighters!! TOMCAT!"

'Bye Bye Baby...!' is filled with outstanding images over the past 35 years from great photographers such as George Hall, Bob Lawson, CJ "Heater" Heatley, Ted Carson, and Katsuhiko Tokunaga. The images are complemented with serious and very funny quotes from many Tomcat legends including Paul "Gator" Gillerist, John "Masher" Carrier, Joe "Hoser" Satrapa, and Monroe "Hawk" Smith, men who were instrumental over the years to making the Tomcat into the lethal warplane that it became for the three decades or so it was flying. There is also information about the Tomcats that still fly for Iran.

Another area 'Bye Bye Baby...!' examines in a light-hearted way is the use of the F-14 Tomcat by Hollywood. From *JAG* to the *Final Countdown* and to the movie that made the Tomcat into a bigger star than the actors, *TOP GUN*. The quote by actor Anthony "Goose" Edwards about one of his Tomcat flights during the making of the movie is one of the funniest in the book!

If you want facts and figures on the Tomcat, this is not the book for you. If you want a great insight into the world of US Naval Aviation and the role played by the F-14 Tomcat from those that flew, fought, fixed and commanded Tomcats and their Aviators, then 'Bye Bye Baby...! Grumman F-14 Tomcat' is the book for you! Worth the effort to get it online and the wait for its arrival from the USA.

Anytime Baby! Hail and Farewell to the US Navy F-14 Tomcat

By Erik Hilderbrant

192 Pages.

Price \$35.00USD + P&H

From Amazon.com

Reviewed by Ian Johnson

Anytime Baby! Hail and Farewell to the US Navy F-14 Tomcat covers the last three years of Tomcat service with the USN. *Anytime Baby* is the creed of the F-14 Tomcat and those Naval Aviators that flew them.

The chapters of the book tell the tale of those last squadrons and their last acts as part of the United States Naval Aviation fraternity. From the last F-14A squadron to decommission (VF-211 "Checkmates") in 2004 to the Last Cat Standing (VF-31 "Tomcatters") in 2006, this book chronicles the last dedicated fighter (VF) squadrons of the USN before and during their conversion to Strike Fighter Squadrons (VFA) using the F/A-18E/F Super Hornet (also known as the Rhino).

Most of the book celebrates the service of the F-14 Tomcat. Chapters cover the last Tomcat cruises supporting *Operation Iraqi Freedom* and *Operation Enduring Freedom*, the decommissioning of the last Tomcat training squadron (VF-101 "Grim Reapers"), as well as explanations of USN fighter squadron traditions such as the MUTHA Award. But in some ways, *Anytime Baby* is a somewhat melancholy look into the retirement of the F-14 Tomcat, with the two saddest chapters showing what happens to fighter aircraft when they are no longer required, and what the F/A-18E/F Super Hornets look like with Tomcat colours.

With comments from those last serving Tomcat Aviators and illustrated with stunning images of the last USN Tomcats in flight (Iran still operates at least 20), *Anytime Baby* is ultimately a celebration of the last years of the greatest and last dedicated fighter aircraft to serve in the United States Navy, the F-14 Tomcat. This book is a must for any aviation fan.

Dragon Wings – Warbird Series F-14 Tomcat 1/72 scale Die Cast Model series

F-14D Tomcat, VF-31 'Tomcatters' 2004

F-14D Tomcat, VF-213 'Black Lions' 2006

F-14B Tomcat, VF-11 'Red Rippers' 2003

Cost \$70.00 each + Postage & Handling.

From: The Armchair Aviator.

8 James Street

Fremantle WA 6160

Ph and fax (08) 9335 2500

Reviewed by Ian Johnson

In 2005 *Dragon* began to release a series of die cast models of modern military aircraft. The standard of the models are exceptional. For this review we will concentrate on their F-14 Tomcat range. *Dragon* is releasing more Tomcats from different squadrons later this year. The current *Dragon* Tomcats available are: F-14D Tomcat - XO from VF-31 'Tomcatters' last Tomcat WestPac cruise in 2004; F-14D Tomcat from VF-213 'Black Lions' 2006; and the CAG F-14B Tomcat from VF-11 'Red Rippers' 2003.

They are each sold separately. The squadron colour schemes of each Tomcat model released are accurate and very vibrant. Some assembly of the model is required. The Tomcat's wing swings are movable. One disappointment was that of the weapons provided with each model - there are no AIM-54C Phoenix missiles which only the F-14 Tomcat carried. One thing that can be improved is more information on the box about the aircraft and its history. Due to the size of the real Tomcats, the 1/72 scale is a great size for these die cast models. For those aviation enthusiasts who want a reminder of this legendary aircraft, these *Dragon Wings* F-14 Tomcat die cast models are exceptional. Worth the money but be warned, they do sell fast!



A VERY RUDE AWAKENING: THE NIGHT THE JAPANESE MIDGET SUBS CAME TO SYDNEY HARBOUR

Peter Grose

Published by Alien & Unwin,

ISBN 9781741752199,

RRP: \$32.95

Reviewed by Paul D. Johnstone

Peter Grose has used a wide variety of sources to put together this involved and highly accurate account of the Japanese Midget Submarine attack upon Sydney Harbour. This includes the use of declassified documents, photographs and interviews from eyewitnesses including information from the only surviving Japanese submariner from the actual harbour raid.

This book does not read like so many that has previously covered this event or what one might call a wake up call in Australia's history. Grose has an easy writing style that is objective in its findings and at the same time leaves the reader very well informed. He clearly sets out to address many of the myths and legends that have grown from this incident, which have occurred due to wartime restrictions, censorship, propaganda, rumour and in some cases military incompetence and self edifying bravado. This book in turn establishes links with events that occurred within the UK, US and Japan and led up to the attack, in many ways establishing a precedent and early warning of what was to later occur within Sydney Harbour. The ill preparedness of the Australian Commonwealth Government and Royal Australian Navy to defend the largest natural harbour in the world is clearly evident as is the political necessity of keeping the United States engaged in our region rather than the hard pressed and beleaguered UK Force emerges within the subsequent inquiry and report held concerning this event.

A Very Rude Awakening – The night the Japanese midget subs attacked Sydney Harbour does not necessarily cover the same ground as many other publications have previously on this topic. This story provides a fresh, informed and well researched coverage of this particular event within Australia's modern history.

INSIDE THE DANGER ZONE The US Military in the Persian Gulf 1987-1988

By Harold Wise

288 pages, 25 images, 1 map, 1 illustration

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US Naval Institute Press.

In May 1987, an Iraqi F-1 fighter fired two AM-39 Exocet missiles at the USN's FFG USS STARK, a lone frigate on patrol in the Gulf. Only one of the missiles exploded but together severely damaged the ship and killing 37 sailors. This deadly attack, which Iraq claimed was accidental, brought heightened attention to the Persian Gulf and heralded the beginning of a new era in U.S. Middle Eastern policy. From then until the end of the Iran-Iraq War, American forces carried out an unprecedented series of military operations in the Gulf against the Iranian regime. A planned tanker protection mission evolved into a naval quasi-war with Iran and culminated in the largest US sea-air battle since World War II.

Inside the Danger Zone is a history of U.S. military involvement in the Persian Gulf in 1987 and 1988 – a time of burning ships, air strikes, and secret missions – the prelude to the Iraqi invasion of Kuwait, *Desert Storm*, and the most recent U.S. invasion of Iraq. Based largely on first-hand accounts from veterans of that era, it is an up-close, detailed report from the front lines of "a guerrilla war at sea." Many of the dramatic incidents of this period are told in depth, with new information and details never before seen in print.

"By including sufficient background and detailing the strategic aims of Washington policy makers as well as the tactical moves by the on-scene commanders, Wise conveys both the complexities of U.S. operations and the fighting and dying that routinely occurred. A fast-moving page turner. *Inside the Danger Zone* is a must read for the naval history buff or anyone seeking to probe more deeply into the complexities of American involvement in Middle East war and politics." – Rear Adm. Harold J. Bersen, USN (Ret.), Commander, Middle East Force, 1986-88.

STATEMENT of POLICY

Navy League of Australia

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

- Believes Australia can be defended against attack by other than a super or major maritime power and that the prime requirement of our defence is an evident ability to control the sea and air space around us and to contribute to defending essential lines of sea and air communication to our allies.
- Supports the ANZUS Treaty and the future reintegration of New Zealand as a full partner.
- Urges a close relationship with the nearer ASEAN countries, PNG and the Island States of the South Pacific.
- Advocates the acquisition of the most modern armaments, surveillance systems and sensors to ensure that the ADF maintains some technological advantages over forces in our general area.
- Supports the acquisition of unmanned aircraft such as the GLOBAL HAWK and UCAVs.
- Believes there must be a significant deterrent element in the ADF capable of powerful retaliation at considerable distances from Australia.
- Believes the ADF must have the capability to protect essential shipping at considerable distances from Australia, as well as in coastal waters.
- Supports the concept of a strong modern Air Force and highly mobile Army, capable of island and jungle warfare as well as the defence of Northern Australia and with the requisite skills and equipment to play its part in combating terrorism.
- Advocates that a proportion of the projected new fighters for the ADF be of the STOVL version to enable operation from suitable ships and minor airfields to support overseas deployments.
- Supports the development of amphibious forces to ensure the security of our offshore territories and to enable assistance to be provided by sea as well as by air to friendly island states in our area and to allies.
- 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 ensure the carriage of essential cargoes in war.

As to the RAN, the League:

- Supports the concept of a Navy capable of effective action off both East and West coasts simultaneously and advocates a gradual build up of the Fleet and its afloat support ships to ensure that, in conjunction

with the RAAF, this can be achieved against any force which could be deployed in our general area.

- Is concerned that the offensive and defensive capability of the RAN has decreased markedly in recent decades and that with the paying-off of the DDGs, the Fleet lacks area air defence and has a reduced capability for support of ground forces.
- Advocates the very early acquisition of the projected Air Warfare Destroyers.
- Advocates the acquisition of long-range precision weapons and the capability of applying long-range precision fire to increase the present limited power projection, support and deterrent capability of the RAN.
- Advocates the acquisition at an early date of integrated air power in the fleet to ensure that ADF deployments can be fully defended and supported from the sea.
- Advocates that all Australian warships should be equipped with some form of defence against missiles.
- Advocates the future build up of submarine strength to at least 8 vessels.
- Advocates that in any future submarine construction program all forms of propulsion be examined with a view to selecting the most advantageous operationally.
- Supports the maintenance and continuing development of a balanced fleet including a mine-countermeasures force, a hydrographic/oceanographic element, a patrol boat force capable of operating in severe sea states, and adequate afloat support vessels.
- Supports the development of defence industry supported by strong research and design organisations capable of constructing and supporting all needed types of warships and support vessels.
- Advocates the retention in a Reserve Fleet of Naval vessels of potential value in defence emergency.
- Supports the maintenance of a strong Naval Reserve to help crew vessels and aircraft in reserve, or taken up for service, and for specialised tasks in time of defence emergency.
- Supports the maintenance of a strong Australian Navy Cadets organisation.

The League:

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



Three carriers at sea. (from front to back) HMS ILLUSTRIOUS (R-06), and the Nimitz class aircraft carriers USS HARRY S TRUMAN and USS EISENHOWER off the US east coast for a joint task force exercise. The exercise also saw ILLUSTRIOUS embark a USMC MV-22 Osprey for the first time as well as 'cross deck' 16 USMC AV-8B Harriers. It was the first opportunity for many of the USMC pilots to use a ski jump. (USN)



The Canadian frigate HMCS HALIFAX battles heavy seas in the North Atlantic. (RCN)

The RAN aircraft carrier HMAS MELBOURNE (11) at sea off Sydney heads with Sea King, Tracker, Skyhawk and Wessex aircraft on her deck. It has been 25 years this year since her decommissioning without replacement. (RAN)

