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AUSSAT
Tomorrow's Communications Today.
THE ARK ROYAL AFFAIR

On 31st October each year the Royal and Royal Australian Navy commemorate Admiral Nelson's famous victory in 1805 off Cape St Vincent. October 1988 will be remembered for some time to come as a special year for both navies as the visit to Melbourne was denied access to a berth in an Australian port by a group of Australian citizens who happened to disagree with the foreign and defence policies of their country's government.

The disappointment caused to the ship's company of HMS ARK ROYAL and of the Fleet Auxiliary VESPER, and the thousands of people in Melbourne waiting to welcome them will pass with time. It is important however in the spectacular demonstration that important policies affecting Australia's future can be so easily disregarded.

ARK ROYAL's misfortune was not the only case of government policies being ignored by maritime unions. Naval vessels have been unable to dry dock because of lack of assurance they could get out again, merchant ships and cargoes black-listed for one reason or another contrary to government wishes, the problem has been clear for a long time.

The Prime Minister has now promised the RAN facilities to make it less reliant on outside sources. While this will be helpful it is only a partial answer to a problem made more difficult to solve since an emotional issue is involved - nuclear weapons.

Perhaps because of the relative isolation of their countries, Australians and New Zealanders do not appear to have accepted that nuclear powered and nuclear capable ships are a product of the age as large and the communities of the northern and western hemispheres have done.

The world may or may not have been a better place if 50 or 60 years ago man had not discovered that the release of atomic energy could be controlled, thus beginning a new phase in history. The unreliable fact is that the discovery was made and we are now learning to live with the results, many of which have been beneficial, e.g. nuclear generated power which has been a life savor for countries lacking the natural hydro and fossil fuel resources of countries such as Australia, and some non-beneficial, notably nuclear weapons. Though this debateable as many believe the existence of such weapons has been, and remains, the greatest deterrent to major conflict.

Man also has a strong instinct to survive and to counter dangers that threaten survival. There can be no doubt the dangers posed by atomic energy are real and as with other forms of energy, precautions taken to minimize risk.

The governments of the nuclear powers are not foolish enough to send thousands of their sailors to see "safe" ships, not to create hazards to the hundreds of ports in which the ships are based. It would be contrary to common sense and their national aims.

Australia has obligations, formal and moral, to a number of countries not have to Britain and the United States. These obligations include access by friendly navies to our ports and their facilities, unless they can be ignored, are of no value.

The Government would be naive if it made an effort to obtain the full support of the Australian people for the maritime communities which form such an important part of its foreign and defence policies. If the RAN ROYAL affair helps produce a better understanding of the world in which we live, the unhappy event to Melbourne will not have been in vain.

THE CAME IN PEACE, THEY GO IN REGRET

Captain Joe Frank and the USN's NEW INDIAN ROYAL would like the people of Melbourne to know that he cares as much for the future of his children as for yours.

He would also like to apologise to the dozens of children who tried to use his ship as a playmate yesterday thanks to a large anti-nuclear protest.

Captain Frank's ship was to sail from Melbourne at 11 am today, said he regretted that yesterday's demonstration had drowned out his first impressions of Melbourne.

"I'm sorry that we never could get on. After all we have rights as well. Unfortunately and I'm not sure how we were able to do this, the demonstrators were able to stop people from seeing our ship."

"I just hope people realise that we're not two hot devil animals attempting to bring about the mass destruction of the world," Captain Frank said in a parting interview aboard his ship car.

"Actually we're pretty regular guys. One-third of my crew are married with children. I have two boys aged seven and 11, and I don't want any different future for my kids than anyone else."

"I'm sure my kids are as well as yours now as yours are."

"Unfortunetly and I'm sure we were able to do this, the demonstrators were able to stop people from seeing our ship."

"I'm sorry that they never were able to go. After all, they have rights too."

Readers

New Amphibious Ship

Dear Sir,

The small pictorial article on the USN's new WASP (LH-921) class which appeared in the edition before last, leads me to ask whether any information is available on these interesting ships?

Could your North American correspondent provide material for a more detailed description of the USN WASP for a future issue?

Yours faithfully,

W. CHOBIE

Geofford

Editor: We plan to feature the WASP class in detail in the April-June edition of the "The Navy".

Last Issue

Dear Sir,

I was indeed grateful to receive in the mail my October/December, 1988 edition of "The Navy" Being unable to get to the Bicentennial Naval Salute in Sydney was a great disappointment. However, "The Navy" provided all the information I needed to help me enjoy the live ABC telecast.

Can we expect to see any of the photos taken of the RNS in your next issue?

On another point, a relative of mine served in HMS ARMISTICE when the vessel was serving from Port Adelaide. Can any of your readers put together an article on her career in South Australian waters?

Yours sincerely,

M. SIMON

Port Melbourne

PS: I enclose a copy of a letter from a Melbourne newspaper which you may wish to reprint in your Sea Mail section.

Editor: The article is reprinted hereunder. Pictorial coverage of the RNS is included in this issue.

Naval Spectacular

The Bicentennial Naval Salute and the International Naval Review are now part of Australia's Maritime History.

The Naval Tribute began literally with a bang on Sunday, 26th September, when the gunnery of 210 pounders garnished Sydney Heads as the representatives from 10 nations' fleets paid tribute to the Bicentenary in a formal salute off the Sydney coast.

Accompanying the naval fleet on this picturesque and tranquil Sunday afternoon were thousands of well-wishers embarking in hundreds of smaller motor and sail boats to witness this unique ceremony. Navies represented in the salute included Australia, France, Greece, India, Japan, Malaysia, New Zealand, Pakistan, Britain and USA.

Monday, 26th September, dawned, for the citizens of Sydney and especially the coastal suburbs, was the spectacle of Australian and visiting naval vessels entering Port Jackson in six waves from 0700 to the early afternoon. In the water, greeting the men-of-war, were the usual welcoming craft plus the new ever-present group of protesters aboard kayaks, dinghies and surfboards. A Navy spokesman commended the latter's behaviour while some of the visiting Captains expressed both delight and surprise as to the lack of antagonism.

By late afternoon Garden Island and the Woodloamboolo bassin resembled more than a home for one fleet, but a home for many.

Echoes of a past era in naval warfare roared across the horizon towards the city on Monday afternoon with the firing of the big 16-inch guns of the battleship USS NEW JERSEY. The firepower demonstration by the dreadnought heralded yet another phase of the BNS, the arrival in Sydney the following week of the WASP class in detail in the April-June edition of "The Navy".
morning of the old battleship, followed close on her stern by the Royal Navy's aircraft carrier HMAS ARK ROYAL.

Much of Sydney seemed to have their eyes fixed on events in the harbour. Light rain which had been falling overnight seemed to lift sufficiently to allow a good view of these final arrivals. However all of the action was not confined to the waterways. As well as the peace protestors more than 100 warship 'welcomers' heralded the arrival of the ships by by staging a small, impressive gathering at Mrs Macquarie's Chair.

Welcome's for the visiting ships and personnel were not confined to the harbour front. The Dial-A-Sailor organisation was in full swing and by Thursday was forced to close their doors, having run out of sailors' about on Sydney Harbour and complaining in angry tones that the British aircraft carrier HMAS ARK ROYAL had entered and preceded down the harbour at a speed (I think ol 12 knots) which was dangerous to them and his lot who were trying to paddle across to bows. For these self-elected "protectors" of our society to assume the role of the all-knowing and the all-wise is a demonstration of breathtaking arrogance.

One of the more unusual sights for Sydney was the 315mm gun of the PNS GODAVARI, not because she was the first Indian ship to visit Sydney since the mid 1960's, but for her Soviet weapons, carried into an Australian port for the first time. GODAVARI was built in Bombay, India, to an earlier British design, carried Soviet-made weapons including anti-ship missiles, anti-aircraft missiles and electronic equipment, and as well flew both British and French helicopters: a sort of United Nations frigate.

The highlight of the BNS was fast approaching — the arrival of the large crowds of well-wishers gathered for main of the visiting navies. In abnormally high temperatures, thousands of city workers, some standing up to eight deep watched the BNS parade. The march attracted little opposition from the usual people with the massive Navy cheers drowning out any jeers.

As one columnist in the Daily Telegraph said, 'the anti-nuclear protestors are getting up my nose — and, I suspect, the noses of a whole lot of people...'. I was enraged on Tuesday to see on television several 'chubby ships in a canose, bumbling about on Sydney Harbour and complaining in angry tones that the British aircraft carrier HMAS ARK ROYAL had entered and preceded down the harbour at a speed (I think of 12 knots) which was dangerous to him and his lot who were trying to paddle across to bows. For these self-elected "protectors" of our society to assume the role of the all-knowing and the all-wise is a demonstration of breathtaking arrogance.

Under the clear blue skies of a Sydney spring day, the Duke and Duchess of York, together with RA AF aircraft staged a spectacular display of military hardware. Later in the day, the Chief of the Defence Staff, Air Chief Marshal Sir Keith Wensley, CBE, DSO, ADC, MC, DFC, took a guided tour of the BNS in the company of the Royal Family. The Duke expressed his appreciation of the magnificent display,="345" height="501" src="https://example.com/image.jpg" width="752"/>

The British aircraft carrier HMAS ARK ROYAL departed Sydney Harbour on Wednesday morning, ending a week-long visit by the Royal Navy's aircraft carrier. The ship, carrying a complement of 800 personnel, had arrived in Sydney on February 4th, as part of Operation Ocean Shield, the UK's contribution to the NATO-led force in the Mediterranean Sea. The ship has been berthed at Garden Island, the Royal Australian Navy's main base in Sydney, throughout its stay.

The Royal Family's visit to Australia was widely hailed as a success, with hundreds of thousands of people lining the streets of Sydney to catch a glimpse of the Duke and Duchess of York. The ship's departure was marked by a formal ceremony, with theship's captain, Commodore David Radford, RN, presenting a bouquet of flowers to the Duke and Duchess.

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HMAS COOK with other INR participants.

NAVAL SPECTACULAR — CONTINUED

Pakistan naval units alongside Garden Island.

Garden Island, the Fleet Base and Wolloomooloo after the arrival of all the major units.

What a welcome! Police, protestors, and well-wishers alike.

USS BERKELEY

Some of the visiting ships.

HMS ARK ROYAL in Sydney Cove.

One of the four Dutch participants, HNLMS WITTE DE WITH.
AUSTRALIAN SHIPPING... BROADENING OUR HORIZONS

The potential revenue for carrying Australia's overseas seaborne trade currently stands at around $7.7 billion. About 95% of our overseas shipping trade (which represents more than 80% by value) is in ocean going foreign vessels.

Some of the foreshores crowd.

The benefits of overseas shipping and foreign vessels are not only in terms of foreign exchange but also in terms of employment, defence and trade bargaining.

However, the process of developing a more competitive and efficient Australian maritime industry has begun in recent years. The Australian Shipping Industry has made significant strides in restructure, rationalization, the application of modern technology, market specialization and overall efficiency, to name but a few areas. As a result, the number of Australian overseas flag vessels has increased 55% in the years between 1980 and 1986.

The Australian National Maritime Association (ANMA) encourages the further introduction of efficient new vessels and technologies to Australian shipping and supports the continued move towards a dynamic and competitive Australian merchant marine.

ANMA's members represent owners and operators of more than 150 vessels including tankers, container ships, general cargo ships, bulk carriers, passenger vessels and harbour tugs, all working for Australia, all broadening our horizons.

THEY CAME IN PEACE, THEY GO IN REGRET (Continued from page 2)

Captain Frank said he welcomed the demonstrators' right to freedom of speech but was disappointed at their treatment of children who had been brought to Port Melbourne to see the passing warships.

"I don't think the children really listen in what they're trying to do," Captain Frank said.

"There were people yelling and banging on cars and there is a fine line as to where their rights stop and where other's rights start."

In Newport the demonstrators handed me flowers and a peace flag. This was a little different.

Captain Frank said he suspected that the demonstrators were spurred on by the mass presence of the media. "I'm not saying that the press hurt us, but I was surprised at the lack of news from the other side of the story."

"As far as the newspapers and TV were concerned it was the demonstrators' day and we and our cause were virtually ignored."

Captain Frank stressed that the Seamen's Union, which last week presented a report indicating that US nuclear powered ships were not allowed in the ports of New York City and recently there were five ships including an aircraft carrier in San Francisco harbour. In fact, if US ports would be contrary to US law."

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AWARE departed Darwin on Tuesday, 6th September to conduct a Fisheries Surveillance Patrol in conjunction with RAAF and Coastwatch aircraft. Under the command of CMDR Ian Gibson, Commanding Officer (Reserves), Darwin Port Division, the ship visited Gove and Weipa during passage to Cairns. Whilst at Gove the crew assisted in the medical care of an injured trawler seaman. After completing an eventful patrol, at one stage disappearing off the AWARE watchers’ maps down south, the ship buffered southwards in unseasonal reef weather, arriving in Cairns on 13th September.

After handover to the Leg 4 crew, AWARE departed HMAS CAIRNS on Sunday, 16th September, under the command of CMDR Kevin Liddiard, Commanding Officer (Reserves), Adelaide Port Division. Sailing in company with HMAS WHIN ALLA, rendezvous was made with HMAS ARK ROYAL and EDINBURGH on the same day to participate in passage exercises.

The following morning the ship was stationed abeam of ARK at a range of 400 yards to witness Sea Harrier operations. Then followed an Air Defence exercise against RAAF F-111 aircraft, and Officer of the Watch responsible for attaching to Hamilton Island for a well-earned rest.

AWARE visited Mackay and Brisbane, most of the crew taking the opportunity to visit Expo, before sailing in company with HMAS GEELONG for passage to Sydney. After arrival in Sydney, the crew turned to with willing to prepare the ship for the Biennnaus Naval Salute. After a hectic period of BNS activity, AWARE joined the Small Ship Steampast and Review by His Royal Highness the Duke of York on Saturday, 1st October.

The ship departed Sydney on Monday, 4th October for the final leg of the cruise, under the command of FCDR Kerian McGregor of Sydney Port Division. The fine weather experienced during this leg of BCC-88 was finally departed, and a bumpy ride was endured with stoicism for passage back to Adelaide. The ship visited Hobart, Launceston and Melbourne during passage to Adelaide. A warm welcome was afforded in Launceston where the crew participated in the Navy Week Commemoration. The opportunity was again taken to conduct in-company exercises, in this case with HMAS WARRAMANGOO. The ship arrived in Adelaide on 15th October, being placed alongside by the SA Navy band, and welcomed by a large crowd from APD and HMAS ENCOUNTER.

AWARE completed a total distance of some 3000 nautical miles during the circumnavigation, and was manned by 93 Reserves from all Port Divisions, the 23-year-old ship performed magnificently throughout the cruise. BCC-88 was a clear demonstration of Reserve professionalism, showing the ability to man ships at any suitable port around Australia, and bringing their ship to operational status after a few days of respite.

Author
CMDR KEVIN LIDDARD

In my last article, I quoted Minister of Defence Beazley (writing in The Australian, 13th May) "No matter how high it is on the Government’s list of priorities, defence — in peacetime — cannot be insulated from economic realities."

All these adverse developments were not included in the financing plans for defence that were developed at the time of the Dibb Report...
THE LAST SURVEY

In 1985 HMAS BRUNEI, a heavy landing craft (LCH), was re-classified as Interim Survey Ship (ISS) to work with the small survey vessel HMAS FLINDERS from Cairns in northern Queensland. Since her commissioning as an ISS in August 1985, BRUNEI successfully completed or assisted in nine major surveys, providing disaster relief in the Solomons in the wake of Cyclone NA MI, and participated in five amphibious exercises.

To accomplish these missions she steamed 46,453 miles, 20% of the total distance travelled since first commissioned in January 1973.

The following is an account of BRUNEI's last survey as an ISS:

During late August BRUNEI returned to Australia from northern Papua New Guinea following the completion of the Wewak to Madang survey. In Cairns, BRUNEI concluded her role as an Interim Survey Ship, reclassified for Diving Training duties. The ship was slipped and a subsequent intermediate docking began at QE A. Monday, 1st August, found BRUNEI on passage sounding along the northern coast of PNG. During the afternoon and evening of Tuesday 2nd, Raven Channel and China Strait were cleared, and over the following two days the decks were kept awash by a 2.5 metre quartering sea along the south coast of PNG.

A 200-mile shipping route between Wewak and Madang was surveyed. This route is one of the busiest in PNG and more vessels are expected as natural resources are developed in the headwaters of the Sepik River.

This region had never been systematically charted. It is strewn with active volcanic islands one of which, Maum Island, smouldered continuously.

The Sepik River discharges into the middle of the area carrying out to sea large floating islands of grass and huge trees from the jungle highlands.

Whenever BRUNEI beached to land her surveying equipment, hundreds of smiling faces would soon appear to lend a hand. On one occasion enthusiastic villagers dug up and moved a survey mark to a safer place because it was threatened by erosion — they insisted that it was otherwise undisturbed.

Shoals and offshore seamounts were investigated and BRUNEI and BETANO set up the geodetic framework for further surveys off Manus Island.

BRUNEI also conducted inshore surveys of anchorages, jetties and port facilities on the coast, up the Sepik River and on the offshore islands.

While operating in the Sepik, oceanographic liaison was provided to the research vessel CALYPSO of the Cousteau Society in the study of sediment transport in the river.

Over the next seven days the ship was despatched and all survey equipment landed. Departmental inspections were conducted as part of the intended role and home port change.

With her return to Cairns, BRUNEI had spent 79 of the previous 112 days at sea, and had steamed 10,500 miles. The loss of the LCH as an ISS will be more than compensated with the introduction of the new Survey Motor Launch (SML) class in 1989.

With her square bow and consequent poor capability to weather, the LCH hull form was never an ideal sounding platform. However, it will not be surpassed in the survey support role due to its cargo carrying and beaching capacity, particularly when the requirement exists to place equipment ashore.

The vessel and her sister ISS, HMAS BETANO, also provided valuable insight and hands-on experience in operating small hydrographic ships. Yet another benefit was the exposing of hydrographic specialists to general naval and amphibious operations, thus increasing the range of skills and experience within the branch.

BRUNEI with BETANO sailed to Sydney, arriving on 27th October and 16th December, 1988 respectively to be utilised as Diving Training Vessels from HMAS WATERHEN. The LHs replaced the mid-1970s vintage former inshore minesweeper SEAL and PORPOISE, which were "paid off" last September and December.
A BOUt 80 years ago, the Greek Navy was short of modern heavy fighting units, but the Greek Government was too short of money to help. But a public-spirited Greek millionaire, Giorgios Averoff, put up a million pounds sterling to help, and the naval staff looked round to see what they could afford.

The crew were concentrating on dreadnought battleships and battlecruisers, light cruisers, destroyers and submarines. The Greeks wanted a powerful ship, but they still couldn't afford a dreadnought. Large cruisers were now outclassed by battleships in speed and gunpower, but finally they decided a big armoured cruiser would give the best balance of fighting qualities.

The Italians were successful builders of armoured cruisers for export. Ten years earlier, they had sold three Goeben-class ships to Argentina, one to Spain and two to Japan. Now they had just completed their Navy's last pair, Pisa and Amalfi. The Greeks ordered another of the Pisa class from the Orlando yard at Livorno.

The GIORGIOs AVEROFF was launched in 1910, and completed in 1911. She cost £1,100,000, about £600,000 less than her contemporary, the battlecruiser HMASAustralia. From keel to upper deck she was a replica of the Italian pair, but she was two yards shorter in place of her single upper mast.

She was heavily armed for her size. A 6-inch displacement of 9,756 tons, four 9.2-inch guns in twin turrets fore and aft, and four 6-inch turrets. There were thirteen 9.2-inch guns for defence against torpedo craft, and three submerged 18-inch torpedo tubes.

For an armoured cruiser she was very stoutly protected. The waterline armoured belt was 8 inches thick amidships, sloping to 3 inches fore and aft. The side armoured protection was 3 inches thick amidships, sloping to 2 inches. The forecastle and crow's nest were protected by 8 inches thick. Her 22 boilers produced 19,000 hp, and two reciprocating engines drove her at an alleged 24 knots. Comparisons with contemporary cruisers suggest this speed must have been a little optimistic. Her bunkers held 1,600 tons of coal at deep load, giving a very adequate range for a cruiser of her size.

By 1912, the Turks had just completed their Navy's last pair. Pisa and Amalfi. The Italians, having had a taste of their success, now decided to repeat it, and in the same year, they added the Dardanelles. At first the Turks used their fleet in the Black Sea, supporting their army on the Bulgarian front. On December 1st they made an armistice with the Bulgarians, Serbs, and Montenegrans, and then they moved their ships south to threaten the Aegean.

On December 14th, the Turkish cruiser MIMIDEH engaged Greek torpedo craft south of Gallipoli. On December 16th, the Turkish fleet made a full-strength sortie. The two battleships and two old ironclads came out of the Dardanelles, and steered west and north past Gallipoli. Rear-Admiral Conelius led the four heavy Greek ships to intercept them.

The AVEROFF played what might be called the battlecruiser role. She was first into action, with the battleships HYDRA, PASKA, and SHIRSHAF following in line ahead. The Turkish opened fire at 15,000 yards, long range for their battleships' old 11-inch guns. The AVEROFF held her fire until the range was down to 5,000 yards. She scored hits on the Turkish ships, and she took minor damage from their shellfire.

She fired a torpedo, which missed.

Before the Greek battleships could close, the Turks turned away in disorder. They retired up the Dardanelles, under cover of the shore guns. Neither side was much damaged, and the Greek blockade was unbroken. British reports said the shooting on both sides was poor, but the Turks showed signs of severe strain.

On December 22nd, Turkish ships showed themselves in the Straits, but withdrew when the AVEROFF and the Greek battleships appeared. But on January 10th, 1913, the Turks came out again in full strength. Greek patrols saw them, and Admiral Conelius steered to engage them.

He spotted and launched 11.25 at 11.45 am, without much damage to either side. The Turks soon turned away to the north-west, and the Greeks followed. After about 1 pm, the Turks turned again, and at 1.45 pm, they turned back for the Dardanelles again. The AVEROFF's modern guns had done most of the shooting on the Greek side, and better,

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Buying a new Isuzu small truck is no small decision. For a start you'll find all truck prices have risen dramatically since you last bought. So you'll want your next truck to last a long time to cover your investment. A big range choice will be important. You can't afford to compromise. You'll need a truck that's right for your business now. And one that can handle business growth. Reliability will be a key feature. Unexpected down time in business is money down the drain. Economy of operation will be an essential element. It will mean your truck becomes a profit centre on its own.

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Isuzu small trucks are designed by Japan's biggest truck manufacturer and built in Australia by Holden. When you choose an Isuzu N series for your business you can rely on getting a truck with an enviable reputation for reliability and performance, built to give Australian business exactly what it needs. Find out how Isuzu can build your business! Complete and mail the coupon post free to:

ISUZU RANGE INFORMATION, FREEPOST No. 17, PO BOX 1146, COLLINGWOOD, VICTORIA 3066. Or phone TOLL FREE 0800 038 134

A HISTORY THESIS

In all, 12 River Class Frigates were completed, although 22 vessels were actually ordered. However, only six ships of this class, including the sole survivors DIAMANTINA and LACLAN, commissioned for service during the 1939-45 hostilities.

The origin of the 'Rivers' can be traced back to April 1941, when Acting Prime Minister, the Rt Hon A. Fadden, requested the Minister for the Navy, the Rt Hon W. M. Hughes, after consultations with the Naval Board, to furnish views upon a new type of warship for Australian trade defence for consideration by War Cabinet. The Prime Minister, the Rt Hon R. G. Menzies, was at the time touring Britain; and after holding discussions with the Admiralty, he requested that this possibility be reviewed by the Minister for the Navy. Mr Menzies had provided a summary on the type of ship as suggested by the First Sea Lord:

(1) The ship should have both anti-aircraft and anti-submarine capabilities;
(2) Experience from the war indicated the need for good endurance and also speed (but destroyer performance was not required);
(3) Tonnage 1325, speed 20 knots, endurance at 10 knots — 5000 miles, armament — 2 by 4 inch mounts;
(4) This amounted to a corvette (frigate) type of vessel proven to be the most economical means of meeting Australia's needs.

In an agenda to War Cabinet in March 1941, the Minister for the Navy outlined that the future naval programme would be governed by:

(a) the amount of merchant ships to be built;
(b) the extent to which Marine Engine production capacity could be enlarged.

After consultations with the Naval Board, the Minister mentioned that the Navy was short of dual purpose...
Minesweeping and anti-submarine vessels (AMS Vessels), and also frigates for ocean work and convoy protection. At the time, the Naval Programme provided for 28 AMS ships, but the construction of a frigate type of vessel.

In a later submission to War Cabinet, the Minister expressed concern that the present planned programme was falling short of what was previously considered necessary to give security to the country. Coupled with this, the programme did not make any allowance for losses. For ships which were in a state of shortage, there was an even greater need for frigates. The construction of frigates would require a large addition to the Marine Engineering production in the Commonwealth, but this in turn depended upon the availability of large machine tools which needed to be imported. Hence engine production would limit the number of ships to be built. This problem resulted in the recommendation of the Naval Board being limited to six frigates and 12 AMS vessels with the following funds being required:

<table>
<thead>
<tr>
<th>Type</th>
<th>Capital Cost (£m)</th>
<th>Annual Costs (£m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Frigates</td>
<td>£450.000</td>
<td>£720.000</td>
</tr>
<tr>
<td>12 AMS</td>
<td>£220.000</td>
<td>£360.000</td>
</tr>
<tr>
<td>Total</td>
<td>£670.000</td>
<td>£1,080.000</td>
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</table>

This recommendation of the Naval Board was endorsed by the Minister and also by the War Cabinet. Originally 20 AMS vessels and 12 frigates were proposed, but the Naval Board was forced to reduce this number to 12 AMS vessels and six frigates. If the building of frigates were to be undertaken, replacing steam engines of adequate size by more suitable diesel engines would be a substantial saving. According to the Board, that seven frigates only should be built. Besides the ASB report, the need for ship repairs, particularly with the likely fall of Singapore, would only delay progress in naval construction.

The ASB considered that in spite of the need for extra frigates, the Merchant Ship Construction Programme would be unduly hampered. Accordingly, the Board recommended that seven frigates be built and that nine were still necessary. The purpose of the Board was to consider the construction of a further nine frigates, the ASB report, and the Board recommended that the following names be used for the nine frigates ordered:

- Cockatoo
- Walkers Ltd
- Morris Dock & Engineering Co Ltd
- Morris Dock
- Morris Dock
- Melbourne Harbour Trust Commissioners
- Evans Deakin & Co Ltd
- Evans Deakin
- Walkers

The Board wished to express the desirability of the programme being approved by Cabinet for the following reasons:

(a) Japanese expansion would lead to greater urgency for ocean patrols;
(b) larger engines could be ordered in advance thereby avoiding delays in delivery;
(c) certain amount of prefabrication could be made before the keel was laid;
(d) considerable savings in both time and costs could be achieved through thoughtful planning at the outset.

The Naval Board's recommendations were endorsed by the Minister, but he considered that first of all the priorities of naval engine production would limit the number of ships to be built. This problem resulted in the recommendation of the Naval Board being limited to six frigates and 12 AMS vessels with the following funds being required:

The ASB considered that in spite of the need for extra frigates, the Merchant Ship Construction Programme would be unduly hampered. Accordingly, the Board recommended that seven frigates only should be built. Besides the ASB report, the need for ship repairs, particularly with the likely fall of Singapore, would only delay progress in naval construction.

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HMAS BARCOO, in a bit of trouble, April, 1944. She was later rescued with little damage.
The Royal Australian Navy never crosses the oceans without Kiwi Shoe Polish.

Kiwi Shoe Polishes are proud to have served R.A.N. ships since 1906.

RIVER CLASS FRIGATES—Continued

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<tr>
<th>No</th>
<th>Name</th>
<th>Builder</th>
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<tbody>
<tr>
<td>14</td>
<td>Mort's Dock</td>
<td>Sydney</td>
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<tr>
<td>15</td>
<td>Mort's Dock</td>
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<td>16</td>
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<td>19</td>
<td>Cockatoo</td>
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<tr>
<td>20</td>
<td>HMAS Naval Dockyard</td>
<td>Williamstown</td>
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<tr>
<td>21</td>
<td>NSW Govt Dockyard</td>
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<td>22</td>
<td>NSW Govt Dockyard</td>
<td>Newcastle</td>
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Approval was given on the immediate placing of orders for more frigates at a cost of £4,050,000.

The third order of frigates was to be also allocated 'River' names, the following being those suggested: Bogan, Cambay, Condamine, Coromandel, Currajong, Renmark, Narrabeen, Wimmera and Wollondilly. However the names Williamstown and Balmain were approved while Cambay and Matamata were rejected. Balmain and Williamstown were the towns where two of the ships concerned were being built and strong local representations had been made to the effect on the Minister.

Accordingly the final disposition of names for the three batches of frigates were as follows:

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<td>1</td>
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The names of the frigates were as follows: Bogan, Cambay, Condamine, Coromandel, Currajong, Narrabeen, Wimmera and Wollondilly. However, the names Williamstown and Balmain were approved while Cambay and Matamata were rejected. Williamstown and Balmain were the towns where two of the ships concerned were being built and strong local representations had been made to the effect on the Minister.

Accordingly the final disposition of names for the three batches of frigates were as follows:
However a review of escort requirements in October 1943, still indicated a deficiency, for over 150 vessels were needed. This figure comprised 99 ASMs vessels, four destroyers, 22 frigates and 46 vessels to be loaned from the USA, which vessels were not materialised. The balance of 26 vessels would have to be built in Australia. It was suggested that this number could be bridged by building further River class frigates and that Hunt class destroyers. Hunt class destroyers were preferable to the River class—since they had superior AA equipment, speed, fire control, and also radar installation. However if Hunt class destroyers were to be built, valuable time would have elapsed before the plans appeared from Britain. Also estimates and a Cabinet agenda would have to be even further expedited. Accordingly, the Naval Board directed that a War Cabinet agenda be drawn up so that the immediate construction of four extra frigates could be considered. The ASB was consulted as to whether its merchant construction programme would be affected if the Naval Board placed orders for two further frigates at Evans Deakin and one each at Morris Dock and Walkers. The ASB did not want further frigates ordered since:

1. Due to the already slow building of merchant ships, measures were needed first of all to quicken the construction of merchant ships at Cockatoo, Morris Dock, Evans Deakin and Williamstown, only the Whitley yard was progressing satisfactorily;

2. A great shortage of manpower existed particularly in relation to repair work. Merchant shipbuilding simply would not progress if further orders were placed, particularly in yards where naval and repair work was being undertaken.

The ASB, in retrospect, preferred that the Naval programme be deferred. In light of this opinion, there seemed doubtful value in ordering more vessels since it would have taken two years from the date of order for completion. Accordingly, the ASB was advised that the Naval Board would not pursue the order for a further four frigates. However at this stage of the war, the construction of naval ships in Britain and America was catching up with demand and with amazing efficiency. The undersea threat meant that great progress was made. Coupled with this the outlook of the European war was becoming more favourable to the Allies with the result that more vessels could be spared for operations in the Pacific. Accordingly, the Admiralty was notified that should world requirements for escort vessels be expected to be met, the cancellation of 10 Australian orders was being considered. It was officially announced in July 1944, that due to altered conditions, the construction of frigates ordered in 1942 would be cancelled, with the exception of No 21, CONDAMINE. The construction of frigates No 10, MURRUMBIDGEE and frigate No 12, WASHINGTON, was also cancelled.

The design of the River class frigates was based upon British plans and the technical details for the ships built in Britain, Canada, the United States and Australia were almost identical. The only real difference lay in the armament of each vessel, and even a significant difference between the armament of the 12 completed Australian ships was apparent. A brief summary of the chief features of each ship follows:

Length overall: 201' 4"
Beam: 36' 6"
Standard Displacement: 1,325 tons
Propulsion: Two sets of four cylinder, triple-expansion engines, each of 2250 HP.
Speed: 20.5 knots
Endurance: 5000 miles at 15 knots
Complement: 104 officers and men (original estimate).

Armament
Original estimate: 2x4" HA 1 A guns
2x2 pounder guns
2x Oerlikon guns, 20mm.
8 depth charge throwers, 100 depth charges.
Boats: 1x27',-sharer, 1x25' diesel motor boat, 1x16' trailer type dinghy.

However, this armament was changed several times before and after completion. It was decided that the first eight frigates (Barcoo, Barwon, Burdekin, Diamantina, Gascoyne, Hawkesbury, LaTrobe and Macquarie) would all be fitted with the following armaments:

2x4" quick Brem Mark XV in single mountings.
1x single Oerlikons.
1x Hedgehog (an anti-submarine device similar to depth charges).
4 depth charge throwers and 116 depth charges.
4x4" OF guns in two mountings.
1x twin Bofors 40mm guns.
1x twin Oerlikon 20mm guns.
4x4" quick Brem Mark XV in single mountings.
2x4" Oerlikon guns amidships, port and starboard.
2 depth charge throwers and 70 depth charges.
1x Hedgehog.

However only CONDAMINE, CULGOA, MURRUMBIDGEE and SHOAL HAVEN were completed to carry this armament. The old Mk XIX mountings had a range of only 950 yards with a ceiling of 7794 feet, inadequate for anti-air and anti-submarine warfare. The new guns would provide a range of 15,000 yards and a ceiling of 30,000 feet. The new armament was boosted with the addition of superior AA fire control, radar fire directors and radar fire control systems.

The first three vessels commissioned, GASCOYNE, BARCOO and BURDEKIN, were fitted with four single 303" Vickers mountings and four twin 303" Brem mountings in addition to the eight single Oerlikons. This armament comprised the anti-aircraft strength of the ships and were positioned fore and aft and also on the bridge. However, the arc of fire for some of the guns was discovered to be unsatisfactory in the gun trials of HMAS GASCOYNE. It was then decided that a revised AA armament be fitted to BARCOO, BURDEKIN, GASCOYNE and HAWKESBURY as follows:

(i) two single Oerlikons on the bridge be retained;
(ii) two twin MV Oerlikons replace the four single Oerlikon mountings on the forecastle, port and starboard;
(iii) two 40mm Bofors Mk I guns replace the single Oerlikons, port and starboard;
(iv) two twin 303" Brem mountings on the lower bridge be retained;
(v) two twin 303" Vickers mountings on the forecastle, deck, port and starboard abreast the forward 4" gun be retained. It was also decided that two single 303" twin Brem guns from the bridge and the two single Vickers guns from the quarterdeck be landeed. (NB: The other 4" turret was mounted as well as the anti-submarine equipment which was mounted on the quarterdeck.)
What would the Dutch know about designing ships for these waters?

As long ago as 1606, the Dutch entered the Gulf of Carpentaria and began to chart Australian and New Zealand waters. Their skills as ship designers, builders and navigators earned them a vital place in the history of Australia.

In the intervening centuries, the expertise of the Dutch has multiplied, so that today their ships, and particularly their frigates, are renowned for operational reliability and high availability.

So when Royal Schelde submitted their design for the ANZAC frigate, AWS knew that, in taking it up, they would be offering the Australian and New Zealand navies the best possible naval vessel, dependably built for the best price.

The technology applied to the AWS ANZAC frigate is ahead of its time. The expertise of the Dutch is based on the skills, experience and commitment of personnel from three different countries: AWS/Aoka, TNT, Carrington Shipways, McConnell Dowell and Royal Schelde, united by a single aim to secure the ANZAC frigate contract.

The AWS workforce is ready to go.

FOR a decade and a half, the United States Navy has been improving its capability to defend against incoming anti-ship missiles. Navy designers now are developing a lightweight, low cost, high firepower system to fill the need for a missile of shorter range than the NATO Seasparrow but longer than the 20mm Phalanx, and that can function either as part of a layered defence or as a stand-alone system. The system is RAM (Rolling Airframe Missile), scheduled for introduction in the 1991.

RAM was originally part of the Anti-Ship Missile Defence (ASMD) programme. Two methods for launching the missile were conceived — a stand-alone system for those ships that had no other self-defence except Phalanx; and RAM launcher inserts, each containing five RAMs for two of the eight NATO Seasparrow cells.

"The major effort now," said Capt Jim Howard, NAVSEA programme manager for RAM, "is the stand-alone launching system. The modification to the ANZAC frigate is planned for later in this decade. Its development and fielding will be a joint effort between the NATO Seasparrow office and this one."

A critical feature is target designation from installed radars and electronic support measures equipment — the AN/SLQ-32. "The idea here," said Capt Howard, "was that the Navy would come up with a RAM, but would use equipment that are in place or planned to be aboard."

"It's a passive missile, so there are no fire control illuminators — such as are required for NATO Seasparrow and Standard missiles."

Another criterion of the system's Operational Requirement was the use of existing in-service components. "We do that in several ways," said Capt Howard. "There's a lot of Sidewinder in the missile — the fuse, warhead and rocket motor — and some Stinger IIR seeker in the front end of the missile. In the launcher, we use certain Phalanx components."

The last major requirement was that the system be designed to permit block changes to meet the changing threat. "The Federal Republic of Germany (FRG) had an interest in something like RAM for use on a number of their ships. They entered into a Memorandum of Understanding (MOU) with the United States. The MOU established a co-operative development programme, up to production. Development costs were to be shared. It established a flag-level steering committee, with the United States member, currently RADM George R. Metzgar, NAVSEA's Assistant Deputy Commander for Surface and Anti-Air Warfare."

Full-scale engineering began in 1979. A combined development operational test phase was recently completed and limited production will begin next year. Full-scale production is expected in 1990.

System operation involves a passive missile, using a wide field-of-view ARM seeker, homing on an incoming target. It also uses a narrow field-of-view IIR terminal guidance for precise terminal guidance. Installed sensors, both radar and ESM, determine if the target is threatening, give it a ranking and assigns the launcher. The launcher initiates programmes and fires the missile.
The missile launching system is a 21-cell launcher, with missiles loaded in a canister to provide environmental protection. A control panel for built-in testing is located in CIC.

One engineering development model stand-alone launching system is installed in USS DAVID R. RAY (DD 971) and one is in the LHD fast patrol boat PUMA.

Shipboard location of the launcher will depend on the class of ship. Aboard DAVID R. RAY, the launcher is located on the fantail. "That is probably not the final location for production installation," said Capt Howard. On amphibious ships, two each would be installed in LCCs, LHAs and LPHs — one on the port side, the other on the starboard, to provide 360° coverage.

"The first shipboard firing was from the DAVID R. RAY last December," said Capt Howard. "We had six shipboard firings during the Development Test/Operational Test (DT/OT), with seven more from land-based sites. Overall, we have fired more than 50 missiles. Prior to full production, there must be successful completion of ETECVAI OPEVAL."

Navy's plan is to install the stand-alone launcher in the two LCCs, the five LHAs, and the seven LPHs. Later, RAM will be installed on an ORDAIT in the NATO Sea Sparrow system aboard CVs, AORs, AOEs, LHDs and the DD 963-class destroyers.

"We've demonstrated very low altitude intercepts against targets simulating anti-ship missiles — at both maximum range and close-in — against supersonic and manoeuvring targets," said Capt Howard. "The system is not designed to go after a crossing target, only incoming missiles. We've demonstrated the dual-mode guidance and we've also demonstrated that we can shoot in bad weather with only RF guidance.

"IR seeker fuse and warhead effectiveness have been proven. The IR seeker is effective in a high infrared background, such as the sun or a heavy cloud backlit with the sun. The missile has the capability to reject these distractions and still go after the proper target. The warhead and fuse have been tested in an operational environment and were found to be very effective.

"The launching system is fully automatic, and has a real-time operability test built into the system. The system interrogates itself and provides real-time information to the operator who determines if there is a problem so that steps can be taken to correct it."

Since RAM was installed in DAVID R. RAY and the LHD PUMA, maintenance of the system offered few, if any, problems. The missile itself is delivered to the ship as a "wooden" round and that obviates shipboard maintenance. When missiles are off-loaded from the ship, they go through a test procedure. Should any defect show up, the missile is sent to a depot for repair and returns.

An extensive built-in maintenance test for the launching system is aboard each ship. The maintenance is module level and faults are isolated to replaceable cards. Structural components of the launching system are large mechanical pieces that are not expected to deteriorate.

"We have a very extensive integrated logistics support programme in RAM," said Capt Howard, "both in the US and in Germany."

The navy is accelerating its efforts to move into full production. "The RAM production programme is unique," continued Capt Howard. "In 1985, a joint agreement stipulated a prime US contractor with a German producer as a second source. I don't know of any allied programme with that kind of acquisition plan."

The first installation of a production model RAM is scheduled for a US ship in 1991.
HMMNZS ENDEAVOUR

THE replenishment tanker HMMNZS ENDEAVOUR is the third ship to bear the name in the Royal New Zealand Navy. The first two, both ex-US Naval vessels originally, were used in support of the New Zealand Antarctic programme from 1956 to 1962 and 1962 to 1971 respectively. Unlike those predecessors, however, the present ENDEAVOUR has been built specifically for the RNZN and although built essentially to a commercial tanker design and standards, she has been fitted with a variety of specialist equipment to permit the naval role to be fulfilled.

The long-standing requirement for an integral capacity to replenish other RNZN Fleet units at sea was to draw to fruition in April of 1985 when the Government of the day authorised a detailed investigation to be undertaken for the acquisition of a suitable vessel to meet the need. The ultimate outcome was the awarding of a contract on 26th July, 1986, to the Special and Naval Division of Hyundai Heavy Industries of the Republic of Korea to build a tanker for the RNZN. This was to be the first new ship built for the RNZN outside the United Kingdom and the first ship built by Hyundai for a foreign navy. The first steel was cut at the Hyundai shipyard, Ulsan on 4th February, 1987.

Delivery of the ship was expected to occur during December 1987. An unexpected delay was caused however through error in the care of the Main Engine during some period of its installation. The outcome was to be a delay in delivery until 1988. Formal hand-over on 7th April was preceded by a colourful naming ceremony on 8th April at which time Mrs Janet Lums, wife of the Mayor of New Plymouth officially named the ship. On 8th April, ENDEAVOUR was commissioned for service in the RNZN, and departed Ulsan on her delivery voyage on 14th April. The delivery voyage included a visit to Singapore where a full cargo of naval specification DIESO and AVCAT was uplifted. (And the New Plymouth connection? — The City of New Plymouth has sought approval to adopt ENDEAVOUR, and it is expected that formal adoption will occur during a visit to New Plymouth.)

The approximate cost of the project was NZ$27 million which allowed the acquisition of a ship even more able to carry out its role than had been originally anticipated. The all-welded steel hull has a 60'-6" stem and poop with an elevated RAS (Replenishment at Sea) Deck forward of amidships connected to the poop and forecastle by catwalks. The ship has a raked stem with bulbous forefoot, a transom stern, and the bridge, machinery, hangar, helo-deck and all accommodation arranged aft. On the RAS deck is a house for RAS control and a set of Sampson Posts supporting the abeam replenishment derricks. Below the upper deck the hull is transversely divided by eight main bulkheads, with a cofferdam at the after end of the tank space. Stowage is provided in four wing and four centre-line tanks for 7,500 tonnes of cargo fuel, and up to 2,000 standard 20ft containers can be carried forward of the superstructure on a half-deck above the tank deck. The two abreast liquid replenishment hose rigs are suspended from lattice derricks at the RAS deck and employ couplings common to RNZN and other allied naval units. Eight rope jackstay positions are also fitted port and starboard of the RAS deck to allow the transfer of small quantities of stores, provisions or personnel when under way. At the stern a reliable refuelling hose allows yet another method of fuel transfer when under way and above, the helo-deck and hangar gives further scope to transfer both stores and personnel.

The ship meets all current international standards for safety and pollution prevention, including segregated ballast. ENDEAVOUR is classed " A(IOAI) OIL TANKER, FP above 60 degrees Celsius, UMS, + LMC " by Lloyd's Register of Shipping and it is intended that she will be kept in class during her life. Being of modern commercial design ENDEAVOUR is also manned to minimum levels by normal naval standards. The main engine and auxiliary plant are designed to be operated in the UMS (Unmanned MACHINERY SPACES) condition outside the normal hours for routine maintenance.

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PARTICULARS

| Length (OA) | 131.5m |
| Beam | 12.0m |
| Draught (Light) | 8.4m |
| Draught (Laden) | 5.2m |
| Depth | 10.0m |
| Displacement (Full) | 14,300t |
| Displacement (Ballast) | 7,300t |
| Deadweight | 8,400t |
| Gross RT | 6,900t |

Complement:

- Officers: 6
- Senior Ranks: 7
- Junior Ranks: 30

Equipment:

- Abeam RAS Rigs.
- Astern RAS reel.
- RIB Rescue and workboat.

Propulsion:

- Main Engine: One Mann Burmeister & Wain V12 - 32/36 medium speed diesel developing 5300 bhp.
- Propeller: Three 4 blade Controllable Pitch by Lips.
- Reduction gear & clutch.

At rest during the International Naval Review, 1st October, 1986.
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Rockwell Ship Systems Australia
Level 6, 3 Thomas Holt Drive
North Ryde, NSW 2113
Telephone (02) 805 5555
Fax (02) 805 5599
The Navy League of Australia

APPLICATION FOR MEMBERSHIP

HISTORICAL

In 1950, encouraged by the Australian Commonwealth Naval Board, the Navy League of Australia was established as a means of facilitating the development of the Australian Sea Cadet Corps.

Since that time, Divisions have been formed in every State, the Australian Capital Territory and the Northern Territory.

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

The Navy League of Australia cordially invites you to join us in what we believe to be an important national task.
MEMBERSHIP
Any person with an interest in maritime affairs or who wishes to acquire an interest in maritime affairs and who wishes to support the objectives of the League is invited to join.

OBJECTIVES
The principal objectives of The Navy League of Australia are:

- To keep before the Australian people the fact that we are a maritime nation and that a strong Navy and a sound maritime industry are indispensable elements of our national well being and vital to the freedom of Australia
- To promote, sponsor and encourage the interest of Australian youth in the sea and sea services, and support practical sea training measures
- To operate with other Navy Leagues and sponsor the exchange of cadets for training purposes

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

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

Member participation is encouraged in all these activities.

JOINING THE LEAGUE
To become a Member of The League, simply complete the Application Form below and post it, together with your first annual subscription of $12.00 (twelve dollars) which includes the 4 quarterly editions of "The Navy", to the Hon Secretary of the Division of The Navy League in the State or Territory in which you reside. The addresses of which are as follows:

VICTORIAN DIVISION: C/O 5 Eleanor Court, Donvale, Vic., 3111
QUEENSLAND DIVISION: 42 Gledswood Street, Indooroopilly, Qld., 4068
AUSTRALIAN CAPITAL TERRITORY DIVISION: C/O 4 Shailer Street, Coombs, ACT, 2614.
SOUTH AUSTRALIAN DIVISION: GPO Box 1529, Adelaide, SA, 5001.
TASMANIAN DIVISION: C/O 12 Army Road, Loughton, Tas, 7250.
WESTERN AUSTRALIAN DIVISION: C/O 35 Longworth Road, Adelaide, WA, 6159.
NORTHERN TERRITORY DIVISION: GPO Box 166, Darwin, NT, 0801.

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

THE NAVY LEAGUE OF AUSTRALIA
Application for Membership

To The Hon Secretary of The Navy League of Australia

Division

I wish to join the Navy League of Australia, the objectives of which I support, and I enclose a remittance for $12.00 being my first annual subscription in 30th June next.

Name
Address
Suburb
Postcode

Signature

Date

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

PLEASE PRINT CLEARLY
JOIN THE
NAVAL RESERVE CADETS

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

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

Uniforms are supplied free of charge.

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

Parades are held on Saturday afternoon and certain Units hold an additional parade one night a week.

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

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

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

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

NEW SOUTH WALES: Staff Office Cadets, HMAS Watson, Watsons Bay, NSW, 2030.

QUEENSLAND: Staff Office Cadets, HMAS Moreton, Box 1416T, GPO, Brisbane, 4001.

WESTERN AUSTRALIA: Staff Office Cadets, HMAS Leeuwin, PO Box 58, Fremantle, WA, 6160.

SOUTH AUSTRALIA: Staff Office Cadets, HMAS Encounter, PO Box 117, Port Adelaide, South Australia, 5015.

VICTORIA: Staff Office Cadets, HMAS Lonsdale, Rouse Street, Port Melbourne, Vic, 3207.

TASMANIA: Staff Office Cadets, HMAS Huon, Hobart, Tas, 7000.

AUSTRALIAN CAPITAL TERRITORY: Commanding Officer, TS Canberra, PO Box E52, Queen Victoria Terrace, Canberra, ACT, 2600.

THE NAVY

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The Hon. Secretary, NSW Division
NAVY LEAGUE of AUSTRALIA
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THE NAVY LEAGUE OF AUSTRALIA

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OUR COVER PHOTOGRAPH

HMAS HOBART, the Australian Fleet’s most efficient ship in 1988. Throughout the year, the DOD maintained a high profile in the bicentennial year from the Tall Ships Race in January to her leading role in the Naval Review in October. During the year HMAS HOBART sailed over 30,000 miles. In March 1989 the ship began a major modernisation.

April-June, 1989

THE NAVY

Page One
AUSTRALIANS AND DEFENCE - ARE WE BECOMING TOO COMPATANT?

Defence has not been a major issue in Australia for such a long time that it is hard to remember when the community last felt it to be of great importance; probably not since the early 1930s, when the militarists carried the day. A significant exception has been the recent round of public speeches, in which I have been called upon to restate the proposition that defence is a national priority.

The purpose of this is to assist us in our campaign to keep the Defence issue alive. As a result, the Defence effort must be maintained.

Australia has, of course, been involved in so-called "limited" wars since World War II, but while disastrous to many of those who took part in them, they did not impose a direct threat to Australia or impinge on the well-being of most Australians.

If defence has not been a major issue for nearly 50 years an interesting question is raised. Does it mean that Australia is aloof from all this. Complacency is a significant problem in any democracy for those responsible for national defence. Money is harder to obtain and morale can be affected. In Australia the difficulties are compounded by the increasingly diverse make-up of the population and for this variety to be proportionate in the composition of the armed forces; this does not appear to be resolved in the foreseeable future.

Too often complacency leads to, among other things, careless thinking. Recent reports on the rivalry between major powers, particularly between the Soviet Union and the United States, the world is still beset by ideological, racial, economic and cultural problems unlikely to be resolved in the foreseeable future. Australia cannot remain aloof from all this.

Complacency is a significant problem in any democracy for those responsible for national defence. Money is harder to obtain and morale can be affected. In Australia the difficulties are compounded by the increasingly diverse make-up of the population and for this variety to be proportionate in the composition of the armed forces; this does not appear to be resolved in the foreseeable future. Australia cannot remain aloof from all this.

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Each type would be required to keep open specialised or different types of vessels for ing towards the development of spe­
cial vessel. Could be kept open.

Three coastal zones, including Torres
geographic proximity would allow, at oil and natural gas. While in some places
coastal water stretching from the vicinity
exerted against us at fairly short notice
forces-in-being, laying mines in the

Strait, could be kept open.

The availability and training of crews.

The availability of vessels, aircraft

and many aspects would require detailed
judgments to be made on these matters
establish the necessary support facilities.

• The type of threat and the speed at
central if it is to be effective and available
at short notice.

The new and the old.

Timescales for availability on task
would be greatly reduced if MCM forces
were based in peacetime near likely
operational areas, eg, at Darwin, Frem-
ness or Port Hedland, or possibly Cairns.
The establishment of an MCM
headquarters in Sydney, however, and
the desirability of exercising in sev-
everal major asets, and some sources of
supply could be abandoned, it is diffi-
cult to envisage a successful overall de-
are unless at least five port areas and
three coastal forces-in-being, including Torres
Strait, could be kept open.

Current technology appears to be mov-
ing towards the development of spe-
cialised or different types of vessels for
unshore and port-minehunting, for mine-
swiping and for coastal and ocean mine-
countermeasures. A minimum of two of
each type would be required to keep open

of the control and administrative aspects
of manning civil registered aircraft with
naval personnel and using them for naval
purposes should be undertaken as soon as
possible.

Similarly, the equipping, when build-
ing, of Australian-owned and registered
merchant ships with facilities to enable
them to be fitted with certain MCM
equipment in an emergency should be
investigated. This was an earlier policy
throughout to have been dropped some years
ago.

RAN Reserve

It has been stated that Reserve person-
would have a significant, indeed a
major role in MCM activities. This would
certainly be the case in the event that a
substantial MCM effort had to be mounted
core force. However, in peacetime the League is of the opinion
that permanent naval force (PNF) per-
sion would have to carry the main

broad, including manning the core force
ships. Many RAN Reserve members give a con-
siderable amount of time to the Navy,
but when all is said and done, the amount of
time they can give is limited by their
normal civilian responsibilities. The
All MCM personnel would be very profes-
ial if it is to be effective and available

MCM Core Force

The Navy League believes that in con-
sidering mine countermeasures — and
other defence preparations — thinking
should not become entirely "defensive".

We are of the opinion that Australia
itself should have a mining capability,
both to protect our own ports and vital
passages, and of those of a country seeking
our assistance, and as a way of dis-

MCM Priority

The Sub-Committee will no doubt be
in a position to make a judgment on the
need for and scope of mine counter-
measures it has examined the sub-
missions placed before it, and to make an
appropriate recommendation to the gov-
ernment.

So far as the Navy League is con-
cerned, we believe the mine is a weapon
that could be used against Australia in a
variety of circumstances, and that the
increase which could be related to the
damage that could result makes a
significant MCM capability essential.

At the present time our ability to coun-
ter a mines threat is very limited. In
the matter of defence preparedness it could
be likened to Achilles' heel and we all
know what happened to Achilles.

An "Offensive" Capability

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in this form of activity. Simi-
larity, other elements of the Defence
Force should be prepared to strike at the
opponent's production and storage facili-
ties. The likelihood of retaliation can have a very calming effect on those with
aggressive intent.
ROYAL AUSTRALIAN NAVY TUGS

By C. H. ANDREWS

The Federal Government will speed up the acquisition of Navy tugs because of the debate in which two British warships were prevented from berthing in the Melbourne by union bans and poor weather.

In the case of the Prone Smelter, Mr. Hawke, said yesterday that legislation enforcing berthing rights, as proposed by the Fraser Government in 1982 with Labor support, had now been put to use. "If we do not accept the acquisition of Navy tugs, we will be able to accelerate the acquisition of RAN tug vessels so far as that is possible," Mr. Hawke said.

The Navy was planning to add a couple of tugboats to its fleet of tugs during the Depression. The RAN was able to keep its tugs busy during the Depression, with the arrival of the new diesel tug, WATTLE, to Port Phillip, where it is now in regular use as a museum ship.

The Pacific War brought maritime action closer to the shores of the Great South Land than ever before. Our merchant seamen and our naval seamen battled a naval adversary that was, initially, well equipped and with the wind in its favour. Ships were damaged around the Australian coastline in numbers greater than in World War I. Our war effort to the north needed barges and steamships and vessels of them too small to make sea passages unescorted. Tugs were needed and the converted harbour tugs of the Depression, many of them working for WWII, were in many ways the most valuable but unsung big ships.

The two Victorian Navy gunboats, VICTORIA and ALBERT, although not intended as tugs by their original owners, were used as such later in their careers. VICTORIA was used as a tug for the Victorian Public Works Department. ALBERT worked as a tug for Ferries and was used as a short-term tug until it was sold in 1939.

Three large harbour and coastal tugs were requisitioned for Navy use during WWII. The 84-foot (25.5m) tugs were used as auxiliary tugs at Wollongong and in the South Australian ports. The big sea-going tug CHAMPION was used as a tug by the RAN as required, but not as a commissioned ship. Two large salvage ships were used by the RAN on behalf of the Royal Navy. CAMBRIA and SALVOR were used to salvage ships in the South Pacific. It is interesting to note that all of these big, quick-built tugs had built lives of more than 30 years, with at least two — SPRIGHTLY and TANCRED — still in use in Australian ports.

While not designated as a harbour tug, it is likely that the water tender RIPPLE (1904-200 tons) carried out barge and other towing for the RAN during its 20 years of naval use in Port Jackson.

The West Coast of Australia used a number of 75-foot tugs (20) in the AT 2196-series. These tugs were mainly of the 45-foot class with numbers AT 1536 DOOEN. is in naval use at base HMAS Cerberus in Victoria. Twelve of the type served in the RAN from 1945 with their numbers. These ships were very durable, with several of them still in use in Australian ports and one, now TB1536, ex HMAS WATO, has been converted to a training tug at HMAS Cerberus in Victoria.

The Australian Army, which had little need of watercraft before WWII, found itself with almost 1,000 vessels of many types on its fleet list by the end of the war. Many of these, indeed most, were requisitioned with a number of harbour and coastal tugs being taken over. The RAN gave up its Army tugs, mainly the 45-foot class with numbers AT 1536 DOOEN, ex HMAS WATO, and was involved in the Mindoro landings in December 1944, having earlier saved a damaged landship off the NSW coast. Perhaps the saddest duty of any of the RAN tugs came to HMAS ST GILES. Sent north of Australia, it was involved in the Mindoro landings. It was involved in the Mindoro landings in December 1944, having earlier saved a damaged landship off the NSW coast. Perhaps the saddest duty of any of the RAN tugs came to HMAS ST GILES. Sent north of Australia, it was involved in the Mindoro landings.

Towards the end of the war, Australian boat and shipbuilding capacity caught up with demand and a considerable number of harbour tugs and coastal tugs were built. Of these, the biggest were the 98-footers. Three served in the RAN as BRONZEWING, EME and MOLLYMUCK. None were available during hostilities.

HMAS ST GILES.

The former HMAS SPRIGHTLY, arriving in Sydney in 1963.

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NEW SOVIET CARRIER

Satellite photographs of the new Soviet carrier TBLLISI provide a starting point for a detailed analysis of the air group the ship is designed to operate.

The drawings, based on the satellite photographs and assessments made by United States Naval Intelligence, reveal a flight deck broadly similar to that of current US Navy carriers, but with two major differences.

The first is the provision of a 2x4 lift above the bow. The second is that there appears to be no deck-edge lifts to port, and only two to starboard.

Previous artists’ impressions have always shown a third lift aboard of the island, and there is certainly sufficient space for one between the island and the angled deck.

However, the lift well might have been expected to show up as a dark shadow on the photograph at this stage of construction.

The number of lifts installed in a carrier is generally related to the size of the air group. If the Soviets persist with their previous policy of operating only as many aircraft as can be accommodated in the hangar, TBLLISI’s air group will be significantly smaller than that of US supercarriers, which operate with a permanent deck park.

Since a centre-line lift would encroach on both the hangar and the reducing the number of aircraft which could be carried topple, two deck-edge lifts would appear to constitute a neat and elegant solution.

The deck-edge lifts, at approximately 22m long and 14m wide, appear to have been sized to accommodate the Su-27 “Flanker”, the largest of the aircraft under consideration to operate from the carrier.

The forward lift is well-placed to support flying operations from the axial flight deck, and the after lift to support operations from the angled deck.

Both lifts probably have small weapon lifts in close proximity, and there may be additional lifts close to the superstructure, the magazine houses running between the hangar and the sides of the ship.

The hangar itself would measure 180-185m x 30m, and would be broadly rectangular.

With a length of approximately 21m (excluding probe) and a wingspan of 14.5m, the “Flanker” is comparable in size to the United States Navy’s F-14 Tomcat, though the “Flanker’s” span could be reduced to approximately 10m (as in the hangar view) by the adoption of a folding wing.

Even though the schematic representation shown in the drawing is not the most economical way of showing this aircraft, it would appear that two vertical take-off/landing (VTOL) Yak-41 “Forger” derivatives (or three Ka-27 “Helix” helicopters) could be accommodated in place of this one.

A single squadron of 12 “Flankers” would take up 45 per cent of available hangar space, making it unlikely that more than 12 “Flankers” could be carried without resorting to a permanent deck park.

The lower of the three drawings gives a schematic representation of the sort of air group which might be accommodated in the hangar.

The most likely peacetime complement, assuming that TBLLISI has a conventional take-off/landing (CTOL) capability, would be a squadron of 12 “Flankers”, a squadron of 12 Yak-41 VTOL aircraft, a squadron of 15-18 Ka-27 “Helix A” anti-submarine helicopters, plus a handful of other, general purpose helicopters.

As always, I would appreciate contact with anyone who can furnish more details, particularly of appearance of the new aircraft under consideration.
The PLA Navy's 'Luda' Class Destroyers

by ANTHONY PRESTON

The PLA Navy operates 16 Type 051 destroyers, forming the main strength of the surface fleet. Known as the "Luda" class from the parent shipyard in the twin cities of Lushun-Dalian, the first, No 105, was commissioned in 1971 and the last, No 165 four years ago.

The design is very similar to the Soviet "Kotlin", but with two twin 130mm guns (one fore and one aft), four twin 57mm AA and four twin 76mm M1934 AA mountings. However, the "Ludas" differ from the Russian ships in having two rotating sets of CSS-1 anti-ship missiles-launchers, one fore and one aft. The C30-2 missile is more correctly known as C40-2, and is derived from the Soviet SS-N-2 Styx.

The first ships were built at Luda, but production was then shifted to a larger shipyard at Yulin and Dongfeng. Nos 131-133 are with the North East Sea Fleet, Nos 160-165 are with the South Sea Fleet (yes, No 162, lost by an explosion in 1978). Eight years ago the PLA Navy was negotiating with British companies to put together a modernisation package. This would have included a complete rebuild to accommodate modern electronics and the surface-to-air missile version of the Sea Dart. The US Navy area defence system. Shortage of foreign exchange and a political shuffle which cut back naval expenditure put an end to this. However, in 1987 the first of 23, No 105 completed a local modernisation.

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The "mystery" ship of the Australian Navy is (says the Sydney "Daily Telegraph") the cruiser ADELAIDE, now being completed at Cockatoo Dock. For many months the financing process has occupied the attention of the highly-paid mechanics, and so comfortable is the job that it is expected that many more will pass before the ADELAIDE speeds away on her trial run down the coast.

The story of the ADELAIDE's construction is a wonderful example of how not to build a cruiser quickly. She left the slips and entered Cockatoo Dockyard in 1918. Early in 1919 was the time set down for the trial spin. The mechanics went to work in the usual way, but as the months slipped by the ADELAIDE somehow did not take on the finished aspect her builders had hoped to see. The joke of the yard came to be: "When will the ADELAIDE be completed?" Reputations were lost on this gamble in guessing, and the cruiser was put in the same class as the slow. She was nicknamed "The Slow". But that was a mere detail. There was money to burn, and so it was burnt. The banknotes are at present "burning" at the dockyard on the creation of the ADELAIDE, and only the optimists in that busy hive believe the vessel will ever be finished.

The job is reputed to be so fascinating that the workers do not wish to leave it. They have grown to love their dear old ship. The pessimists reckon it will never do its trials. The optimists in that busy hive believe the vessel will ever be finished.

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New Era Opens for Sydney Sailors' Home

Nearly 125 years of service by the Sydney Sailors' Home to the Port of Sydney, to shipping companies and to succeeding generations of sailors of all nationalities begins a new phase next year with the expected completion of a retirement complex for ex-seafoyers at Woolloomooloo.

The development, to be known as "Mariners Court", will occupy a site between McElhone and Brougham Streets. It will be a low-rise, landscaped three-storey complex with accommodation for 40 residents in serviced single rooms with private facilities attached and each "pair" of rooms have provision for an interconnecting door, if required. All meals will be provided and served in a separate communal dining room and there will also be a lounge, a library and other residents' amenities, including telephone points and TV aerial in each room, optional security car parking and a resident warden.

To be eligible for allotment of accommodation in "Mariners Court", applicants must be over the age of 55, male or female, and have had Merchant Navy or naval service.

Subject to the views of the Trustees, successful applicants will make a "base payment" and this amount will be refunded when the applicant leaves "Mariners Court", less a deduction as a management fee.

There will also be a weekly maintenance fee payable by all tenants, and, in the case of old-age pensioners, this amount will not exceed 85% of that pension.

HISTORY:
The Sydney Sailors' Home is an integral part of the maritime history of Sydney.

In 1860, following representations by a citizens' committee, the New South Wales Government promised a site at Circular Quay on which could be built a sailors' home where seamen could at reasonable cost, obtain comfortable board and lodging.

A successful public appeal raised the necessary funds and the home was opened in 1864.

This building, now vested in the Sydney Cove Redevelopment Authority, still stands to this day.

In 1919, the Sydney Sailors' Home was incorporated in New South Wales as a limited company and four years later title to the land on which the home stood was given, by Crown Grant, to the company.

Having for more than a century provided accommodation for ships' crews, progress finally caught up with the Sailors' Home in 1972, when the land was resumed by the Sydney Cove Redevelopment Authority and the Sailors' Home was suddenly in danger itself of becoming homeless.

Fortunately, after leaving some temporary accommodation for the residents of the Circular Quay property, a small residential in Paddington was acquired.

These events, however, coincided with rapid and widespread change in the shipping industry, one effect being that there was now little demand for the type of accommodation the Sailors' Home traditionally had offered.

After much research and enquiry, the directors decided that the most appropriate avenue for their efforts and resources would be to provide long-term accommodation for retired seafarers and their dependants.

Readers continued

"Mariners Court" at Woolloomooloo is the outcome.

Enquiries from prospective tenants are welcome and may be made by contacting the Chief Executive of the Sydney Sailors' Home, Mr Bryan Rowland, on Sydney telephone (02) 419 4362.

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WASP (LHD 1) CLASS AMPHIBIOUS ASSAULT SHIP

WASP is the lead ship of the all-new LHD 1 class of multirole amphibious ships - the Navy/Marine Corps team's newest class of amphibious support warships. The class has as its primary mission the embarkation, deployment, landing and support of a Marine landing force.

In carrying out this mission, LHD 1 will mount an assault of helicopters, landing craft and other amphibious vehicles in various combinations. The WASP class is the first specifically designed to accommodate the air cushion landing craft (LCAC) and Harrier II (AV-8B) STOVL (Short Takeoff/Vertical Landing) jets, which will provide close-in air support of the assault force. The ship will also accommodate the full range of Navy and Marine Corps helicopters, conventional landing craft and amphibious vehicles.

Outfitted for her primary mission, WASP will carry a mix of assault helicopters, plus six to eight Harriers. The ship's design provides for a full intermediate and operational aircraft maintenance capability for the aircraft and intermediate maintenance support and the embarked landing force squadrons. Additionally, flight deck optical and visual landing aids have been integrated to optimise the requirements of both rotary wing and jet aircraft.

WASP-class ships are 844 feet long, with a beam of 47 feet. The cargo area is as high as four feet. The LCACs are 87 feet, 11 inches long, 25 feet wide and 10 feet high. A crew of five is required to operate the craft. Main propulsion is provided by four gas turbine engines.

The LCAC's range allows over-the-horizon launch and delivery of assault forces and equipment. Additionally, weather, sea and surf conditions are much less of a factor in LCAC operations. The well deck, designed specifically for the STOVL capabilities of the Harrier II, provides the LCACs with a more suitable environment for launch and delivery of assault craft.

LHD 1 will have more than 22,000 square feet of vehicle space, and 100,000 cubic feet of cargo space. Accommodations for nearly 3,000 troops and crew members (the crew numbers 98 officers and 983 enlisted personnel) are provided in the ship's living areas. For combat support, as well as medical and engineering missions, LHD 1 will have six fully-equipped operating rooms and a 60-bed hospital.

On February 28, 1984, the US Navy awarded construction contracts for LHD 1 to Ingalls Shipbuilding of Pascagoula, Mississippi. LHD 1 will be delivered to the Navy by Ingalls by the mid-1989.

On November 11, 1986, Ingalls won the competition for the first three follow-on ships of the class, ESSEX (LHD 2), Kearsarge (LHD 3) and the as yet unnamed LHD 4. Ingalls and the Navy actually began preparing for the construction of LHD 1 in 1981. Along with Navy and Marine Corps fleet and staff personnel, Ingalls represented participated in a team effort to develop the preliminary and contract designs of the new ship class. This unique teaming of military operations experts with industrial engineering technology early in the design has greatly enhanced the amphibious operations potential of this new class of ships.

The new class is the sixth amphibious assault ship programme in which Ingalls has been involved since the early 1960s. Most recently, the five ships of the TARAWA (LHA 1) class were delivered to the Navy by Ingalls between 1976-80. The TARAWA class provided much of the baseline from which the design of the all-new WASP class was developed.

Major highlights of the WASP (LHD 1) class ship design include:

**THE ASSAULT SYSTEM**

The development of air cushion landing craft technology, as embodied in the LCAC, introduces high speed and long-range capabilities into surface amphibious assault, significantly increasing the match between the helicopter and surface-borne assault. The LCAC provides high-speed (40 knots), low-altitude (60 feet) means for ships-to-shore movement of cargo, equipment and personnel. The new craft operates on a cushion of pressurised air, and can deliver its cargo to points above the high-water mark - unaffected by beach features and conditions. The craft can clear obstacles as high as four feet.

The LCACs are 87 feet, 11 inches long, with a beam of 47 feet. The cargo area is 67 feet by 27 feet. A crew of five is required to operate the craft. Main propulsion is provided by four gas turbine engines.

**Fitting out.**
WASP class has been specifically dedicated to support the dock on July 30, 1987, for launch on were applied to the ship's exterior hull. types and sizes, and 10 miles of ventila­tion ducting. In preparation for LHD l's the hull closed.

MTACCS will provide real-time displays of the operations ashore and in the air during amphibious operations. The air traffic control capability of the WASP class has been specifically assembled to support simultaneous Har­rier II hovering operations. The MTACCS displays are installed to monitor air control functions. A general upgrading of capabil­ities is planned in order to support a vari­ous computer-driven subsystems, automa­ted status boards and improved dis­plays. The provision of high-data-rate, low-probability of intercept communications, and the installation of the Joint Tactical Information Distribution Sys­tems (JTIDS), will enhance this capabil­ity.

The LHD 1 exterior communication system features the first US Navy installa­tion of broadband HF transmitters and receivers that provide a frequency-hopping capability in the 2-50 MHz range and greatly reduce the required number of transmitting antennas.

SURVEILLANCE

The LHD 1 surveillance systems pro­vide integrated automated detection and tracking. This capability provides a single highly accurate radar presentation for high confidence threat assessment. Radar equipment located within the super­structure will be protected with combi­nated ballistic protection to achieve maximum fragmentation protection.

FACTS & FIGURES

WASP (LHD I): WASD designed utilizing computer-generated detailed design drawings created for each ship section. These state-of-the-art design drawings, used in concert with the revolutionary modular construction techniques pioneered by Ingalls, pro­duced a ship that was approximately 70 per cent complete when launched. Modu­lar construction of the ship in five sec­tions featured extensive pre-outfitting of machinery, hardware and equipment prior to the integration of these sections and the hull closed.

This utilization of 21,000 tons of steel, 400 tons of aluminum, 400 miles of electrical/electronic cable, 80 miles of pipe, 10 miles of electrical equip­ment, and 120 miles of welding on the hull's new construction, 36000000 gallons of water were applied to the ship's exterior hull.

WEIGHTS & MEASUREMENTS: When moved onto Ingalls' floating dry­dock, the LHD I was loaded by forklift, August 4, 1987, becoming the largest man-made object ever toiled across land.

IS 788 feet long at the waterline, 819 feet long at the flight deck, and 651 feet (almost three football fields) long overall; has a beam of 106 feet (just three times the deck length); and a draft of less than the narrowest point in the Panama Canal; and displaces 40,500 tons when fully loaded. The ship has 2.2 acres of habitable floor area.

IS the first ship specifically designed for short take-off/vertical landing (STO/ VLT) jet aircraft and the new-dedicated air cushion landing craft (LCAC).

IS designed to transport, put ashore and support a Marine landing force, as well as its combat and support equip­ment, utilizing the unique capabilities of the LCAC and Harrier II, as well as the full range of Navy-Marine Corps heli­copters and landing craft air cushion system.

IS equipped with highly automated air-fighting capabilities, arroyed in three close-related systems: The combat sys­tem, which includes all air- and surface­search and fire control radars and com­puter systems, electronic warfare sys­tems, the Integrated Tactical Amphibi­ous Warfare Data Systems (ITAWDS), and a unique, computer-controlled internal/external communications system.

IS has an internal communications sys­tems consisting of 800 telephones, 78 sound-powered telephone systems, 16 intercom system and annunciator sys­tems, an internal radio system, three video recorders, 54 receivers, 179 TV out­lets, and a complete audio-visual studio with 16mm film, slide video and recording equipment for shipboard distribution of live or taped broadcasts.

IS has an exterior communications sys­tem which includes 27 transmit­ters, 42 receiving channels and 43 trans­mitting or receiving channels — in fre­quency ranges from below broadcast band to ultra-high frequency. High­power transmission reaches about 36 kilowatts — the equivalent of an average­size commercial FM radio station.

IS has 24 antennas for interior and exter­nal communications controlled by a computer for circuit designation and channel assignments.

IS has the capability to perform as the command ship for any Amphibious Task Force (ATF). Living quarters for the Commandant of the Navy, and all other personnel, are immediately accessible to all Command and Control centers.

IS has the first Combat Simulation Test Set which, utilizing fibre-optics technol­ogy, provides realistic training for a full complement of the ship's systems and provides continuous crew training capabilities.

IS has an assault support system that synchronizes the simultaneous horizontal and vertical flow of vehicles throughout the ship. Two craft elevators service the hangar and flight decks. Six cargo elevators, each 12 by 25 feet, are utilized to transport material and supplies from cargo holds through the center of the ship to the flight, hangar and vehicle storage decks. Cargo is transported to waiting landing craft docked within the ship's well deck via a monorail system. Heli­copters or vehicles in the hangar or on the flight deck are loaded by forklift.

IS has ballast over 15,000 tons of sea­water for trimming the ship during landing craft launch/recovery operations in the well deck. Has 1500 component compartments, ranging in size from six sq ft well deck and 120 sq ft hangar deck.

IS has medical and dental facilities capable of providing medical assistance to 1000 casualties including combat-injured or brought aboard ship during humanitarian missions. Providing routine medical/dental care to all embarked ship and troop personnel. Major medical capability to onde tour main and two emergency operating rooms, seven operating rooms, eight radi­o­graphy rooms, a blood bank, laboratories, and patient wards. In addition, three bat­tle dressing stations are located throughout the ship, as well as a casualty collect­ing area. In the well deck, four medical elevators rapidly transfer casualties from both the flight and hangar decks to the medical treatment area.

IS has crew and troop berthing on the same deck level, with galleys and mess facilities nearby. Berthing areas are subdiv­ided to provide semi-private spaces, with three to eight bunks, and are designed to limit the flight deck capacity to only 15,000 sq ft hangar deck. IS has 24 antennas for interior and exte­rior communications controlled by a computer for circuit designation and channel assignments.

IS has the capability to perform as the command ship for any Amphibious Task Force (ATF). Living quarters for the Commandant of the Navy, and all other personnel, are immediately accessible to all Command and Control centers.

IS has the first Combat Simulation Test Set which, utilizing fibre-optics technol­ogy, provides realistic training for a full complement of the ship's systems and provides continuous crew training capabilities.

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ASW ROLE

The ASW role of future general-purpose warships will be even more important. I do not think anybody will deny that and the future ASW weapon system will be shipborne helicopters carrying active sonar and light-weight torpedoes. 3000 dwt or thereabouts, seems barely adequate considering the vital importance which is going to be placed on shipborne helicopters.

The US Navy have stated that the future of passive sonar as an ASW measure is very much in doubt, as the latest Soviet nuclear submarines are now very much quieter than they were and will no doubt continue to get quieter. They also have stated that because of this, the possible demise of their hunter-killer nuclear submarines must be considered, as they were most dependent on passive sonar. This is a staggering statement considering the billions of dollars that have been expended on the SSNs by both the US Navy and the RN.

Likewise, towed arrays which feature a passive sonar can no longer be depended upon as an ASW measure, unless an active transmitter is somehow added. The solution to this problem is in-hand apparently. Rapid communications between surface, sub-surface and air will be the order of the day and here again, helicopters using dipping active sonar buoys will be the essential link when attacking enemy submarines with aerial torpedoes, or communicating with our attacking enemy submarines with aerial buoys will be the essential link when attacking enemy submarines with aerial torpedoes.

The issue is so important, that it merits a special design. Warships designed for NATO requirements are most unlikely to be equally suitable for our vast ocean expanses. They are just not big enough, as I have endeavoured to argue to satisfy my versatility requirements. A great deal of work has been put into the design that I am advocating by a well-known warship builder on the Clyde. It was a special variant of the Yarrow type 23. It seems more than just a pity to let all this expense and effort go by the board, just because it was not "an existing design!"

ELECTRIC PROPULSION — CODLAG

With the possibility of a rethink — I hope — it is maddening to have to refer to another American Admiral Tront in support of electric propulsion. This is already a reality in the Type 23 Frigate, as illustrated, building in Scotland by Yarrow Shipbuilders for the RN. The flexibility of the CODLAG configuration (combined diesel electric and gas turbine) has everything to commend it, both operationally and from an installation point of view. Be with it!

CONCLUSION

What is the logic in procuring the latest and best helicopters if you cannot take them to sea in the right mix? An enormous amount of effort is being put into developing vertical take-off aircraft, both in the USA and Europe, for every conceivable role. Yet the RAN are apparently prepared to restrict themselves to the choice of one helicopter per ship, when we will never have many warships in one place at one time.

The Department of Defence is in effect buying NATO warships where they can continue to put every type of helicopter to sea at any one time. All we have here is one powerful ally and a few, we hope, friendly neighbours, no NATO equivalent as yet and maybe not for a long time. We are on our own. I would like to conclude with a quote from Admiral Hill's recent address in Canberra, as published in the journal of the ANI, May 1988.

"If I have a criticism of Australian maritime policy, it is not on the strategic side, but on the implementation of the strategy in material terms. Is that well-protected area of services covered by a force that can be sufficiently brought to bear?"

I take this to be a polite way of saying that the ADF is inadequate, without being specific! It would have been most informative if he had chosen to be much more definitive.

After commissioning: HMAS PALUMA on trials, February 1989.

HMAS DERWENT — Keeping Busy

A replacement for the Royal New Zealand Navy's diving tender (HMNZDT MANAWANUI) has now entered service.

She is the former STAR PERSEUS, renamed HMNZS MANAWANUI, a purpose-built diving support vessel for North Sea operations.

The cost of the vessel, including delivery voyage expenses, was $1.6 million, saving $400,000 on the original budgeted cost.

The earlier MANAWANUI was built in New Zealand and entered service in 1978. Since then, the support requirements of diving have changed considerably, with the expansion of the roles of the Navy's Operational Diving Team.

The vessel's design meant that deeper diving could not be undertaken without the presence of another vessel carrying additional compression chambers and associated equipment. She was also unable to deep moor and therefore could not safely support deeper diving and recovery operations.

In response to a registration of interest to select a consultant to assist with the introduction of a diving support vessel, over 100 replies were received worldwide.

A tender was then issued to a short-list of six companies — two in New Zealand, three in the United Kingdom and one in Sweden — from which Ocean Fleet (UK) Ltd was chosen. A number of potential vessels were investigated and four were identified for subsequent detailed inspection.

The Minister approved the purchase of the new MANAWANUI on 5th November, 1987. After looking at ships in Dun­

The ship was laid up in October 1987 and renamed HMNZS MANAWANUI. It had already been decided that the DSV would retain the name of MANA­WANUI, which had been associated with the Diving Branch for many years. She would also be commissioned, thus for the first time we had an HMNZS MANA­WANUI. To confuse matters even further, she was allocated the pennant number and international call sign of HMNZDT MANAWANUI, while the earlier was given new ones. So now the RNZN had a HMNZS MANAWANUI and a HMNZDT MANAWANUI which, of course, was later renamed HMNZS KAHU. (There was good reason for all this at the time, if only I could remember what it was!)

MANAWANUI slipped and proceeded on Thursday, April 7, 1988, to commence a voyage of nearly three months to New Zealand. That afternoon, various emergency drills and evolutions were undertaken to familiarise all on board with the various safety procedures and good time was made through the North Sea.

Throughout the passage, considerable interest in the ship had been shown by the diving branch of the Royal Australian Navy, which went as far as to send a team up to Cairns from Sydney while the ship was alongside.

On arrival in Auckland, the delivery voyage of the RNZN's new Diving Support Vessel was complete. Some 14,500 nautical miles were steamed with 14 days alongside during the three month period.

At times it has been a testing passage, it has also been a highly enjoyable one, a maiden voyage which all the Ship's Company will remember with pride.

The ship proved to be a challenge in many ways, the crew continually discovered new things, especially hydraulic and air lines, and became accustomed to Merchant Navy equipment. There is no doubt that it is a fine little vessel that should serve the RNZN very well.

The next phase of the project was a commercial refit in NZ from October 25 to December 16, 1988.

By Christmas the Navy had a very versatile and capable Diving Support Vessel, thus bringing to a close a very satisfying project.

From Royal New Zealand Navy News.
AUSTRALIAN AIR POWER TODAY
By: GREG MEGGS
Published by: Kooberry Technical Publications
PO Box 648
Dundee, Western Australia, X1375
Reviewed by: ROSS GILLET

This is a really bundled and bunched job, a typical downmarket affair, a shame for its publishers, and the Australian Air Power. As for the book itself, I felt misled and cheated, as I have spent money to purchase this work, which fully deserves the qualifications and the word book on naval history ever written. Of course, the incompetent publishers are not the people who can do anything about the result to the RAN and the reader's intelligence. When I phoned Messrs Ferguson, someone told me on the phone, they couldn't care less about my criticisms.

COMMUTS FLEETS OF THE WORLD 1888/89: THEIR SHIPS, AIRCRAFT AND ARMS
Edited by: JAN LABAYE COUHARL and BERNARD PREZÉLIN
Published by: Courier Maritime Press, London/ federation of the States Naval Institute
Reviewed by: ONE STACZEK

The current edition of "Combat Fleets of the World", weighing in at some 900 pages and 160 photographs, is a comprehensive edition yet to be surpassed. It appears to be a treasure chest which includes wealth of knowledge concerning the naval forces, coast guards and major warships of the world.

The book starts with a resume and assessment of the Navies of the United States, Great Britain, the Soviet Union, Germany, Japan, China and all the other major powers. This resume highlights the strengths and weaknesses of the selected navies. Following this section is the main body of the book, which describes the navies of all the countries from Albania to Zimbabwe. This is then followed by a comprehensive index listing all ships described within the book.

Because of the time taken to compile and edit this book, it is still an excellent reference work for those interested in the naval history of the world. It is recommended for any serious student of naval history.
Fleets of the World" is as accurate and up-to-date as can possibly be. The most impressive aspect of this edition of "Combat Fleets of the World" is the vastness of the coverage. No other publication available can provide the reader with the same coverage of the world's navies. In both in terms of nations covered and the technical information provided on the various ships. The real heart of this magnificent publication is in fact the technical data provided for each ship or class of ships. This data is presented in an easy-to-read and understand format. Where variations occur within a class or group of ships, these are presented in such a manner so as to readily identify the ship and the variations. This is very useful with respect to the major powers and their larger warship classes.

In reviewing a book of this nature, every effort has been made in attempting to find an error; and one has been found! The artist's rendering of the new French aircraft carrier CHARLES DE GAULLE is not correct. As with the earlier volumes, the author has relied heavily on a large selection of well-designed scale-line drawings to provide the best coverage of this much-neglected area. The drawings include plans and profiles with numerous keyed diagrams to indicate internal arrangements. As well as the completed small combatants, the author discusses and illustrates the numerous planned vessels throughout the narrative, captions and tables of data.

Special appendices describe gunboats, minor patrol craft, cross boats, wepons, vessels for export and finally, a huge 40-page list of dates and other roles for all of the Navy's small combatants. This reviewer hopes that the author will continue the series covering such ship types as amphibious warfare, mine countermeasures and submarines.

The book is available direct from the Naval Institute Press, PO Box 105, Weston Creek, 2611. Price: $21.95 plus postage, etc.

The book provides a feast of interest for both industry personnel, as well as civilian aviation enthusiasts. It is well-composed scale-line drawings to provide the best coverage of this much-neglected area. The drawings include plans and profiles with numerous keyed diagrams to indicate internal arrangements. As well as the completed small combatants, the author discusses and illustrates the numerous planned vessels throughout the narrative, captions and tables of data.

Throughout the eight comprehensive and fascinating narrative chapters of this book, the author proceeds from the days of early RAAF seaplanes and conventional aircraft and helicopters of today's Navy Air Arm. The book is available direct from the Naval Institute Press, PO Box 105, Weston Creek, 2611. Price: $21.95 plus postage, etc.
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