

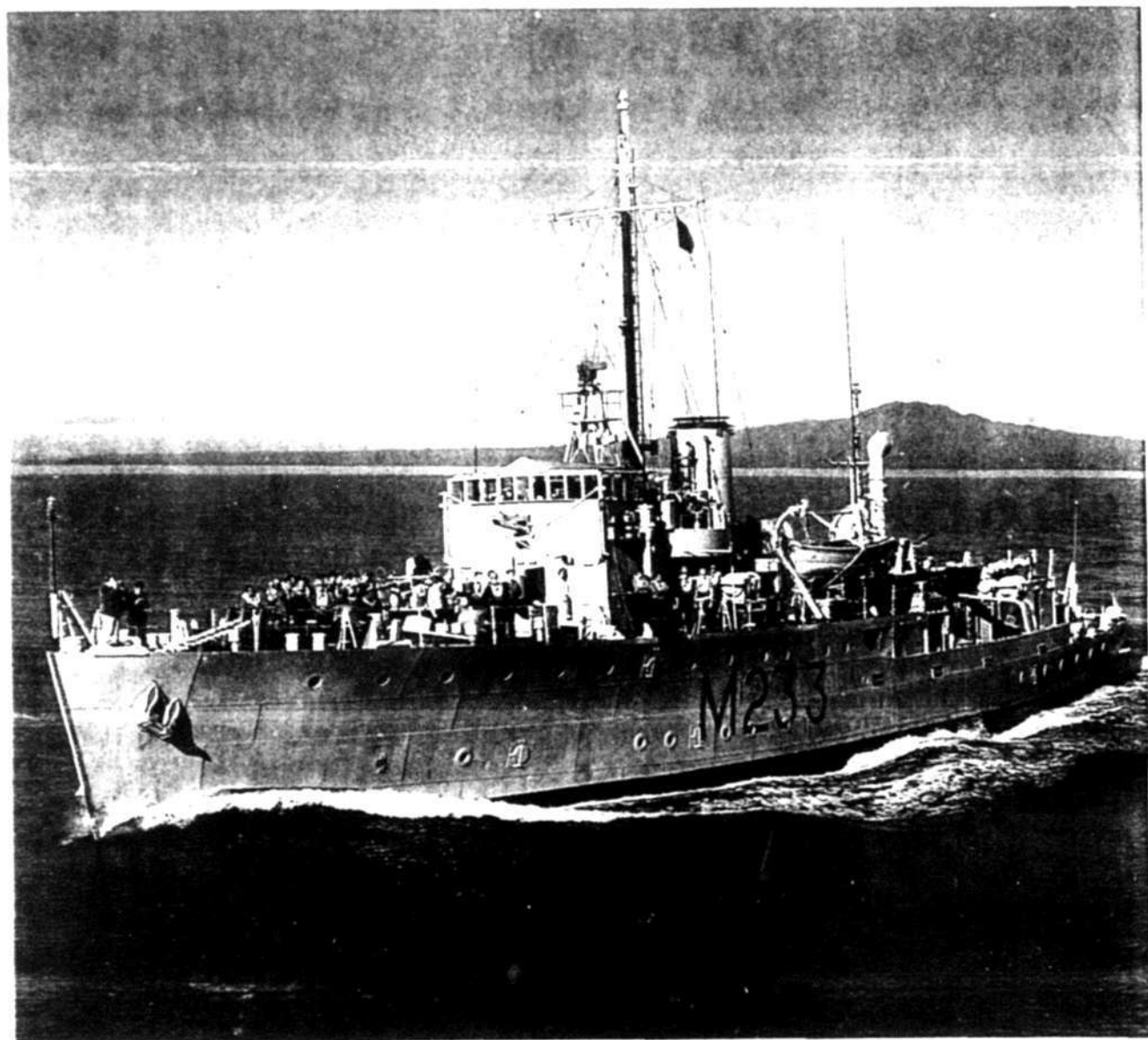
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JULY - SEPTEMBER, 1991

THE NAVY

The magazine of
THE NAVY LEAGUE OF AUSTRALIA

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No. 3

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OUR FRONT COVER PHOTOGRAPH

HMNZS INVERELL, July 1972. See RNZN 50th Anniversary article

(Photo — L.E. Bushell, courtesy G. Andrews)

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viewpoint

FORCE STRUCTURE REVIEW — EMPHASIS ON MARITIME NEEDS

The recently completed Australian Defence Force Structure Review (FSR) confirms that Australia's maritime defence capabilities rank high in the objectives of those responsible for the nation's security. The FSR is not a strategy review and the policies outlined in the 1987 Defence White Paper are unchanged.

Given that funds available for defence are likely to be limited for some years to come (unless of course a presently unforeseen emergency arises) the structure review ordered by the government twelve months ago was necessary and appears to have been carried out with a high degree of co-operation between the Services and between the uniformed and civilian members of the defence hierarchy.

The purpose of the review was to maintain as far as possible the proportion of funds available for capital equipment and works, funds that in percentage terms languished in the 'teens throughout the nineteen-seventies and early 'eighties before rising to the vicinity of 30%. Inevitably other major expenditure categories, notably personnel (uniformed and civilian) and day-to-day running expenses, had to be pruned.

The changes are planned to take place over a period of ten years and will certainly not happen overnight. Indeed, in some respects it seems a rather long period as it will be many years before some urgently needed items, such as airborne early warning and control aircraft and a training/helicopter support ship, can be brought into service.

Changes in the structure of the Army will undoubtedly cause anguish in many quarters, in particular the decision to shed over 5000 regular personnel and introduce a "ready reserve" of 3200. It has been calculated that the cost of ready reservists will be less than half (42%) that of regulars, but this remains to be proved as does the ability of the Army to attract the necessary number of recruits even with generous inducements. The Navy and Air Force are also to each have a "ready reserve" but the numbers are much smaller — 450 in each Service. Whether the "ready reserve" and existing "ordinary" reserve will sit comfortably together, only time will tell.

Regular Air Force personnel will be reduced by over 4,000, proportionately more than either the Navy or Army. The Air Force has been more "self-contained" than the other Services, the Navy in particular always having had a substantial civilian support element in its structure, a feature which will now be more widely applied in the ADF. It was one of the reforms recommended by the Wrigley Report and generally regarded as acceptable.

The Navy has been extensively reorganised in recent years, a consequence of the government's decision in 1983 to discontinue fixed-wing flying in the Service; in the process its strength has been reduced by some 2000 personnel and could not be reduced much further without seriously impairing readiness to react to government foreign policy requirements. This fact has been recognised and the Navy does not face major manpower cuts. The Service is currently slightly under strength and over several years about 600 regulars will not be replaced.

The Australian Defence Force is not numerically large compared with a great many other defence forces, indeed it is quite small and any diminution is to be greatly regretted. Given the prevailing

economic and political climate, which seems unlikely to change in the short or medium term, the responsibility of the Navy League and other like-minded organisations and people to ensure that governments honour their promises to provide the nation with an effective defence force, is considerable. When one adds "no threat" scenarios and changing social values, the task of promoting national security in peacetime will be even more difficult than it has been in the past.

Geoffrey Evans

NOTE A report by A.W. Grazebrook on naval equipment mentioned in the FSR appears on page 6.

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Dear Sir,

I read with interest a letter by Les Fenning in "The Navy" April, 1991, in which he mentions HMAS "NAMBUCCA", ex TSS NAMBUCCA of the North Coast SN Co. Ltd.

She was built by Ernest Wright at Tuncurry, NSW in 1936 for service on the NSW North Coast, and requisitioned by the RAN on 7 November 1939, commissioning on 10 January 1940.

In April 1943 she transferred to the US Small Ships Organisation as YGDS and was "written off" on 30 December 1945. She had caught fire and burned to the waterline up in the Islands but the yanks did not notify us until the date given above. I have been unable to find out any more about her.

Your letter is the first information I have seen on where she operated (Sydney - Wollongong - Jervis Bay) and I would be grateful if you could let me know any more of these operations. The two tugs "St Giles" and "Heros" were large tugs and both also worked in Sydney as well as Newcastle. I sailed once on the Heros (as a passenger) because I asked Fenwick's if I could and they agreed.

The requisitioned auxiliary minesweepers should not be forgotten - they did very useful work before we had enough proper naval sweepers, and their story should not be forgotten, even the boring routine bits!

The best of luck to you

Yours Ave

MIKE RICHARDS

Via Lawrence 2460

Dear Sir,

I would be grateful if you would grant me space to reply to the review by Mr Peter Jones of my book, "HMAS Armidale, the ship that had to die".

Mr Jones challenges my statement that there was a cover-up of the botched-up operation that resulted in the sinking of Armidale off the coast of Timor in 1942, and he consistently refers to a cover-up theory.

It was no theory. The cover-up is an incontrovertible fact and it is there in black and white on pages 108 and 109 of my book, and reaffirmed in the official documents on page 170. This shows that the Naval Board deliberately suppressed any reference to Commodore Pope's conduct of the operation.

It is, in fact, even more serious. It was suppressed because, in the words of the document, "if the report were forwarded (to the Prime Minister) as it now stands, similar reports on future operations may cause the Naval Board some embarrassment". In other words, cover-ups of future botch-ups would continue.

The Navy's embarrassment over Pope's actions is understandable - in response to Armidale's urgent request for fighter cover, he had replied with the astonishing signal: "Air attack is to be accepted as ordinary, routine, secondary warfare". Sadly, Armidale did not ever receive that signal because ordinary routine secondary warfare had already sunk her.

Mr Jones states in his review that "what the book does not tell is why the air cover promised did not come". Again, it is there in black and white on pages 115 and 116.

He also claims that in the 1970s the Navy named a ship HMAS Armidale. What the Navy did was to decide that the name Armidale would be given to one of the last five of 20 Fremantle-class minesweepers, then built only 15. Why was Armidale relegated to the obscurity of being a phantom ship that was never built? If the Navy had really wanted to honour the gallant little Armidale and her crew, it would have named the first one Armidale and the minesweepers

would have gone down in history as the Armidale class. At the very least, it could have named the second one Armidale to ensure that the name was perpetuated. I said in my book that nowhere in today's Navy is there a HMAS Armidale - and this, like the cover-up, is a fact, not a theory.

Mr Jones asks why I did not compare Ordinary Seaman Sheehan's situation with that of Lieutenant Commander Rankin, who was not awarded the Victoria Cross despite repeating in HMAS Yarra the very same act of heroism for which Captain Fegan, of HMS Jervis Bay, was awarded the VC.

Perhaps I should have. I would then have put this question: Why did the Naval Board, after finding that its failure to recommend any specific award for Rankin had resulted in him not getting the VC he deserved, then follow precisely the same futile procedure nine months later for Sheehan? Surely, after that experience, if the Naval Board had wanted Sheehan to get the VC, it would have recommended him for the VC, but it did not. Why?

I find it impertinent and offensive for Mr Jones to impugn my professional integrity by accusing me of neglecting this aspect, because, in his words, "it would have weakened his case for a cover-up". The cover-up is revealed in the official documents as well as in the text, and did not need any argument or comparison to establish its existence.

Yours faithfully

FRANK B. WALKER

Budgewell 2262

Dear Sir,

Recent events in the Persian Gulf have rekindled a concern which has been developing for some time, with regard to the objectives and role of the Royal Australian Navy. For many years the drift towards the integration of the Australian Defence Forces has progressed. In a country, such as Australia, there is certainly a need to rationalise the administration of our defence assets and to limit the costly civilian bureaucratic support which the Defence forces generate.

In the last few decades too much emphasis has been placed upon defence reviews and reports, written by erudite Public Servants, which have conclusions which lull the community into complacency. These reports tend to be the foundations for defence policy and expenditure. None of them predicted Cyclone Tracy, the Fijian coups, the problems in Bougainville, our involvement in SW Africa and the Persian Gulf.

Too often their findings include the need for self reliance. This is a wonderful goal but it is not very realistic. Interdependence includes logistical support which is essential with modern technology in weapons and sensors. We must rely, still, on the logistical support of our old allies.

The most recent Defence review, the Wrigley Report, had many findings including the concept that Australia no longer needed to be involved in expeditionary forces. Perhaps the most ironic aftermath was that within weeks of the Wrigley Report a small "expeditionary force" of two frigates and an oiler were despatched to support the United Nations operations in the Persian Gulf.

This was possible because the Navy is the most mobile of the armed services. Moreover, because of the very close ties with the Royal Navy and the United States Navy our ships were able to complement our major allies objectives.

I was in Britain during the build up to the liberation of Kuwait. It was very reassuring to see how a nation, whose history since the defeat of King Philip II of Spain has been involved in riding the world of upstart dictators and standing up to absolute monarchies,

went about preparing for war. Like the United States, Britain has a great sense of patriotism.

Perhaps the most important lesson for the liberation of Kuwait, is that we still have a paramount priority to remain very close to our real allies, the UK and USA.

I believe our Defence planners appreciate this fact. There is concern that some of the Australian Labor Party's left faction and their ilk have very different views. It is also considered that the majority of the Australian people realise that we must rely on our old friends.

It is hoped that we will always enhance this vital relationship between the very professional Royal Australian Navy and their equally professional counterparts in the Royal and United States Navies. This clearly also applies to Australia's other armed services.

Yours sincerely,

G. HALLEY,

Commander RAN (Ret)

Woolahra 2025

Dear Sir,

I write as an ex member of the HMAS Goulburn - the subject of a most interesting article in your issue Jan-Mar 1991 pp 23-25.

My brother Douglas, currently in the USA, sent me a copy of the article. At the same time unbeknown to him I had undertaken to try and find some good photographs of the Goulburn - our Goulburn Association has a surprisingly poor collection. I therefore noted with interest the quite clear reproduction of a photo on page 25 of the issue referred to above.

My reason for writing is to ask how I might take up what seems to be an invitation at the end of the "Krait" article on p 25. I take the footnote to indicate Lynette Silver would accept correspondence concerning the article. As I have also resolved (firmly I hope) to put together a short history of the Goulburn - one somewhat more detailed than that in I. Nesdale's "Corvettes" - it may be that Ms Silver has information that could be helpful.

I should be most appreciative if you are able to help me with the matters I've raised.

he best of luck to you

Yours Sincerely

W. CHARLTON

Forest Hill 3133

Mr Charlton has been put in contact with Lynette Silver.

Dear Sir,

I am a long time resident of Papua New Guinea, who, in his spare time researches shipping losses in PNG waters during World War II. It is my hope that I will one day publish this information in a book. I have records on over 300 sinkings - mostly Japanese - many of which I have been able to match up with allied combat reports. This goes to make some very interesting reading. I am now researching the immediate post war period; September 1945 through 1946. It is here

that I seek your advice.

The Japanese surrendered at Rabaul in September 1945 whereupon that base was occupied by Australian forces. Immediately salvage operations commenced in the harbour. Involved in this salvage was HMAS RESERVE along with vessels of the COMMONWEALTH MARINE SALVAGE BOARD who's vessels included: CALEDONIAN SALVOR, CAMBRIAN SALVOR, TANCRED and ST GILES of which CAMBRIAN SALVOR was actively involved in salvage in Rabaul Harbour in late 1945. I am all but totally ignorant as to the activities of HMAS RESERVE or any other RAN vessel involved in salvage in Rabaul at that time. The same is true for the CMSB vessels and their activities. Could your league some how enlighten me or refer me to some one who could.

What I want to know is:

- What Japanese vessels were identified at Rabaul at wars end.

- Which vessels were salvaged, refloated, cut up etc.

- Who did the salvage work

- The vessels, the men, the equipment used

- Human interest aspects: accidents, discoveries etc.

I would very much like to make personal contact with any veterans who participated in these events. I have read photo-graphic evidence of these events from the Australian War Memorial, Canberra and some written evidence from the Australian Archives in Melbourne. But I need to know much more before I consider myself to be informed enough on the subject to commit myself to print.

I look forward to hearing from you.

Yours gratefully,

DAVID H. PENNEFATHER

P.O. Box 1295, Lae, Morobe Province, Papua New Guinea



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NAVAL MATTERS

by A. W. GRAZEBROOK

Navy strengthened under Force structure review

Navy will be strengthened under the Force Structure Review announced by the Minister for Defence, Senator Robert Ray, at the end of June.

The strengthening will affect most arms of the service:

- Major surface combatants – destroyers and frigates
- Patrol forces
- Mine counter measures
- Support for the Army

On the other hand, there are disappointments in some areas.

MAJOR SURFACE COMBATANTS

The required major surface combatant strength is sixteen frigates and destroyers.

The three Charles F. Adams class DDGs (HOBART, PERTH and BRISBANE), the last of which is now completing a major modernisation, will undergo life extension programmes to extend their availability for front line service until 2005 et seq, when they will be replaced by a derivative of the Anzac class.

The key requirement is an area defence AAW system, which could be fitted in the Anzac class' Mark 41 vertical missile launching system. The Anzacs themselves will have an eight cell unit, but space and weight has been provided for a second unit of eight. The Mark 41 can be configured to handle Standard missiles up to the most modern SM2 missile.

Three key Anzac frigate decisions have been vindicated by the need to extend the design to build DDG replacements. These three decisions were the fitting of the Mark 41 vertical missile launching system, the incorporation of an hangar large enough for Seahawk size helicopters, and the installation of the Mark 45 127mm gun.

In their interim, provision will be made for fitting the DDGs (and support ships such as SUCCESS, WESTRALIA and TOBRUK) for the Phalanx close in weapons system. Additional systems will be bought and kept in store until operational requirements dictate their installation the DDGs and support ships.

The obsolete Seacat point defence missile systems will be removed from the three remaining River class destroyer escorts and the Ikaras ASW system, of limited use without the Seaking helicopters, will be removed from the DDGs and the River class.

In the longer term, a further Anzac derivative is a possible replacement for the FFG7s, the first of which, HMAS ADELAIDE, is now over ten years old.

There is no mention of half life modernisations for the FFG7s – a regrettable omission, to say the least.

PATROL FORCES

The Frigate class patrol boats will be given major refits to extend their lives until they can be replaced by twelve ocean patrol vessels.

Although they have given excellent service, practical experience has shown that they need better seakeeping qualities and greater endurance, if necessary at the expense of a lower top speed. They may be equipped for helicopter operations or with a remotely piloted vehicle for reconnaissance.

A number of proven overseas designs are available to meet the need for an ocean patrol vessel. There is no doubt that the vessels themselves will be built in Australia.

MINE COUNTER MEASURES

No further inshore minehunters (the Bay class) will be built. However, the competitive testing of minehunting sonars will continue to enable the two prototype MHLs to be brought up to full operational standards.

The auxiliary minesweeper (craft of opportunity) programme will be continued to complete the "proof of concept" ie to prove that the concept can work in practice but the planned acquisition of a core force of auxiliary minesweepers will now not take place.

Instead, four coastal minehunters of a proven design will be acquired as a matter of priority. It is not clear how Navy will fill its clearly established need for minesweepers as well as minehunters.

The mine warfare systems centre will be constructed at HMAS WATERHEN in Sydney, where all mine warfare craft will be based. No MCM vessels will be based on the west coast.

SUPPORT FOR THE ARMY

A helicopter support ship will be converted from a merchant ship, or a new ship will be built. The ship will be manned by Navy. Her primary role will be to support Army in its operations in the defence of Australia and in activities in cooperation with regional powers.

The ship will also replace the training ship HMAS JERVIS BAY, which is due to retire in 1997/98.

Although the ship will be capable of operating helicopters these will be troop lift helicopters.

There is no way in which the ship will be a replacement for HMAS MELBOURNE's ASW helicopters, let alone her fixed wing aircraft.

SUBMARINES

All six Collins class submarines will be based on the west coast. The seventh and eight units will not be built. There is no intention of installing air independent propulsion in any of the submarines, in part at least because none of the various systems are yet proven.

It is probable that the Sydney submarine base HMAS PLATYPUS will be closed when the last of the Oberon class submarines pays off. Collins class boats deployed to the east will probably be accommodated in the fleet base in Sydney.

TWO OCEAN NAVY TO CONTINUE?

The Government has reaffirmed its two ocean basing policy. However, the ultimate mix of units between the two oceans will be reviewed.

Already we know that all six submarines will be based on the west coast, primarily for economic reasons. On the other hand the west coast will be without mine counter measures forces.

In the next few years, two FFG7 class ships will be based on the west coast. In due course, they will be joined by Anzac class frigates.

However, the present situation – we have only three partially disarmed elderly River class ships and a maximum of two submarines based on the west coast – will continue for some time.

OTHER FACTORS

The Marine Science Force units FLINDERS, MORESBY and COOK (already paid off) will be replaced by a new class of medium oceanographic and hydrographic ships.

The Seaking helicopters will be retained in service until 1995, when they will be replaced by a new type of utility helicopter.

Later in the decade, ten helicopters will be ordered for the Anzac class frigates. This means the earlier Anzacs will go to sea without helicopters. All sixteen S70B2 Seahawks are required for the six FFG7 class frigates, each of which can operate two Seahawks on full operational service.

Research on strategic towed array systems (Project ASSTASS) will be redirected towards the production of a passive surveillance towed array for the FFGs and Anzac class frigates.

Countess of Hopetoun — THE LAST TORPEDO BOAT

by Ross Gillett

The first class torpedo boat *Countess of Hopetoun* was the last vessel to be ordered for the Victorian naval force. The 75 ton boat was built by Yarrow & Co., at Poplar in London. She was laid down in 1890 launched and completed in 1891. *Countess of Hopetoun* was named after the wife of the Governor of Victoria and sailed to Australia via the Cape of Good Hope in 154 days. She was crewed by 19 officers and men, accommodation being provided on board. Her hull was constructed of galvanised mild steel, divided into compartments by nine watertight bulkheads.

Before sailing to Australia the "Countess", then referred to as No. 905 by her builders, undertook trials on 25th August, 1891. On this day her primary particulars were as follows:

Machinery:	Engines:	Cylinders — 14 1/2" 21" and 32"
		Stroke — 16"
		1 Locomotive
Propellers:	Boilers:	1
	Number:	1
	Number of Blades:	3
	Diameter:	5 5/8"
	Pitch:	7"
	Area:	1,172 square inches
Trial:	Where Run:	Lower Hope, River Thames
	Duration:	3 hours
	Draft Mean:	3 7/8"
	Forward:	3 5/8"
	Aft:	3 9/8"
	Displacement:	81.5 tons
	Speed:	22.566 knots
	I.H.P.:	1,186
	Revolutions:	403.528 per minute
Miles:	Number:	6
	Speed:	22.736
	I.H.P.:	1,190
	Revolutions:	406.3

The torpedo boat left the builder's yard at 1048 on 25 August into very rough conditions and the wind against the tide. Twenty-seven men were embarked to judge No. 905's effectiveness, as well as

24cwt of water, two air compressors, a galley, dynamo and evaporator.

A start was made at 1233 for the three hour trial. During this period No. 905 made 72,635 revolutions with a boiler pressure of

160 to 170 lbs psi and 3 1/2 to 5 inches WG.

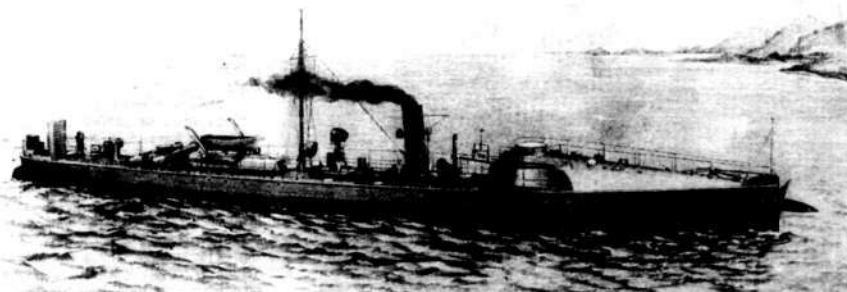
Trials were also undertaken with turning circles to port and starboard in 70 and 85 seconds respectively, the diameter being about twice the length of No. 905. Steering was then tested by both hand and steam from both wheels followed by stopping, starting and reversing of the engines. All tests were satisfactory.

Water was also run into the storeholds to test the watertight arrangements. Indication diagrams were finally taken by two officials from Chatham. The highest speed attained during the trial occurred at 1349 when 24489 knots was achieved.

From Engineering 20 January 1893

THE STRENGTH OF TORPEDO BOATS

On the present page we give an illustration, prepared from a photograph, of the bow of a first-class torpedo boat which had been in collision with a sailing barge. The matter is interesting as affording a record of the amount of rough usage these lightly-built craft will stand without absolute destruction. The vessel in question was built by Messrs. Yarrow and Co. for the Government of Victoria, and at the time of the accident was



HMVS COUNTESS OF HOPETOUN, as built.

COUNTRESS OF HOPETOUN continued

on her trial trip. She is 130 ft long by 13 ft 6 in wide, and had a displacement, at the time of the trial of about 80 tons. The hull is divided into ten water-tight compartments, the bulkheads forming the divisions being of steel and carefully fitted; and as, in addition, they are pierced by neither doorways nor sluices, the compartments are in truth water-tight. It was this fact, coupled with the excellent workmanship of the structure, which doubtless saved the boat from sinking when the accident occurred. The machinery of the boat consisted of three-stage compound engines capable of giving out about 1100 indicated horse-power. There was one large locomotive boiler producing steam at about 170 lb pressure. The material of which the hull is constructed is mild steel. It has a tensile strength of about 27 tons, combined with great ductility. The latter is a point to which Messrs. Yarrow have always paid great attention; that it was so in the case of the boat in question a glance at the engraving will amply prove.

We have been furnished with a description of the accident by one who was on board at the time, and we cannot do better than give the facts in the writer's own words.

"We left the builders' yard at 11am, and ran down to Gravesend at quite an easy speed for a torpedo boat, viz. about 17 knots. At full speed the swell made by torpedo boats is so great that the high-speed trials are not permitted to be made above Gravesend, and it was only after we had passed that place that we proceeded to raise steam to full speed. By 12.30 we were at full speed, and went up and down the measured sea-mile in the Lower Hope in fine style, the mean of about 12 runs giving us a speed through the water of rather above 23 knots, with between 160 lb and 170lb steam, and rather over 400 revolutions. The vibration, even right aft, was nothing more than often experienced in passenger steamers, a fact due to the system of



Damage to the bow after colliding with a sailing barge during trials.

balancing the reciprocating parts of the engines introduced by this firm. We had been at full speed for about two and a half hours, and had been to the Norse and back again to the Mucking Lighthouse, when turning round to go down Sea Reach something went wrong with the steering gear. A clutch had worked back without its being noticed, and the consequence was the steersman lost all control, and, before the engines could be got to go fairly astern, we ran, stem on, at about 18-knot speed, into a large wooden sailing barge, loaded with over 100 tons of wheat, at anchor just above the Lower Hope Point beacon. Our stem cut deep into the fore-part of the barge, just forward of the mast. The barges got into their boat, and our engines were put full speed astern to disengage us, for the anchor of the barge held her so firmly that we could not push her on the shore, although this was only 80 yards distant. The sinking barge was so firmly fixed to our stem that she was pulling our bow into the water and lifting our stern so much that our propeller was only

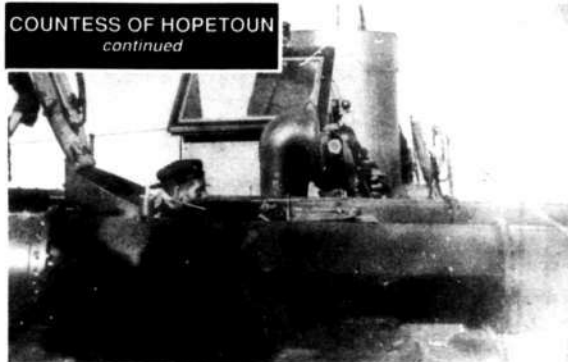
skimming the water, and we were helplessly gripped by the nose like a bull by a bulldog. To make matters worse, the strong ebb tide acting on our side, twisted our stem completely round to port, at right angles, tearing our plates open as far as the second bulkhead. For a short time it seemed as if nothing could save us, when the barge heeled suddenly right over to port, tore herself clear of the wreckage of our bows, and sunk in some 20ft of water, still held by her anchor. As soon as we were released from the weight of the barge our bows came up, and our propeller gripped the water. We then steamed ahead to clear some vessels at anchor below us. We now found that the third bulkhead from forward was quite water-tight, and by trimming all our ballast right aft we got the wreckage of our stem sufficiently out of the water to enable us to secure it by means of chains, &c; for until we had done this, it would not have been safe to steam ahead; indeed, our cutwater, being all twisted over to port acted like a bow rudder, and prevented us steering properly. An hour's work in hauling up the iron plates of our bow enabled us once more to obtain steering control. Engines, boilers and steam pipes were not at all injured, and we steamed home without aid at the rate of quite 10 or 12 knots per hour, arriving late, but all safe, at the works at Poplar.

It might have been expected that such a collision would have shifted the machinery and broken some of the steam joints, but such, it will be seen, was not the case. On account of the lightness of the scantling of the bow, no solid resistance was presented to cause the stoppage of the boat, the momentum being gradually taken up, as it were, by a buffer. The scantling of the hull was of the strength customary in Messrs. Yarrow's boats, and although this may appear exceedingly light, it has been found, in this case, of sufficient strength to withstand the



Christening ceremony, Williamstown, 25 July, 1891

COUNTRESS OF HOPETOUN continued



Aiming the torpedoes, 1906

stress of a voyage to Australia, the vessel in question arriving there some months ago without a single rivet leaking.

Details of The "COUNTRESS OF HOPETOUN"

Crew —
Lieutenants or sub-lieutenants, 2; warrant officer, 1; engineroom artificers, 2; leading stoker and stokers, 6; petty officers, 3; AB's and signalman, 7. — Total 21.

Length, 135 feet. Draught aft, including propeller, 6ft. 2in.

Beam, 13ft. 6in. Draught aft, exclusive of propeller, 3ft. 8in.

Tonnage, 80 tons. Draught forward, 3ft. 4in.

Coal in bunkers, 14 tons. Distance at full speed, 218 knots. Full speed, 20 knots per hour. Coal per hour, 30 cwt. Revolutions, 413 per minute.

Economical speed, 10 knots. Distance at 10 knots, 1,200 knots. Coal per hour, 2 1/4 cwt. Revolutions, 240 at 12 knots.

Displacement ranges from 70 to 95 tons, according to the load, and the draught from 3 inches less to 5 inches greater than the above.

The boat is divided into nine compartments by eight whole bulkheads, and, in addition, has two half bulkheads.

Her armament consists of —

1 fixed stem tube and 2 revolving tubes, mounted as a pair, for discharging 14-in. torpedoes.

2 two-barrelled Nordenfiet guns, with 96 rounds per gun.

10 rifles, with 70 rounds per rifle.

5 pistols, with 50 rounds per pistol.

10 cutlasses.

Air pumps — 2 Brotherhoods, 10 cubic feet, 60 minutes, 1,500 lbs.

Compound dynamos, 8,000 c.p. projected, fitted with divergent lenses.

For her voyage to Melbourne, the "Countess" carried 1,800 square feet of sail with a maximum displacement of 111 tons. Her departure draft was 3'11" forward and 4'11 1/2" aft. For the delivery she carried no

guns, only the single bow and twin revolving deck torpedo tubes.

After her arrival in Melbourne on 22nd May, 1891, *Countess of Hopetoun* was officially christened in the Alfred Graving Dock, Williamstown, on 25th July, 1891.

APPEARANCE

A very sleek craft, *Countess of Hopetoun* was originally fitted with three masts. Immediately abaft the foremast was located a small conning tower. The funnel was then positioned between the fore and main masts, with a ship's boat further aft. At the stern a small wheel was used to control the torpedo boat. As modified in Victoria, *Countess of Hopetoun's* funnel was raised and the two masts removed.

During the 1890s, *Countess of Hopetoun* was dazzle painted.

CONTEMPORARY DESCRIPTION

— From *Engineering* 22 January, 1892



Securing a torpedo after firing practice.

COUNTRESS OF HOPETOUN continued



HMAS COUNTESS OF HOPETOUN, 1920, painted white for the visit of the Prince of Wales.

which prevents the fire being extinguished by a sudden inrush of water, owing to the skin of the vessel being pierced.

The main engines are of the three-stage compound type, and develop 1150 indicated horse-power when running in full gear. In the engine-room there are besides the main engines, a centrifugal pumping engine for circulating water, a fan engine, steam steering engine, two air-compressing engines for charging torpedoes, and a distilling apparatus for the supply of fresh water to the boiler, as well as for drinking purposes. The bunkers hold about 20 tons of coal, which is considered sufficient for a run of 1600 knots at a 10-knot speed.

The armament consists of a bow torpedo tube, built into the stem, for firing in a line with the keel. There are a pair of torpedo guns on a turntable aft. These guns are so arranged that the torpedoes from both can be fired simultaneously. They point at slightly divergent angles from one another, so that the courses of the two torpedoes would diverge somewhat, and the line covered by their fire

will be more extended. Provision is also made for three quick-firing guns, which are to be placed *en echelon* and mounted on naval carriages. Our engraving is from a photograph taken while the boat was in the Thames, and the quick-firing guns do not appear, as they are not to be fitted until the boat arrives in Australia.

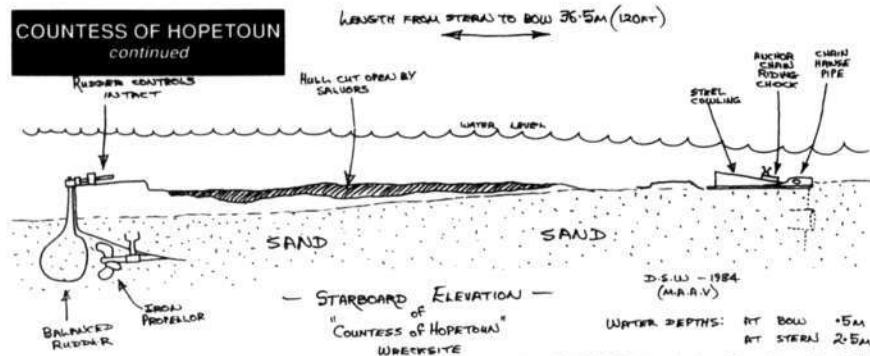
The general arrangement of the deck is well shown in the engraving. Forward is the long turtle-back, ending in a round conning tower. The latter contains the forward steering wheel which is so arranged that the vessel can be steered either by steam or hand. Immediately aft of the conning tower will be seen the davit for handling the torpedo and lifting it into the trough by which it is run through the conning tower and placed in the bow tube. Between the funnel and the short signal mast are the attachments for receiving the stands for the quick-firing guns. Under the small boat on deck is the engine-room skylight, and immediately abaft of this are the two torpedo guns on their turntable. In the centre is a small but thick conning tower

which is the protection of the man operating the gear. Further aft is the entrance to the officers' cabin, and nearer the stern is a screen behind which is the after, or deck steering wheel. This screen is made of brass in order to avoid the danger that might arise through it affecting the compass. On the stand just forward of the signal mast the search light is placed. It is, however, capable of being moved, and arrangements are made for fitting it on either of the gun stands, or on the top of the conning tower; leads being provided to conduct the current to whichever position may be considered desirable at the time. The light is of 6000 candle-power. The dynamo and its engine are placed in the galley compartment just abaft the forward conning tower.

THE CAREER OF COUNTESS OF HOPETOUN

In August, 1892, *Countess of Hopetoun* was damaged while in the process of being slipped. The next year she was overhauled completely and from 15th January, 1895,

COUNTESS OF HOPETOUN continued



Starboard elevation of the COUNTESS OF HOPETOUN wreck site off Swan Island, Port Phillip.

participated in exercises at Swan Island for a period of three weeks. The annual Easter cruise was held from 3rd to 6th April, 1896. During 1897 she exercised with the monitor *Cerberus* on one of the rare occasions the old vessel put to sea.

On 11th April, 1898, she carried out target practice with *Childers* and in February 1905 steamed to Launceston with *Childers*. Again in company with *Childers* she steamed from Williamstown for Tasmania at 0900 on 30th December, 1907. The pair reached Devonport the following day and arrived in Hobart on 4th January, 1908. After four days in port the Victorian torpedo boats left for their homeport. Enroute rough weather plagued the journey, both vessels shipping large quantities of water. Sailing via Devonport they arrived in Williamstown on 14th January.

Countess of Hopetoun joined *Lonsdale*, *Nepean* and *Childers* for the 1908 Easter instructional cruise during April. On 20th January, 1910, the "Countess" proceeded to Sydney to be refitted with new water tube boilers at Cockatoo Island, arriving on 23rd. On 14th April she left for Melbourne having trials on Sydney Harbour reaching 20/22 knots on 13th April.

With other units of the Victorian navy, *Countess of Hopetoun* transferred to RAN control in 1911. With *Childers* she left for

Western Port on 11th February, 1913. Two days later *Childers* grounded on a bank, *Countess of Hopetoun* attempting to pull her clear. Throughout February and March both vessels sailed from Williamstown almost daily, to investigate an unnamed wreck along the southern Victorian coast.

On 7th January, 1914, her 3 pounder gun was removed and the boat painted. She teamed up with the ex-Queensland gunboat *Paluma* on 9th January for exercises at Swan Island. Trials were held on 15th May, the speed achieved being 14 knots. Up to August, *Countess of Hopetoun* saw no service. She was shipped on 10th of the month to determine her suitability for service, regarding age, etc. While proceeding through the channel at Swan Island on 5th November, 1914, her propeller became snagged. She stopped to clear the problem but drifted ashore.

Exercises were held in January, 1915, with *Childers* towing *Countess of Hopetoun* and vice versa. *Protector* arrived in Port Phillip during March for exercises with the torpedo boats. *Countess of Hopetoun* carried out minesweeping duties in August and torpedo practice in November. On 13th December her boiler was cleaned, mountings overhauled and new slabs fitted where required. The next day, in company with

Childers, she left for the open sea. The Heads were cleared and the boats steamed at 10 knots. At 1230 *Countess of Hopetoun's* boiler tube burst. *Childers* was ordered to Queenscliff for assistance, leaving the vessel alone on the high seas. Lookouts were set and distress signals fired. On 15th December *Nyora* arrived on the scene and took the crippled torpedo boat in tow. By 1055 she was moored alongside at the depot. A court of enquiry was convened to investigate the matter.

The years 1916 and 1917 were spent in Port Phillip with regular training cruises and target practice. During 1918 she operated with *Protector*, wing targets, patrolling the troop transports and visiting the quarantine station at Portsea. *Countess of Hopetoun* operated over 18th and 19th November, 1920, on target practice duties and subsequently paid off to reserve.

DISPOSAL

Edw. J Hill of 77 Chapman Street, North Melbourne, purchased *Countess of Hopetoun* for £299 in April, 1924. She was scrapped the following year, her engines subsequently in use at the Gordon Institute of Technology in Geelong, Victoria. The hull of the torpedo boat was beached ashore on Swan Island, where it remains mostly covered by sand and in water from .5 to 2.5 metres deep.

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Exercise 'Squadex' — LCHs Get Together

by SBLT SALLY BICK, Brisbane Port Division

Five amphibious ships came to Brisbane to undertake a major exercise in Moreton Bay during February, 1991.

HMAS LABUAN (LCDR R. Priest), HMAS BETANO (LCDR R. Morrison), HMAS BALIKPAPAN (LCDR B. Russell), HMAS BRUNEI (LEUT S. McCAREY), and HMAS TARAKAN (LEUT C. McMASTER), all heavy landing craft, had been based at HMAS MORETON from 1973 to 1985 as part of the former Amphibious Squadron.

The vessels reunited in early 1991 to exercise in the Moreton Bay area as part of Exercise Squadex, the first major amphibious exercise for six years. PNF and Reserve personnel practised amphibious warfare techniques and procedures in a multi-ship situation, according to the Commander of the Task Group, Commander Alan Regan.

"The exercise was held in two phases, the first involving lectures, NBCD exercises, VERTREPs, gunnery practice, a shakedown exercise involving beach landings and amphibious manoeuvring procedures in company," CMDR Regan said.

"During the second phase, the ships were

involved in landing equipment armoured personnel carriers and heavy trucks from the Army's 6th Brigade in conjunction with two medium-sized landing craft from the Army's 34th Water Transport Squadron at a number of locations on Moreton Island and Bribie Island," he said.

Each location was different in regard to the geographic features which needed to be taken into consideration in order to execute a successful landing. The most challenging landings were the surf beachlanding on Bribie Island and a successful night beaching on Moreton Island. First Aid and search and rescue activities also formed an integral part of the exercise.

A combined diving team, involving Diving Team 8 (Brisbane Port Division), Diving Team 9 (Adelaide Port Division) and Diving Team 10 (Hobart Division), set up beaches and undertook a deep dive during Squadex. The beach team was under the command of LEUT Neil Whitehead, officer-in-charge of Diving Team 8.

The team prepared the beaches on

Moreton Island and Bribie Island, clearing and searching them to ensure all was safe for the navigation and beachings by the LCHs.

They also set jackstays and buoys for the heavy landing craft to use for their landings.

Only face masks, snorkels and fins could be used by the divers to clear the beach at Bribie Island because of the heavy surf.

HMAS BRUNEI won the proficiency shield for Squadex adding to her reputation gained during the time of the Amphibious Squadron when she was awarded the LCH proficiency award the most times.

During the exercise, the ships participated in an impressive Amphibious Review on the Brisbane River as part of RAN Veterans Corvettes Association memorial service at the Dockside Centre. Brisbane Port Division's band provided entertainment to a large crowd during proceedings.

Despite the fact that four of the ships are no longer homeported in Brisbane LABUAN is based at HMAS MORETON and is operated by the Brisbane Port

EXERCISE 'SQUADEX'
continued



Landing equipment on Bribie Island

Division of the Royal Australian Naval Reserve while TARAKAN is based at HMAS CAIRNS, operated by permanent

Naval staff from HMAS CAIRNS and Reserve personnel from Cairns Port Division.

BALIKPAPAN is based at Darwin and is operated by the local Port Division with BETANO and BRUNEI operating from Sydney.



Heading across Moreton Bay



Five RAN/RANR LCHs in a line abreast formation

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The Capture of MV *KRAIT* — A POSTSCRIPT

by LYNETTE RAMSAY SILVER

MV Krait is a fascinating little ship. Considering her size and her rather unremarkable appearance, this WWII vessel evokes more than her fair share of interest – and with good reason.

Well known to most Australians because of the part she played in Operation Jaywick, the daring 1943 commando raid on Singapore Harbour, she is now a floating War Memorial and forms an important part of the Australian National Maritime Museum's collection.

For decades it was claimed that the minesweeper HMAS *Goulburn* had captured MV *Krait*, formerly the Japanese fishing vessel *Kofuku Maru*, shortly after the outbreak of war with Japan, thereby making her the first Japanese vessel captured by the Royal Australian navy in the Pacific Zone. These claims were accepted without question. Indeed, it was not until mid 1990 that intensive research by myself and Major Tom Hall, on the origins of this famous little ship, revealed that the first claim was not true. On December 11 1941, *Goulburn* had taken into custody not *Kofuku Maru*, but another ship of very similar appearance and with a very similar name, *Shofuku Maru*. (see *The Navy*, Jan-March 1990, pp. 23-25).

With *Goulburn* out of the running, this had left the tantalising question of who or what had captured *Krait*. Although our research had proved that most of the accepted history of the ship was erroneous,

there was the remaining deep-seated claim which, despite concentrated effort, could not be confirmed by documented evidence, nor could it be discounted. In publications far and wide, ranging from British Naval histories to local museum newsletters, was repeated the claim the *Kofuku Maru* was the first Japanese ship captured by the RAN in the Pacific Zone after the outbreak of war with Japan.

When research showed that at noon on December 8 1941, a scant seven hours after hostilities commenced with Japan, it was *Goulburn's* sister ship, HMAS *Maryborough*, which had captured the first enemy vessel, it appeared that the riddle about the origins of MV *Krait* was all but solved. However, it was not quite that simple. Although the capture of *Maryborough's* ship, a Japanese fishing vessel, was recorded rather sketchily in *Goulburn's* log, the log of HMAS *Maryborough*, which would have given all the relevant details, including the name and number of the Japanese ship, had disappeared. The only document which mentioned this capture was in a summarised form — a typed copy of *Maryborough's* Letter of Proceedings (written after the event), naming the vessel as *Fukuyu Maru*.

The writer was now faced with conflicting information. *Kofuku Maru* was claimed to be the first ship captured by the RAN in the Pacific Zone yet here was a flimsy piece of paper which gave the name

as *Fukuyu Maru*. An intensive search of all archives in the United Kingdom and Australia by Major Hall revealed no other documentation, apart from summaries which quoted as their source *Maryborough's* letter of Proceedings. On the balance of probabilities, with the "Kofuku Maru/first RAN capture" claim seemingly set in concrete, it appeared that there had been a transcription error somewhere along the line and that *Fukuyu Maru* and *Kofuku Maru* were most likely one and the same. Consequently, in the absence of any evidence to the contrary, it seemed that the credit for the capture of the vessel which was to become *Krait* must pass to HMAS *Maryborough*.

However, early this year we received from the family of Bill Reynolds, the Australian who brought *Krait* out of Singapore, the registered number given to the then *Kofuku Maru* by British authorities in Singapore. While the number confirmed that *Goulburn's* ship, *Shofuku Maru*, whose number appeared in the *Goulburn's* Log, was definitely not *Krait*, it sparked off an immediate search in Singapore and the UK for the Shipping Registers. Unfortunately, our hopes were dashed by the revelation that all the registers had been lost or destroyed. Then, while Major Hall was still sifting through a mountain of files in the UK, came the vital breakthrough. By a most amazing sequence of unrelated events, I made contact

CAPTURE OF MV *KRAIT* continued

with an ex-*Maryborough* crewmember, Mr Jack Sweeney, who gave me the name of someone he believed could be of assistance, Mr Brian (Barney) Ogle.

By the greatest good fortune Barney Ogle, an ex-mariner and academic who is intensively researching *Maryborough's* history, was on board *Maryborough*, standing on the starboard wing of the bridge when *Maryborough* apprehended the Japanese vessel on December 8 1941. From his position behind the Vickers machine gun, which was covering the enemy ship, he had a clear view of everything that was happening.

It soon transpired that Mr Ogle, whose recall of events surrounding the capture is excellent, had been following the same barren track we had taken in search for documentation other than the Letter of Proceedings to verify the name of the vessel, the one detail he could not remember. However, his frustration was worse than mine for he had two photographs, showing that the ship *Maryborough* had captured appeared to be identical with photographs of *Krait* (*Kofuku Maru*). Most infuriating of all he told me, was the fact that the first part of the name, printed in small block letters on the vessel's bow was too indistinct for him to say for certain whether it was *Fukuyu* or *Kofuku*. The only bit that was beyond doubt was the *Maru* and, he moaned, the registration number alongside, which was so enormous that it could be read with ease. I could scarcely believe my ears. On the other end of the phone was a man with the registered number of *Maryborough's* prize ship and in front of me, clearly written in Bill Reynolds' meticulously neat



Watched by a fellow crewmember, five of *MARYBOROUGH's* personnel prepare to board *FUKUKU MARU*

handwriting, was the registered number of *Kofuku Maru*.

They are not the same.

Having now examined Mr Ogle's photographs, it is also quite apparent, apart from the different numbers and the different names (now able to be deciphered on the photograph after considerable enlargement), that *Fukuyu Maru* and *Kofuku Maru* are not one and the same. Although the vessels, which were obviously made to the same plan, look like identical twins, there is one important difference — the frames of the windows and doorways of *Fukuyu Maru's* wheelhouse are the same shade as the rest of the wheelhouse, while on *Kofuku Maru* they

are picked out in white paint. This information, previously given to my colleague Major Hall by Corporal Ron Morris — a member of the Jaywick team who was well acquainted with *Kofuku Maru* from the time she left Singapore — is born out by photographs taken of *Kofuku Maru* shortly after her arrival in Australia in December 1942, when the window and door frames were still the same grubby white. It was not until she was ready to leave Australia on her mission to Singapore in September 1943 that the wheelhouse was painted a uniform colour.

Quite obviously, since the first Japanese vessel captured by the RAN was *Fukuyu Maru* — the ship apprehended by HMAS *Maryborough* at noon on December 8 1941 — the long standing and widespread claim that it was *Kofuku Maru* is clearly not true. It appears that this furore, which has outlasted all others, surfaced in the sixties, along with a number of other "facts" about *Krait*, all of which have now been disproved. Which leaves the question — if the RAN did not capture *Kofuku Maru* on December 8 1941, who did?

Now *THAT IS quite another story.*
Lynette Ramsay Silver
May 1991

The author acknowledges the immense assistance given to her by Mr Barney Ogle, whose generosity in allowing access to his photographs solved the riddle. Mr Ogle has also kindly provided copies of the photographs which illustrate this article.

NOTE: A book on MV *Krait*, written by Lynette Silver in conjunction with the research of Major Tom Hall, will be released shortly.

© Lynette Ramsay Silver, May 1991



FUKUYU MARU, shortly before her arrest by HMAS *MARYBOROUGH*, 8 December, 1941



KRAIT, ex *KOFUKU MARU*



The similarity between *KOFUKU MARU* and *FUKUYU MARU* is clearly evident in this photograph, taken as *FUKUKU MARU* was obeying the order to come alongside HMAS *MARYBOROUGH*



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NAVAL NEWS

Victoria Welcomes Home Gulf Contingent

Victorians have had the opportunity to welcome home, and pay tribute to its Gulf War contingent over three days in July, 1991.

The Premier, Ms Kirner said the public would be invited to a thanksgiving service at St Paul's Cathedral on Sunday July 7.

Ms. Kirner said the thanksgiving service would be followed by a lunchtime reception for the 187 families who had relatives serving in the Gulf and the ship's company. The reception would be held at the World Congress Centre.

The public would also have the chance to demonstrate their appreciation to the service people when the destroyer Brisbane, with 40 Victorians aboard, docks at Station Pier on Friday, July 5.

The following day's race meeting at Flemington would also pay tribute to the Gulf effort with individual races named after vessels which served in the Gulf.

"I am delighted to announce that the Navy has agreed to our requests for a ship to visit Melbourne to give Victoria its opportunity to say thank you to the Gulf service personnel," Ms Kirner said.

Ms Kirner made the announcement in conjunction with Commodore Geoff Morton, the Naval Officer Commanding Victoria and a former commanding officer of HMAS Brisbane.

As a token of its appreciation for all the

support from Victorians the ship would be pleased to extend a welcome for an open day.

Westralia to Return to Australia

The Minister for Defence, Senator Robert Ray, recently announced that HMAS Westralia would complete its deployment to the Gulf region on 28 May and was expected to arrive in Fremantle on 9 June.

Congratulating the ship and its crew on their vital contribution to the effectiveness of the MultiNational Naval Force, Senator Ray said that "The quality, commitment to and maintenance of the high traditions of the Royal Australian Navy as demonstrated by Westralia's personnel are worthy of respect by all Australians."

"An integral element of the Coalition victory in the Gulf was the strength of the logistics support behind the front-line forces, as was carried out by HMAS Westralia and HMAS Success. That support is easily forgotten in the day-to-day view of the war as seen from back in Australia."

HMAS Westralia sailed for the Persian Gulf after an official send-off by the Prime Minister, Mr Hawke, in Geelong on January 9. Westralia relieved HMAS Success from supply duties to ships of the MultiNational Naval Force on 26 January, eight days after the commencement of the air war. She

entered the Persian Gulf for the first time on 5 February.

Asian Maritime Exercise

The RAN and RAAF joined with military units from Malaysia, Singapore, the United Kingdom and New Zealand for an annual maritime exercise held in the South China Sea.

The Five Power Defence Arrangements (FPDA) exercise, called Starfish '91, was conducted by Malaysia from April 29 May 13. This exercise was the eleventh in the Starfish series, which practises combined maritime operations between the participants with particular emphasis on anti-submarine warfare.

Australian Navy participation included HMA Ships ADELAIDE, DARWIN (guided missile frigates), SWAN, STUART (destroyer escorts), GAWLER, GLADSTONE (Fremantle class patrol boats), OVENS and OXLEY (submarines), as well as two HS748 electronic warfare aircraft and a clearance diving detachment.

On the way to participate in Exercise Starfish '91, the patrol boats GLADSTONE and GAWLER became involved in a passage exercise (PASSEX) with the Indonesian Navy, and the destroyer escorts SWAN and STUART also participated in a similar PASSEX on their return to Australia after Starfish '91.

These passage exercises with the Indonesian Navy are co-ordinated on an opportunity basis as RAN ships deploy to and from South East Asia. Called the AUSINA series, the exercises are usually held about four times a year to develop mutual co-operation in maritime warfare training between the Indonesian and Australian navies.

Mine Clearance Exercise

Units from the Royal Australian Navy and the United States 7th Fleet have participated in a routine exercise in Apra Harbour, Guam, from 23 April to 6 May.

The exercise, called Dugong 91, included 20 personnel from the RAN's clearance diving teams with their US counterparts in the bilateral explosive ordnance and mine clearance activity.

Designed to enhance the operational readiness of the participating units in mine warfare and explosive ordnance disposal, the



HMA Ships DARWIN, ADELAIDE and SWAN alongside in Singapore, May 1991
(Photo - ABPRT Simon Poynton)

training also promoted co-operation and understanding between the RAN and the USN.

Australian Active Service Medal Clasp Kuwait

Members of the ships' companies of **BRISBANE** and **SYDNEY** have received the Australian Active Service Medal Clasp Kuwait following their return to Australia.

To be eligible for the medal, members of the Australian Defence Force (ADF) must have served in a ship or unit on continuous duty in the Area of Operations for one day or more after 17 January, 1991.

Those personnel who served in the area on non-continuous duty will also be eligible provided they have amassed a total of 30 or more days service in the Area of Operations.

Details of the medal were announced recently by the Minister for Defence Science and Personnel, Mr Gordon Bilney.

Mr Bilney said that all personnel who served in HMA Ships **SUCCESS** and **WESTRALIA** would also receive the medal. Other members of the ADF who served with Australian or allied forces in the Area of Operations would also be eligible.

"The provisions governing this award conform generally with past practice in both Army and RAAF and aligns Navy with the other services to achieve consistency," he said.

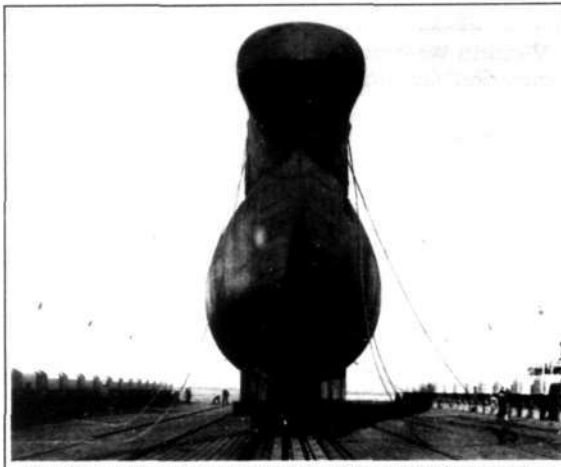
"The Active Service Medal Clasp Kuwait will be highly valued. It is the first award of this wholly Australian medal and it is most appropriate that it will recognise service by Australians in support of United Nations objectives to liberate a small and relatively undefended country," Mr Bilney said.

Former Gulf Supply Ship Captain to head defence recruiting

A Naval officer described by the Minister for Defence, Senator Robert Ray, as being "famous right throughout the Middle East for methods that have achieved results" will be the Australian Defence Force's new head of recruiting.

The former Commanding Officer of the RAN supply ship, **HMAS SUCCESS**, Captain Graham Sloper, was promoted to the rank of Commodore on June 1 and took up the appointment of Director General of Defence Force Recruiting a week later.

An expert in weapons and anti-submarine warfare, Captain Sloper commanded **HMAS SUCCESS** from December 1988. He remained in command through the longest individual deployment



This eye catching view of HMAS OXLEY was taken in February prior to being placed back in the water after a five week refit.

(Photo - LSPH Scott Connolly)

of a multi-National Force ship in the Gulf conflict.

SUCCESS departed with HMA Ships **ADELAIDE** and **DARWIN** on August 13 and remained in the Gulf, supporting the replacement warships until January 26 when the replacement supply ship **HMAS WESTRALIA** was on station.

Captain Sloper hosted Senator Ray on board **SUCCESS** in November, a visit which led to the Defence Minister's remark to the Senate on the vital role played by **SUCCESS**.

Senator Ray told the Senate: "(Captain Sloper) is now famous right throughout the Middle East for his methods that have achieved results."

SUCCESS, under the command of Captain Sloper also won the Duke of Gloucester Cup for the best general efficiency, seamanship, equipment reliability and technical training of RAN ships in 1990.

Logistics Co-Operation Agreement

The Minister for Defence, Senator Robert Ray, has announced the signing of a new Co-operative Defence Logistics Support Agreement between Australia and New Zealand.

Signed by the Defence Ministers of both countries, the Agreement provides a basis for mutual logistics support and strengthens

existing security arrangements between the two nations.

"The Agreement not only sets the legal framework for co-operative defence logistics support between our nations, but will also help to maintain an effective defence capability contributing to the stability of the area," Senator Ray said.

"The agreement recognises the joint industrial capacity of both nations as a significant element of self-reliance in the defence outlook of both Australia and New Zealand. For Australia it reflects the priority given by the 1987 White Paper to defence needs in the types of military conflict which could arise in the shorter term, while developing a mutually beneficial logistics support base within the civil infrastructure of both nations for longer term outlooks.

"Technology transfer between Australia and New Zealand will be directly assisted through the new Agreement and will enable both nations to maintain a high technology base assisting in the acquisition and operation of equipment of an advanced nature.

"One of the major benefits will be in the streamlining of ongoing support arrangements for major joint projects. The Agreement caters for the further development of collaborative projects which will have real benefits for industry in both countries," Senator Ray said.

Current collaborative projects include the



The USN Kilauea class ammunition ships USS FLINT (AE 32) and USS KISKA (AE 35) at HMAS STIRLING in March, 1991

(Photo - RAN)

ANZAC Frigates, the Steyr rifle, the Hamel light artillery gun and the Defence Integrated Secure Communications Network.

Naming of new trials and safety ship

The Navy's new trials and safety ship

was officially named **HMAS PROTECTOR** in a ceremony at the Navy's Fleet Base in Sydney on 20 March.

The ship was named by Mrs Aldona Sawford, wife of the Federal Member for Port Adelaide. The original Her Majesty's Colonial Ship (HMCS) **PROTECTOR**, on which Mr Sawford's grandfather served, operated out of Port Adelaide on behalf of South Australian Colonial Navy last century.

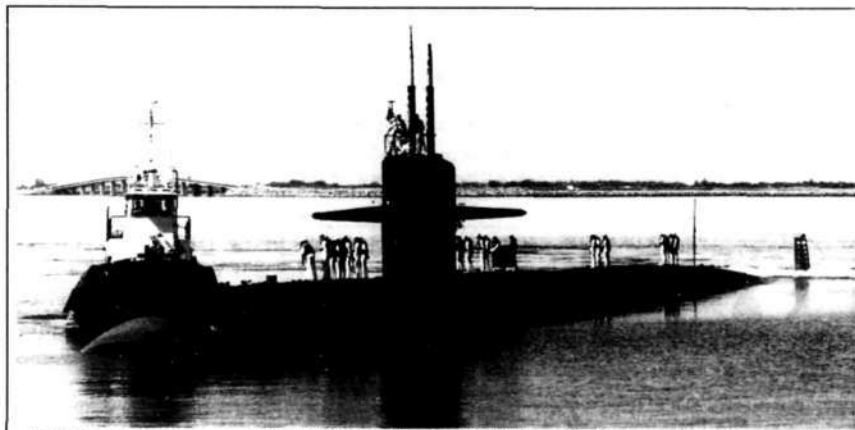
HMCS PROTECTOR guarded South Australian waters before being deployed to China during the Boxer Rebellion. The vessel was finally beached to form a breakwater off the Queensland coast in 1943 during the Second World War.

The new **HMAS PROTECTOR**, formerly the **BLUE NABILLA**, was purchased last year from the National Safety Council of Australia (Victorian Division) following the liquidation of its assets in 1989.

Mr Bilney said that **HMAS PROTECTOR** would put the new Collins Class submarines through their paces prior to their acceptance by Navy.

"**HMAS PROTECTOR** will perform a vital role in Australia's defence by ensuring that Navy's other vessels meet their specifications and perform at peak capacity," Mr Bilney said.

"I am very pleased Mrs Aldona Sawford is the Naming Lady for **HMAS PROTECTOR**. Mr and Mrs Sawford will maintain Naval tradition by keeping alive links with the original vessel whilst also representing the new ship's proposed base at Port Adelaide."



The USN Los Angeles class submarine USS LOUISVILLE arriving at HMAS STIRLING on March 7. She was the first US submarine to visit the facility since January, 1986.

(Photo - LSPH Scott Connolly)

NAVAL NEWS — CONTINUED

In the immediate future, *PROTECTOR* will assist with mine counter measures, mining trials and operations; diving operations; and use of a submersible and remotely operated vehicles (ROVs). *PROTECTOR* has a crew of 19 under the command of Lieutenant Commander Graeme Banyer.

New Navy Reserve diving team for Darwin

The Royal Australian Navy has a new diving team in Darwin which has been formed as part of the Darwin Port Division of the RAN Reserves.

Called Diving Team 11, the new diving team consists of 12 divers, eight members of which are ready for duty with two more

undergoing training.

The Darwin Port Division will be able to provide greater support to Australian Defence Force elements in the area as well as complementing heavy landing craft work and other naval tasks, aid RAN Reserve recruiting and provide assistance to the civilian community in times of disaster and emergency.

Darwin Port Division of the Reserve has been growing steadily since it was formed in 1981 and the formation of the diving team will add a new dimension to the Navy's capability to defend the Top End.

The diving team will be capable of basic ships diving tasks, ship husbandry (underwater maintenance), hull searches and limited surface demolition tasks.

The Gulf War — Maritime Aspects

The New South Wales Division of the Navy League in conjunction with The Company of Master Mariners of Australia arranged a Presentation on the above subject on Tuesday, 21 May at the Masonic Centre in Goulburn Street, Sydney, when some 140 people from all walks of life attended a most stimulating evening.

The Presentation was opened by Rear Admiral Andrew Robertson, a Federal Vice President of the League. Mr Ian Haig, a former Ambassador to Saudi Arabia and Kuwait, with 16 years experience in Foreign Affairs and trade matters in the area, then set the scene with a talk on strategic and

international policy aspects of the Gulf War.

This was followed by Captain Cam Watson, Master of the *MV NIVOSA*, a 124,000 tonne Australian flag Shell tanker, who spoke on "Experiences of a Tanker Master".

After supper, Rear Admiral Ken Doolan, the Maritime Commander Australia and Commodore Don Chalmers, the Task Group Commander of the first Australian deployment in the Gulf, spoke on Maritime Activities in the Gulf Area.

Captain Norm Mackie, Sydney Branch Master of The Company of Master Mariners, and Rear Admiral Robertson summed up.

Some matters which were covered included the minimum warning received by Australia of the outbreak of a major War involving the most modern weaponry; the speed of deployment of our Naval forces and the commendable efforts made to fit urgently needed communications and other equipment; the fact that only four of our warships were equipped with close-in missile weapon systems which was a major factor in the choice of the warships which were deployed (*HMAS BRISBANE* was subsequently fitted with a Phalanx system taken from the frigate under construction in Melbourne, to enable her to take part in the second deployment); the dangers faced by Australian merchant ships, particularly in the earlier Iran/Iraq War, in which the Australian Government seemed to be uninterested in the defence of its merchantmen, and other nations would not accept the tasks of escorting them; the success of command and control arrangements organised among the various national Naval forces present; the problems of intercepting and searching large and uncooperative ships and the techniques using helicopters which were developed; the gradual success of the Naval blockades and the spirit of ready co-operation between all three Services in assisting and supporting the predominantly Naval deployment.

One major lesson learnt was that by and large Navies have to fight with the weapons and equipment they have fitted at

NAVAL NEWS — CONTINUED

the outbreak of War, and this has lessons for Australia in the equipping of our new Anzac class Frigate now building in Melbourne.

Fundamental to the safety of our ships and the success of the operation was the air power provided swiftly by the United States aircraft carriers. Initially they provided the main air effort while land-based Air Forces were rapidly built up.

Battle of the Coral Sea Conference

Sydney, 7-10 May 1992

The Australian National Maritime Museum will hold its first major conference from 7 to 10 May 1992, to commemorate the 50th anniversary of the Battle of the Coral Sea.

The conference and a temporary exhibition, to be held in the newly-opened museum in Sydney's Darling Harbour, will be part of an Australia-wide series of Coral Sea commemorative events during the first ten days of May 1992.

Both museum events are being sponsored through the USA Bicentennial Gift, and form part of the public programs of the USA Gallery, which commemorates Australian-American maritime relations.

Only five months after the opening of the

Pacific War, the Battle of the Coral Sea was fought between ships of the Japanese and Allied navies from 4-8 May, 1942. The battle took place in the Coral Sea, off the coasts of Queensland and New Guinea.

Historically, it was the first naval battle fought entirely by aircraft, without the ships ever sighting each other. Strategically, it was the first check to the Japanese advance in World War II. Following Japanese air raids on Darwin, it was the first time since British colonisation that Australians lived in real fear of imminent enemy invasion.

Conference sessions will focus on the battle itself, its strategic significance, its effect on Australians, and its symbolic meaning for US-Australian bilateral relations then and since. Speakers are being sought from Australia, the USA and elsewhere.

The full conference program will be available later this year.

For further details, intending speakers and participants can contact:

John Wade,
Senior Curator, USA Gallery
Australian National Maritime Museum
GPO Box 5131
Sydney, NSW 2000 Australia
Telephone: (02) 552 7777
Fax: (02) 660 0729

SAFELY BY SEA

Safely by Sea is an edited collection of key papers delivered at six conferences on the Security of Sea Lanes of Communication in the Western Pacific between 1982 and 1988.

The papers by a wide range of senior naval, diplomatic and academic figures from six Pacific nations have been compiled and organised by Malcolm Kennedy and Michael O'Connor of the Australian Defence Association. Additional material has been provided by the editors/authors in a 345 page hardcover book published by the prestigious University Press of America.

Commenting on *Safely by Sea*, Richard B. Foster, Editor-in-Chief of *Comparative Strategy* wrote:

"this timely collection ought to be ready by everyone who has an interest in or a responsibility for maintaining the security of the sea lanes, either in what passes for peace in these times or in the event of actual conflict."

Safely by Sea is available from Kotali Consultants Pty. Ltd., PO Box 1131, East Doncaster, 3109 at A\$55 post paid. Telephone orders to (03) 842 6203 or Fax (03) 841 8413.



Eleven Indonesian fishing boats towed in to Darwin by the patrol boat HMAS DUBBO on 16 March, 1991



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PARRAMATTA GUN ON SHOW

Forty-five tons of naval hardware was uplifted from the former destroyer escort **HMAS PARRAMATTA**, on Wednesday, 10 April.

During the morning the ship's twin 4.5 inch gun turret was 'blasted' from its 'home' for the past 30 years and lifted by crane for transport up harbour to the Navy's Spectacle Island Historical Repository, a short distance from the mouth of the Parramatta River.

The removal operation began at Garden Island at 8.45 am with the turret placed on Spectacle Island as its major outdoor exhibition at 11.00am.

During its 30 years aboard **HMAS PARRAMATTA** the gun provided the main anti-ship and bombardment weapon and was manned by a crew of 6 men. Its rate of fire was 20 rounds per minute with a maximum range of ten nautical miles. **PARRAMATTA** was decommissioned by the RAN on 11 January, 1991.

Spectacle Island, the home of many of the Navy's artifacts, is a storehouse of maritime memories. Included in the collection are relics, flags, photographs, ships' badges and battle honours, uniforms plus various weaponry beginning with the Boxer Rebellion in 1900. Another building has been devoted to a collection of naval paintings, the development of naval aviation and women in the RAN.



WATERFRONT — PORTS AND SHIPPING

A report on the Second Sydney Conference by
Rear Admiral ANDREW ROBERTSON AO RAN (Retd)

"LEAD-FOLLOW-OR GET OUT OF THE ROAD" was a slogan launched by one forthright speaker at the second conference on Waterfront, Ports and Shipping held in Sydney from 12 to 13 February this year — a dramatic call indeed, but indicative of the pressure for reform in the maritime industries now being generated.

Of course the subject, and particularly the waterfront, has been the target of much political and press activity over the last few months, stirred up in part by the various conferences, industrial proceedings and other initiatives which have been taking place all over the country.

Increased productivity, and overall efficiency in the whole maritime industry, is gradually being seen by the nation as one of the most important areas requiring major micro-economic reform if our economy is to move forward and recover in the face of the immense pressures of overseas competition. Clearly any improvement in efficiency and reduction in costs on the waterfront and in port activities must improve the return to the producer, and therefore the nation, on all our exports. Similarly such improvements will reduce the costs of imports to the benefit of our inflation rate and the pocket of all consumers.

Additionally, any increase in Australian-flagged or owned shipping in the international trade is virtually 'value adding' to the export carried, reducing the balance of payments outflow and bringing income into the nation. Carrying more of our trade in Australian ships is as important as further processing before export of our raw commodities such as wool, iron ore, or alumina. Carriage of more of our imports in Australian ships likewise adds to the national income as well as creating jobs and enhancing our balance of payments. (At present only 4% of Australia's external trade is carried by Australian shipping.)

So the conference, which brought to 200 odd representatives of waterfront employers, unions, shipping companies, port authorities, importers and exporters, politicians, academics, government representatives and many other interested parties, played its part in throwing light on the important matter of maritime reform.

Shipping was the first subject to be addressed in some depth. In this area there was a mood of restrained optimism and

some degree of satisfaction at the pace and depth of reform taking place. Average crew sizes for both new and old ships have been reduced dramatically in the last few years. By the end of 1991 average crew sizes will be down to 21, equivalent to the average crews of ships of OECD countries, and a big reduction from the average of 33 of ten years ago. The new BORAL gas tankers BORAL GAS and PACIFIC GAS of 2440 GRT have crews of eleven, as do the 3 new ships being operated by Stateships of W.A. These significant advances in efficiency and competitiveness have been achieved by close co-operation between unions and management; by a reduction of unions in ships crews from 7 to 3 and in due course 2; by multi-skilling training (in which the Australian Maritime College at Launceston has played a central role); and by increased automation and centralisation of ship control facilities.

No less than 27 new ships will have been introduced under the Australian flag in the 4 years ending in mid 1992. There are now eight shipping lines engaged in the TRANS TASMAN service compared with only two in 1980.

If reform proceeds steadily and co-operatively as planned and other measures are taken to improve the competitiveness of Australian shipping and its access to the carriage of our trade, there could be a bright future ahead for all connected with sea transport, to the great benefit of the nation as a whole.

Ports and the waterfront however, present a somewhat different picture. Here the situation is very much more complicated with many authorities, firms, unions, and vested interests involved.

While some progress has been achieved, many speakers at the conference were concerned at the snail's pace and shallowness of reform.

Since the reform process started in earnest about 18 months ago under the Government's WIRA initiative there have been some successes. These include the

enterprise based agreement between one of the nation's largest container terminal operators (National Terminals) and stevedoring unions in Sydney and Melbourne which should result in a 34% reduction in their workforce; a reduction in manning levels and improved efficiency at grain handling terminals; the removal of watchmen from ships' gangways; slightly reduced tug crews; some rationalisation of port charges; amalgamation into the Waterside Workers' Federation of a number of unions; and a streamlining and reorganisation of some maritime (including port) authorities.

However most Australian ports still remain far behind in competitiveness compared with those of our major trading partners and rivals. Statistics were quoted showing that the Government's target for reform fell far short of achievements overseas. In a very short time New Zealand achieved a 100% increase in productivity, and the UK 65%. Our target is a mere 30% improvement over 3 years, and this against one comparative example that ports like Rotterdam, Singapore and Felixstowe handle at least twice as many containers/crane/hour as do most of our ports.

There were calls for the setting of much more ambitious targets in shorter timescales: the removal of restrictive practices and abuses; the removal of cross subsidisation between ports; the introduction of a casual labour system for small ports (Cairns was quoted as a particularly bad example of current full time manning systems); the removal of the voluntary redundancy system; rationalisation and reduction in unions involved; that compulsory unionism should go; and that the performances of our ports and waterfronts must be measured against those of our competitors, and not against our own past performances.

Inefficiencies and abuse on the waterfront have been quoted in the media and in press releases for many years. Recent allegations include outdated and almost unbelievable practices such as:

WATERFRONT PORTS AND SHIPPING

- Two drivers are still required to operate a crane with only one seat and three levers.
- Waterfront gangs still draw straws for "nick-off days" where the lucky winner can return home on full pay.
- Fourteen waterside workers still front up to the task of bulk unloading some commodities, a task which usually needs just three workers.
- Dust allowances, hot weather allowances and wet weather allowances are still paid to drivers operating in closed, air-conditioned cabins.
- Dust allowances, hot weather allowances and wet weather allowances are still paid to drivers operating in closed, air-conditioned cabins.
- Two extra "spare men" are still employed per vessel in some ports. These "spare men" do no job and are not allowed to be employed even if a job arises during the shift.

If these allegations are correct, clearly such practices must end. One must ask how they have been allowed to continue for so long.

On the other hand there were examples where new flexible arrangements in small ports have resulted in highly efficient operations. For instance Perkins Shipping in Darwin, with a highly flexible workforce of permanent multi-skilled personnel supported by casual workers, not only has an enviable industrial records but is able to boast a one-stop shop where the public can present for shipment anywhere in the world anything from a simple parcel of potato chips to a bulldozer.

Other subjects which came up for some criticism included the scheduling and control of trucking to and from the wharves. In the Port of Melbourne, for instance, it was stated that there are half a million truck movements per year but about 80% of the journeys to or from the wharves are made by empty vehicles.



Clearly there is a message here involving co-ordination and management.

Truck queuing is another area now being addressed with a view to reducing the current often wasteful waiting times. Indeed the whole Road/Rail/Waterfront interface is now the subject of detailed investigation.

In the improvement of management practices, Electronic Data Interchange clearly has a major role to play. The possible elimination of most of the paper mountain of forms now required for the import of each item (in some cases over 100 forms are needed) will benefit efficiency, costs and no doubt our forests.

All in all the message seemed clear enough. The process of port and waterfront reform must be speeded up. In the face of recessionary burgeoning unemployment, Australia just cannot wait another 18 months to catch up with our trading partners and rivals.

Another way must be found.

It will be interesting to see how the Prime Minister's initiative in early May in negotiating a waterfront agreement between unions and employers involving a \$12 pay rise and a further average 6 per cent pay rise over the next two years in exchange for new job classifications, works out in practice.

If it produces a huge productivity and efficiency improvement, well and good and Australians will breathe a sigh of relief. If improvements appear to be illusory there will be much disenchantment and calls for sterner measures. After all there are voices now asking why, in time of recession and serious unemployment there is any pay rise on the waterfront, noting the very high average pay already received by most waterfront workers and the low average hours worked.

The new agreement must deliver the goods.

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ROYAL NEW ZEALAND

Navy

— 50TH ANNIVERSARY —

Post World War Two

With the end of World War II, the full implications of the 1941 change in status from the New Zealand Division of the Royal Navy to the Royal New Zealand Navy became apparent; the New Zealand Naval Board were confronted with the problems of the foundation and development of the first peacetime New Zealand Government controlled and operated Navy. Demobilisation had to be expedited, and at the same time officers and ratings had to be found to man HMNZ ships and establishments.

In 1945, on the close of hostilities, the cruisers *ACHILLES* and *GAMBIA*, back from Japanese waters, reverted to the Royal Navy. They were replaced by the light 'Dido' class cruisers *BELLONA* and *BLACK PRINCE* (5,770 tons) on loan to New Zealand.

Although permanent and short-term commissions were granted to a number of Reserve officers, and many 'hostilities only' ratings joined the peacetime Royal New Zealand Navy, the transition period from war to peace necessitated placing in reserve all ships, many for disposal, with the exception of the cruiser *BELLONA* and

corvette *ARBUTUS* and various small auxiliary craft.

Six Frigates Purchased

The post-war Royal New Zealand Navy began to crystallise early in 1948 when six *LOCH* class frigates were bought from the United Kingdom Government.

Designed for anti-submarine, convoy, and escort duties, Britain's modern *LOCH* class frigates earned a fine reputation against German U-boats just after the Normandy Invasion. They also did good work protecting the North Russia convoys. The following *LOCH* class frigates were selected and renamed after New Zealand lakes.

• HMS <i>LOCH SHIN</i>	HMNZS <i>TAUPO</i>
• HMS <i>LOCH ACHRAY</i>	HMNZS <i>KANIERE</i>
• HMS <i>LOCH MORLECH</i>	HMNZS <i>TUTIRA</i>
• HMS <i>LOCH ECK</i>	HMNZS <i>HAWEA</i>
• HMS <i>LOCH ACHANALT</i>	HMNZS <i>PUKAKI</i>
• HMS <i>LOCH KATRINE</i>	HMNZS <i>ROTOITI</i>

Although recruiting in New Zealand had been satisfactory, it was recognised that the training of tradesmen would take some time to accomplish. It was therefore necessary to recruit ex-Royal Navy ratings in the United

Kingdom to make up the complements of the frigates and enable them to be sailed to New Zealand at an early date. The corvettes *ARABIS* and *ARBUTUS* were sailed to the United Kingdom and placed in reserve in July 1948. The first four frigates — *TAUPO*, *KANIERE*, *HAWEA* and *PUKAKI* — arrived in Auckland on 5 January 1949. The last two — *TUTIRA* and *ROTOITI* — followed seven months later, arriving on 25 August.

Korean Contribution

Three days after the New Zealand Government decided to contribute to the United Nations naval forces in Korea, the first two *LOCH* class frigates sailed. They were HMNZS *PUKAKI* and *TUTIRA*, and they left Auckland on 3 July 1950.

On 1 August 1950 they reached Sasebo, and three hours after their arrival sailed again with a supply convoy.

From then until the cease fire on 28 July 1953 the Royal New Zealand Navy maintained two frigates continuously in the area.

This effort involved all six frigates of the RNZN and eight tours of duty. It also involved approximately one-half of the Navy's average strength during the period of hostilities.

After the cease-fire New Zealand's naval contribution was reduced to one ship — usually a frigate but occasionally a cruiser — with a second available although not stationed in the area. In addition, the area of operation was widened by attaching the ship to the Royal Navy's Far West Fleet as part of the Commonwealth Strategic Reserve in South-East Asia.

Australian Minesweepers

On 5 March 1952 it was announced that the Australian Government had made a gift to the New Zealand Government of the four fleet minesweepers, *INVERELL*, *KIAMA*, *STAWELL*, and *ECHUCA*. They retained their original names in commemoration of the gift and in honour of the Australian towns after which they were named. The ships were 'BATHURST' class minesweepers with a displacement of 650



HMNZS *BELLONA*



HMNZS *NGAPONA* in the Marlborough Sounds

tons and were 162 ft long. They were built in Australia during the war. The minesweepers were brought forward from reserve in Australia and sailed to New Zealand for modernisation and refit. *ECHUCA* was scrapped in 1967. *STAWELL* in 1968. *INVERELL* and *KIAMA* were used in the fishery protection and training roles until being scrapped in 1979.

Survey Ship

For almost a hundred years surveying the New Zealand coast was the responsibility of the Royal Navy, the survey ships including HM Ships *ACHERON* and *PANDORA* (1849 to 1855), *PENGUIN* (the early 1900s) and *ENDEAVOUR* (1937 to 1939). At the conclusion of the Second World War, Admiralty advised that it was unable to

resume this work and the responsibility fell upon the Royal New Zealand Navy. The need was great since most of the existing charts were based on the survey made by *ACHERON* and *PANDORA* almost a hundred years before and New Zealand had no survey ship. However, the Australian Government advised that it was prepared to make available *LACHLAN*, a converted 'River' class frigate on loan, and in October 1949 she was commissioned as a unit of the Royal New Zealand Navy. In mid-November she began her work of producing valuable material for new and more detailed charts of the Dominion's coastal waters and of certain Pacific areas. At first, *LACHLAN*'s material was compiled into charts by the Lands and Survey Department, but in 1953 this work was transferred to the Navy Department. *LACHLAN* was finally purchased by the New Zealand Government in 1962 and given an extensive refit in 1966, during which an enclosed bridge and helicopter

flight deck were fitted. *LACHLAN* was paid off in February 1975 and replaced in the sea-going survey role by HMNZS *MONOWAI* (after conversion from the inter-island trader *MOAMA ROA*). After decommissioning *LACHLAN* was fitted out as a refit and accommodation barge and is still in use in this role.

Training Ships

The Navy has had a number of training ships since the end of the Second World War. The first was HMNZS *KIWI* which served as training ship to give annual sea training for the Royal New Zealand Naval Volunteer Reservists from Auckland, Wellington, Christchurch and Dunedin. She was followed by her sister ship HMNZS *TUI* which remained in service until 1955 when she was converted to a fleet auxiliary

work during EEZ patrols around the coast of New Zealand.

Volunteer Reserve Reconstituted

After the war the Royal New Zealand Naval Volunteer Reserve was reconstituted with divisions based in the four main cities, and drill and training commenced late in 1948. During the operation of the Military Training Act the reserve divisions trained the relative small number of compulsory naval reservists accepted, but with the suspension of compulsory service in 1957 they reverted to their volunteer role.

WRNZNS Reinstated

The Women's Royal New Zealand Naval Service was reinstated in May 1947 and later became a permanent part of the Navy.

The main contingent in HMNZS *PHILOMEL* were employed as cooks and stewards, shorthand-typists, writers, communications ratings, M/T drivers, dental attendants, radar plotters, sick berth attendants and stores assistants. A number of Wrens also served at HMNZS *TAMAKI* and at Navy Office, Wellington.

Last of the Cruisers

In mid-1953 the Government announced that it intended to acquire the completely modernised cruiser HMS *ROYALIST* for the Royal New Zealand Navy. *BELLONA* was taken from reserve in October and sailed

to the United Kingdom where her ship's company took over the new ship.

ROYALIST commissioned on 17 April 1956 and was formally handed over to the Prime Minister of New Zealand on 9 July. She sailed from the United Kingdom the same day and, after working up in the



HMNZS *STAWELL*, transferred from the RAN



HMNZS *ENDEAVOUR*, sold in 1962

for use exclusively on research work.

The sea-training role has since been undertaken by the *LOCH* class frigate *ROTOITI* and then HMNZS *INVERELL*. Although not designated specifically for training, the frigates *OTAGO* and *TARANAKI* also undertook this important

Mediterranean, arrived in New Zealand on 20 December.

In 1961 **BLACK PRINCE** was returned to the control of Admiralty which declared her surplus. She was sold to Far Eastern ship-breakers and towed away from Auckland.

ROYALIST was decommissioned in March 1966 and was sold to a Japanese company for scrap in December 1967 and towed from Auckland in January 1968.

Antarctic Supply Ships

The Royal New Zealand Navy accepted a major role in the New Zealand Trans-Antarctic Expedition: it agreed to take the expedition to McMurdo Sound, to help erect Scott Base and supply it, and to provide the Chief Radio Officer.

In 1956 the New Zealand Government purchased the Royal Research Ship **JOHN BISCOE** as the expedition supply ship. She was commissioned as **HMNZS ENDEAVOUR** and arrived in New Zealand on 20 October 1956.

ENDEAVOUR made her first voyage to McMurdo Sound in the summer of 1956 when she took in men and supplies for the Commonwealth Trans-Antarctic Expedition and helped establish Scott Base. She returned the next year to bring back Sir Vivian Fuchs, Sir Edmund Hillary and members of the expedition. **ENDEAVOUR** made three more voyages to the Antarctic with stores and to make extensive oceanographic cruises before it was decided that it was no longer economic to refit her for the hard service of the southern ocean. She was sold in 1962 and replaced by a Patapso-class tanker, the **USS NAMAAGON**, from the United States



HMNZS PUKAKI

Navy. Renamed **HMNZS ENDEAVOUR** the tanker was brought from reserve in San Francisco, commissioned and sailed to New Zealand at the end of 1962.

The Indonesian Confrontation

Two wooden hulled Ton-Class minesweepers were commissioned into RNZN Service in Singapore in 1965. These were **HMS HICKLETON** and **HMS SANTON** and were permanently stationed in Singapore manned by regular and volunteer reserve crews. They were used on

anti-infiltration patrols between Malaysia/Singapore and Indonesia with the Royal Navy 11th Minesweeping Squadron. Both vessels returned to the United Kingdom at the end of 1966 and were paid off into reserve in 1967.

Anti-Submarine Frigates

In October 1956 the Government announced its intention to order two fast anti-submarine frigates of the Whitby-class for the Navy. Orders were placed, with J.L. Thornycroft at Southampton and J.S.



First of the Type 12 frigates, HMNZS OTAGO



HMNZS HAWEA, 1950

White at Cowes, and construction began early in 1957.

The first, named **HMNZS OTAGO**, originally began construction as **HMS HASTINGS** and was commissioned as a Rothesay-Class frigate in 1960. The ship arrived in New Zealand early in 1961.

The second, also a Rothesay-Class anti-submarine frigate, was named **HMNZS TARANAKI** and was commissioned in early 1961, arriving in New Zealand in September of the same year.

In 1962 the Navy was authorised to call tenders for a third frigate. Named **HMNZS WAIKATO** by Princess Alexandra, the new Leander-Class frigate was built at Belfast and came equipped with the latest Wasp anti-submarine helicopter. **HMNZS WAIKATO** arrived in New Zealand in June 1967. The provision of these new modern ships was made necessary by the rapid ageing of the remaining Loch-Class frigates. First **HMNZS ROTOITI** and then **HMNZS PUKAKI** were restricted to coastal waters because of the condition of the ships' hulls. **PUKAKI** was taken out of service in May 1965 and **ROTOITI** in August 1965.

Government policy was obtained agreeing that the Navy should comprise a blue water operational combat force of four frigates and negotiations were held to hire the Whitby-Class anti-submarine frigate **HMS BLACKPOOL** from the Royal Navy for a term of five years while the fourth New Zealand frigate was being built. **HMNZS BLACKPOOL** entered RNZN service in June 1966 and in late 1968 the order was placed with the Glasgow shipbuilding firm of Yarrow for New Zealand's second Leander-Class frigate **HMNZS CANTERBURY**.

HMNZS CANTERBURY was launched by Her Royal Highness Princess Anne on 6 May 1970 and was commissioned into the RNZN on 22 October 1971. The ship is the first vessel of its class to be fitted with two sets of triple-barrelled anti-submarine torpedo tubes in place of the mortar systems fitted in **OTAGO**, **TARANAKI**, **BLACKPOOL** and **WAIKATO**. (This weapon has since been removed from all RNZN frigates during refits in the Naval Dockyard.) **CANTERBURY** was also the first New Zealand frigate to be fitted with an operational closed circuit television system.

New Patrol Craft

In the early 1970s, after detailed study by Naval Staff, approval was received for the construction of four 107 foot steel patrol craft to replace the Harbour Defence Motor Launches built in Canada and the United States during the early 1940s. Built by Brooke Marine Limited in Lowestoft, England, the four patrol craft of this class were commissioned in February and July 1975 and sailed out to New Zealand as deck cargo on the heavy lift ship **STARMAN**. Their primary role is fishery protection and resource duties around the New Zealand coast. The four craft were named after New Zealand lakes and also commemorate the Loch-Class frigates **HAWEA**, **PUKAKI**, **TAUPO** and **ROTOITI** which served the RNZN between 1948 and 1966.

WRNZNS disbanded

July 1976 saw the beginning of the end for the **WRNZNS**. In that month the Defence Council, under the chairmanship of the Minister of Defence, Mr Allan McCready, decided to disband the three women's Services as part of a plan to set up

a new comprehensive policy for the future employment of women. The council's decision heralded a move to open more job opportunities in the forces, among them sending women to sea in non-combat ships. The idea behind the move was to end discrimination in employment and give more economical and flexible management of manpower resources.

In giving its decision, the Defence Council said plans had been developed to give training for men and women throughout the ranks, with the eventual aim of having women become eligible for posts in which they would be responsible for commanding and administering men and vice versa.

Joint training with male ratings saw women gradually taking over duties normally allocated to men. It was in a way a repeat of 1942, but the nation was not at war. Women were trained again as radio operators, one or two qualified as physical training instructors, even the regulating branch got a quota of women.

Finally the Government decreed that the Women's Royal New Zealand Naval Service would be disbanded on 19 July 1977. From that day the only distinction between men and women "servicemen" would be in administrative matters where women would be designated by the letter "W" in brackets after their rank to avoid possible embarrassment or offence. For the officers' ranks like second and third officer were to go, replaced by lieutenant (W) and sub-lieutenant (W). Similar changes occurred in the lower rates.

New White Ensign

The Royal New Zealand Navy hoisted its own White Ensign on 20 June 1968. The

new ensign, of the same design as the New Zealand blue and red ensigns, but on a white background, had received the approval of Her Majesty the Queen.

The main reason for the change was the growth and individuality of the Royal New Zealand Navy and the foreseeable requirement for the Navy to operate increasingly apart from the British Royal Navy.

The White Ensign had been served proudly and well, first by the New Zealand Division of the Royal Navy and subsequently by ships and men of the Royal New Zealand Navy.

The date when the new White ensign was first flown coincided with the 47th anniversary of the formation of "The New Zealand Division of the Royal Navy" authorised by an Order in Council dated 20 June 1921.

HMNZS Tui

HMNZS TUI was leased to the New Zealand Government by the American Government in July 1970 and, after a short refit in Brooklyn, New York, was commissioned into the Royal New Zealand Navy on 11 September 1970. She works primarily on the research programme of the Defence Scientific Establishment.

Before her transfer, she was attached to the United States Navy's Military Sea Transportation Service (MSTS) under the name of CHARLES H. DAVIS.

The ship was specifically designed as a specialised oceanographic research vessel and was launched in June 1962.

HMNZS TUI is employed on oceanographic research in conjunction with the Department of Scientific and Industrial Research and the Defence Scientific Establishment.

To enable a wide range of trials and research to be undertaken, special deck machinery has been fitted, including winches, a large crane, electrical cable handling facilities and a special davit on the stern. A unique feature of the ship are two transducer tubes, one metre in diameter, which extend from the upper deck right through the hull and open to the sea at the bottom.

TUI's normal area of operation is around New Zealand, Australia, New Caledonia, Fiji and the Cook Islands.

HMNZS Monowai

By the early 1970s it was realised that the existing hydrographic survey ship, HMNZS LACHLAN, was nearing the end of its sea-going life. Modern technology also made available a large array of sophisticated survey equipment which, if to be used effectively, would have to be installed in a modern ship. After evaluation the Government transferred the inter-island trader MOANA ROA to the RNZN in 1974 for conversion to a specialist survey ship. In



Working in Malaysian waters, the minesweeper SANTON



HMNZS MANGA

ship. In 1975 HMNZS MONOWAI was steamed back to Scotland where she was first built in 1960 and handed over to Scott Lithgow Drydocks for refit and conversion. The conversion into one of the most modern vessels of its type involved total refurbishing and extension of the accommodation areas, adding extra surveying office space and store room space, fitting the latest surveying equipment available at the time, adding a helicopter deck and hangar in addition to upgrading all engineering equipment throughout the ship. In the course of the

conversion both main engines were completely rebuilt and upgraded.

HMNZS MONOWAI was commissioned on 4 October 1977 in Scotland prior to returning to New Zealand. The ship carries two 10.5 metre specialist survey boats.

New Zealand Built Craft

A total of seven vessels have been built for the RNZN by Whangarei Engineering Company during the late 1970s and early 1980s. The first of these was the diving tender MANAWANUI. All vessels have the same hull design and machinery, being 27

metres in length. MANAWANUI has since been replaced and renamed HMNZS KAHU for use by the training establishment HMNZS TAMAKI for seamanship and navigation training.

Two inshore survey craft, HMNZS TAKAPU and HMNZS TARAPUNGA, were commissioned in 1980. They are designed to work independently or with HMNZS MONOWAI and carry an array of sophisticated hydrographic survey equipment.

Four inshore patrol craft have been built for use with each of the volunteer reserve divisions. HMNZS HINAU is attached to NGAPONA in Auckland, HMNZS WAKAKURA to the Wellington division OLPHERT, HMNZS KIWI to PEGASUS in Christchurch, and the Dunedin division uses HMNZS MOA.

Replacement Frigates

For some years studies had been carried out into suitable replacements for HMNZS OTAGO and HMNZS TARANAKI whose hulls were now nearly 25 years old, although a bold plan was approved to modernise TARANAKI with a gas turbine power plant this never eventuated. In 1981 the British Government offered the RNZN the opportunity to purchase two Lander-Class frigates currently operated by the Royal Navy. This offer was accepted and HMNZS TARANAKI was formally decommissioned in June 1982 and broken up for scrap in Auckland.

To replace the two type 12 frigates the RNZN purchased HMS BACCHANTE and



The second ENDEAVOUR, in service from 1962 to 1971

HMS DIDO, complete with Wasp helicopters. These two frigates were renamed HMNZS WELLINGTON and HMNZS SOUTHLAND respectively. HMNZS SOUTHLAND underwent a refit by Vosper Thornycroft in the United Kingdom prior to sailing for New Zealand.

HMNZS OTAGO was decommissioned in November 1983 and, after being stripped of all essential equipment, was subsequently

broken up in 1987.

This gave the RNZN a combat force of four Leander-Class frigates with the advantages of commonality but the problem that all were approximately the same age and would require replacing as a total frigate force in the 1990s. To overcome this a comprehensive modernisation was carried out to HMNZS WELLINGTON after arrival in New Zealand by the Naval Dockyard in



The current ENDEAVOUR, visiting the Port of Fremantle

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HMNZS BLACKPOOL, on loan from the Royal Navy

Auckland to enable the frigate to remain fully operational into the next century. A similar refit was carried out to CANTERBURY commencing in late 1987.

The acquisition of the two Royal Navy Leanders introduced the Ikara anti-submarine missile system to the RNZN, together with modern operations room technology fitted in HMNZS SOUTHLAND. HMNZS WELLINGTON was fitted with the new RCA gunfire control system, long range fuel tanks and a new weapons control system in the biggest refit ever undertaken to date by the Naval dockyard.

It is intended that HMNZS WAIKATO will be decommissioned in the 1990s, followed by HMNZS SOUTHLAND.

Fleet Replenishment

The long-standing requirement for an

integral capacity to replenish other RNZN fleet units at sea came to fruition in April 1985 when the Government authorised a detailed investigation into the acquisition of a suitable vessel to meet the need. The outcome was the awarding of a contract in July 1986 to Hyundai Heavy Industries in South 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 warship built by Hyundai Shipyard in Ulsan for a foreign Navy.

The first steel was cut in February 1987 and HMNZS ENDEAVOUR was handed over to the RNZN in April 1988.

Diving Support Vessel

Since the construction of MANAWANUI in 1978 by Whangarei Engineering the support requirements for the Operational Diving Team had changed considerably with the expansion of their role. A vessel which

would enable the divers to undertake deep diving with the support of compression chambers and associated equipment was required. The vessel would also have to have the capability of deep mooring for recovery operations. After the inspection of several existing vessels world-wide a purpose built diving support vessel used for North Sea operations was purchased in Scotland. Previously named the STAR PERSEUS the ship was renamed HMNZS MANAWANUI and arrived in New Zealand in late June 1988. The ship is fitted with a triple-lock 250 foot compression chamber and a wet diving bell. It has a 13 tonne capacity crane, full workshop facilities, various air compressors and a four point self tensioning mooring capability. The previous diving tender has been renamed HMNZS KAHU and is attached to HMNZS TAMAKI for use as a seamanship and navigation training vessel.

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The Royal Navy at Malta

Vol 2 1907-1939

By RICHARD ELLIS and
LCDR BEN WARLOW

Published by Maritime Books
Reviewed by ROSS GILLET

As the title suggests this is the second in the series of pictorial books on the Royal Navy's presence in Malta, the first volume covering the period from 1865 to 1906.

The volume under review, 1907 to 1939, is a collection of almost 150 black and white photographs from the surviving glass plate negatives of the Ellis Family of Malta, taken over thirteen decades. The illustrations in the book were rediscovered by the publisher in the 1960s.

Each ship or event portrayed in the Royal Navy at Malta is reproduced in large format with some views spread across two pages. Accompanying each is a detailed caption covering both technical and historical information, compiled by LCDR Warlow.

As well as the larger fleet units in Malta, the book includes support and minor war vessels and for the RAN, both AUSTRALIA and OXLEY or OTWAY are depicted.

The book and its contents are presented in a large square format, measuring 30cm by 30cm. Paper quality is as would be expected, excellent quality to enhance the reproduction of the old glass plates.

The Royal Navy at Malta, Vol Two, 1907 to 1939, is highly recommended to all readers of The Navy Magazine. Copies can be ordered direct from the publishers at Lodge Hill Liskeard, Cornwall, PL14 4EL, United Kingdom for 27 pounds plus freight.

The T Class Submarine

By PAUL J. KEMP

Published by Arms and Armour Press
Review Copy from Capricorn Link,

Australia

Price \$59.95

Reviewed by ROSS GILLET

The T Class Submarine, subtitled The Classic British Submarine, is the story of the 53 T class boats in service with the British and other Navies from 1937 to 1977.

After many successful wartime patrols, in which they sank over 500,000 tons of enemy ships, many of the T class were converted to 'super Ts', rebuilt as streamlined boats, fast and quiet to satisfy the naval needs of the 1950s and 1960s.

Three of the original and four of the remodelled boats operated in Australian waters, the first HMS TELEMACHUS between 1949 and 1959 and the last HMS TRUMP, from 1960 to 1969. All were based in Sydney, initially at HMAS PENGUIN in Middle Harbour and later at Neutral Bay (HMAS PLATYPUS) from 1961.

Known as the Fourth Submarine Flotilla, the Sydney boats were originally to number three, of which one would be under refit in Singapore. The first two selected were HM Ships TELEMACHUS, THOROUGH and TACTICIAN.

BOOK REVIEWS



Following the commissioning into Royal Navy service of the nuclear powered submarines and the Oberon class diesel boats the days of the Ts were numbered. Most were broken up, but some were sold abroad to serve until 1977.

The T Class Submarine spans 150 pages and illustrated by more than 200 black and white photographs. Well recommended.

US Navy 1945 to the Present

By PAUL SILVERSTONE

Published by Arms and Armour Press
Review Copy from Capricorn Link,

Australia

Price \$24.95

Reviewed by 'GAYUNDAH'

An enlarged version of the Fotofax series, this booklet is a collection of 189 photos all with extensive captions. The illustrations are arranged chronologically with the centre pages devoted to brief technical details of the major USN units of the period since 1945.

Although reproduction of some of the photos could be better, the overall book is well presented and provides good reading. As well as portraying the ships many incidents of the post war period are highlighted including the capture of the PUEBLO in 1968, Korea, Vietnam, onboard carrier fires and groundings etc.

The Hybrid Warship

By R.D. LAYMAN and S. McLAUGHLIN
Published by Conway Maritime Press

The Hybrid Warship chronicles the 70 year old quest for a naval unit with big guns and air power that would be more cost-effective than separate battleships and aircraft carriers.

Some of the more famous attempts to create such ships included HMS FURIOUS in the Great War, the Japanese

battleship/aircraft carrier conversions of ISE and HYUGA in 1943 and the more recent Soviet Kiev class hybrids.

Apart from these, the world's navies designed and developed many unusual hybrids, most of which were never built. One ship which was commissioned and appears to have missed out in the book is the RAN's own ALBATROSS, seaplanes carried forward with 4.7 inch and other guns mounted for attack and defensive purposes. On a similar but scale but with different roles, the Japanese Army built and commissioned combined transports/landing vessels and aircraft carriers. The AKITSU MARU and her sister ship NIGHTSU MARU were variations of the big gun/aviation theme. The following description taken from the book, describes these vessels and a third modified vessel.

CHAPTER 15

Variations on a theme

Since antiquity, ships have been specially built or modified to land troops, animals and weapons on hostile shores. Thucydides tells of the Athenian conversion of old warships into horse transports during the Peloponnesian War and indicates the Persians possessed such craft even earlier. Even the twentieth-century vehicle landing ship had its early-day antecedents in the form of special vessels built to transport elephants.

As such craft proliferated during the Second World War, it is probably not surprising that the Japanese, with their penchant for putting aircraft aboard nearly everything that could float, would carry the concept into a 'triphibious' mode by creating three unusual vessels that combined the functions of transport, landing ship and aircraft carrier.

They were not, however, creatures of the navy but of the army, which, suspicious of the IJN's logistic and convoy-protection competence, acquired just before and during the Pacific war quite a little fleet of its own, eventually including a couple of escort carriers and numbers of cargo-carrying submarines.

The three vessels in question were merchantmen converted on the stocks. The first two Akitsu Maru and Nigitsu Maru, were laid down as passenger liners for Nippon Kaiun KK in 1939 and taken over by the army in June 1941. As completed, they boasted short flight decks with starboard islands amidships and a slightly cantled vertical funnel. At 403ft 6in by 73ft 9in, the flight deck was too short to allow landing; aircraft were to be flown off it for service ashore. An open lift at the rear of the flight deck connected with a hangar deck that could accommodate either aeroplanes or landing craft.

Particulars of these vessels were
Displacement: 11,000t, 9186grr (Akitsu Maru);
11,800t, 9574 grr (Nigitsu Maru)
Dimensions: 488ft 6in w x 64ft 3in x 29ft 9 in
to 37ft 9in
Machinery: 2 sets geared turbines, 4 boilers

BOOK REVIEWS continued

2 shafts: 7500-13,000shp = 20-21kts
Armament: two 3in AA, ten 3in army pattern field guns; unknown number of 20mm AA

Radius, bunkerage and complement unknown.

The field guns were to provide support for the troops during the first stages of a landing. The ships could carry twenty to thirty aircraft or alternately twenty *Daihatsu* landing craft in the hangar and eight aircraft on deck. The landing boats were handled by tall derricks right aft and to starboard abreast the island. There may have been a hinged door at the stern for direct launching, but published sources vary on this point.

Akitsu Maru was launched on 17 September 1941 and completed on 30 December 1942; *Nigitsu Maru* was launched some time in 1942 and completed in March 1943. Little is known of the latter's career until she was sunk by the US submarine *Hake* on 12 January 1944, and it is unclear whether she ever embarked aircraft.

Akitsu Maru's first aircraft was the

army's Kokusai Ki-76 liaison and artillery-spotter plane, a light, two-place 310hp high-wing monoplane with fixed landing gear, greatly resembling in form and function the German short take-off and landing gear, Fieseler Fi-156 Storch, whose early successes inspired its design. In late 1943 the vessel carried seven of these, modified to lift two 132lb depth charges for anti-submarine work. They were reportedly fitted with arresting hooks, but it is not known if they attempted landings. Their extensive system of flaps probably would have allowed touchdown, but the approach would almost certainly have been from the bow, since the aft derrick masked the after end of the flight deck.

By mid-1944, as the possibility of landing operations decreased and the toll taken by US submarines rose, the army decided to refit *Akitsu Maru* as an ASW escort carrier, equipping her with the *Kayaba Ka-1* Autogiro, which thus became the first aircraft of its type to see operational wartime service afloat.

The aircraft was a 240hp two-place reconnaissance and artillery-spotter type patterned after the American Keller KD-1A Autogiro, a single example of which had

been imported in 1939. The shipboard version was designated the Ka-1s; to permit it to carry two 132lb depth charges it had to be flown as a single-seater, with the rear cockpit faired over, an example of how, as noted in the previous chapter, the inability of the Autogiro to carry substantial weights aloft handicapped it for military service. Because their three rotors could be folded horizontally rearward, *Akitsu Maru* could carry as many as twenty of these aircraft, although it is not known if this many were ever actually embarked.

In her new guise, which superseded an earlier plan to convert her to a full flight-deck carrier, *Akitsu Maru* carried out only a few operational cruises before being sunk by the US submarine *Queenfish* in the Tsushima Straits on 15 November 1944.

The Japanese Army's third hybrid, *Kumano Maru*, was laid down on 15 August 1944 as a standard M type cargo-transport; while building it was proposed to alter her to the same design as *Akitsu Maru* and *Nigitsu Maru*, but she was ultimately given a different configuration with a short flush flight deck and a starboard midships horizontal funnel. Her particulars as completed on 30 March 1945 were

BOOK REVIEWS continued

Displacement: 12,000t, 9502grt
Dimensions: 491ft oa x 64ft 3in x 23ft
Machinery: 2 sets geared turbines, 3 or 4 boilers, 2 shafts; 10,000shp = 19kts
Armament: thirteen 3in AA, six 20mm or 25mm AA
Radius: 6000nm at 17kts
Bunkerage and complement unknown.

Capacity was twenty-five landing craft stowed below and eight aircraft on deck, or thirty-seven aircraft. There were stern and broadside launching doors for the landing boats as well as a stern derrick. Although the flight deck was unimpeded, with dimensions of 361ft by 70ft 6in, it was even less capable of landing-on operations than *Akitsu Maru* and *Nigitsu Maru*; even take-off would have been virtually out of the question except for the smallest and lightest aircraft.

It is highly doubtful that *Kumano Maru* saw any operational service or embarked aircraft before Japan's surrender only five months after her completion. She was employed in postwar repatriation service until sold for mercantile use in 1947 and is believed to have been scrapped in 1951.

The Discovery of the Bismarck Germany's greatest battleship surrenders her secrets

By Dr ROBERT D. BALLARD
(232 pages, recommended retail price \$49.95)

Distributed in Australia by Hodder & Stoughton Australia, 10-16 South Street, Rydalmere, NSW 2116

Bismarck's final resting place is some 4785 metres below the surface of the Atlantic Ocean on the side of an underwater mountain which rises sharply on the Porcupine Abyssal Plain off the coast of France. The exact location of the wreck remains Mr Ballard's secret.

She sits majestically upright, giving the appearance that she is ready to enter the fitting out yards to have its upper superstructure and main armament fitted. Dr

Ballard describes how along with the main armament, almost all the ship's superstructure was missing. "Nonetheless if you put the turrets back on, the ship would have looked amazingly like she did in her heyday. Bismarck was indeed a wreck, but a dangerous looking one — still sleek, still armed and lethal (still carrying her secondary armament), still confident of her power".

It took two years, two separate expeditions in 1988 and again in 1989 in different ships, *Strella* and *Star Hercules*, with the same equipment and a painstaking survey of 300 kilometres of the seabed before the princely German battleship was finally located.

Ballard's guiding light was the steel framed *Argo* attached to the end of a five kilometre cable which carried side-scan sonar, control mechanisms, lights and television cameras.

Despite having the positions given by the British battleships *HM Ships King George V* and *Rodney*, along with the heavy cruiser *HMS Dorsetshire*, finding the *Bismarck* was described Dr Ballard as "comparable to looking for a needle in a haystack, at night, in a blizzard, with only a torch".

How the *Bismarck* sank is fascinating in itself. As the battle waned she slowly sank by the stern rolling over, her weakened stern breaking away. The four 15-inch gun turrets and much other debris fell away and with the ship now fully flooded it righted itself and picked up speed as the final plunge continued. Some 10-20 minutes after leaving the surface the hull hit midway up the side of a submarine mountain setting off a massive landslide with the ship and other heavy pieces of wreckage being carried down the slope coming to rest about two thirds of the way down the slide area.

The clever way in which *Bismarck's* history has been interwoven with the present is excellent. There are a tremendous insight into life onboard the ship and a begrudging regret that such a magnificent fighting ship should be lost on her first deployment.

Some 29 years before, the *RMS Titanic* was also lost on her maiden voyage when she struck an iceberg in the North Atlantic. Both these vessels have now been located by

Dr Ballard of the Woods Hole Oceanographic Institute and their locations remain a secret. There is now talk of finding the Japanese battleship, *Yamato*.

Although she only made the one voyage into the Atlantic, *Bismarck* — the pride of the German Kriegsmarine, commissioned only the year before, is one of the best known warships of World War Two. Still when one considers her successes in sinking the battle cruiser *HMS Hood* and damaging the battleship *HMS Prince of Wales* with her magnificent gunnery and her efforts in tying up a large percentage of the British fleet, it was in the proudest German naval traditions. She fought magnificently against superior odds and went down fighting.

Lavishly illustrated, this book contains some 400 colour and black and white photos, along with paintings — some specially commissioned, maps and diagrams with many shots showing sections aboard *Bismarck* prior to its loss and the same locations today. Many of the underwater shots of the *Bismarck* can only be described as "hauntingly eerie".

This is unquestionably one of the finest books I have ever sighted. Apart from being a darn good read, it is a superb book to just peruse. The quality of the layouts, design and contents are of the highest standard. Clearly a great deal of thought, time and consultation have gone in to this publication.

Dr Ballard's previous book, "The Discovery of the *Titanic*", I believe was an international best-seller. There is absolutely no reason why "The Discovery of the *Bismarck*" will not equal or even surpass the sale of his previous work. If you only buy one nautical book this year, I recommend this be the one.

Battleship Warspite

By V.E. TATTIAN

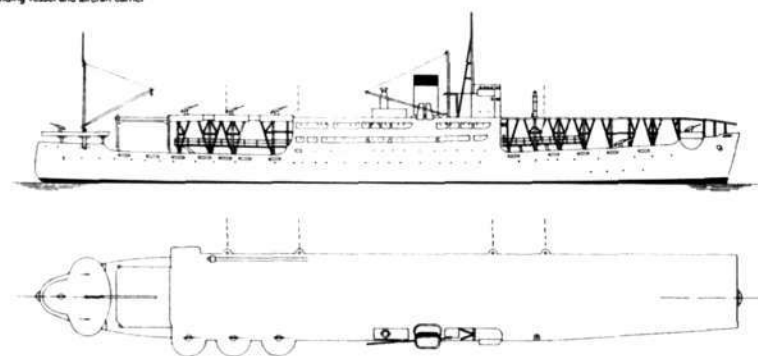
Published by Arms and Armour Press
Review Copy from Capricorn Link, Australia

Reviewed by T.E. WEAVER

This is a very well researched, documented and written book on one of the most famous British battleships that served both England and her Empire so well.

Commissioned on March 8, 1915
Warspite was to serve with great distinction

The Japanese Army's unusual *Akitsu Maru*, a combined transport, landing vessel and aircraft carrier



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BOOK REVIEWS continued

through both world wars. During the "Battle of Jutland", WARSPITE was hit 29 times by enemy fire. Details of these hits together with personal reminiscences and well drawn plots of the action gives the reader an amazing insight into that controversial battle.

Details of the many alterations and additions between the wars are well recorded including the major reconstruction carried out between 1934 and 1937 that drastically changed WARSPITE's appearance.

During the Second World War WARSPITE operated off Norway where she had a very active role during "The Battle of Narvik", served in the Mediterranean where her actions included "Calabria", "Bardia", "Cape Matapan" and "Crete". Off Crete the ship's luck ran out and was struck by a bomb from a German Messerschmitt Me 109 fighter-bomber with the bomb penetrating the forecabin and exploding between decks, this necessitated a refit in Bremerton, USA. Details of the ship's war modifications are well tabulated as a result of this refit. Following refit in January, 1942, WARSPITE was assigned to the Eastern Fleet, visiting Sydney and Fremantle enroute to Colombo, where Admiral Sir James Somerville, C-in-C, Eastern Fleet hoisted his flag on the ship. After a year with the Eastern Fleet WARSPITE was recalled to home waters and served with distinction, the ship was present at the surrender of the Italian Fleet and had an active role in "D Day", the Allied invasion of France on June 6, 1944.

By early 1945 the thirty year old WARSPITE was showing her age with worn armament and machinery and with the end of the war in Europe in sight it was decided to pay the "Old Lady" off. When the time finally came for the ship to be towed to the breakers in 1947, WARSPITE would not go easily as during her final tow a gale was experienced that ended up with the ship firmly aground on the rocks of Prussia Cove, near Penzance.

This is an excellent, lavishly illustrated book about a well known, happy and efficient ship. It gives the reader an insight into the changing roles of the battleship during the two world wars and for anyone interested in naval history is highly recommended.

The Heroes of Rimau

By LYNETTE RAMSAY SILVER
From The Research of MAJOR TOM HALL
Published by Milner Publishing

On September 11, 1944, the British submarine Porpoise slipped quietly from Fremantle Harbour, bound for Indonesia.

It was carrying the twenty-three Australian and British members of Operation Rimau (pron. Ree-mow, rhymes

with 'how') who, under the leadership of the remarkable Lieutenant-Colonel Ivan Lyon of the Gordon Highlanders, intended to repeat the successful Jaywick raid of 1943 by blowing up sixty ships in Japanese-occupied Singapore Harbour. Nineteen days later, the preliminary part of the operation successfully completed, the submarine commander farewelled the raiders at Pedjantau Island, promising to return to pick them up in thirty-eight days' time. A handful of Chinese and Malays and the conquering Japanese were the only people ever to see the twenty-three men again.

According to the scant official post-war record, the mission was an utter failure. All of the party were captured or killed – ten of them beheaded in Singapore only five weeks before the Japanese surrender in, it was claimed, a ceremonial execution. The fate of eleven of the others remains officially unknown.

After a thirty-one year search, Major Tom Hall, with the assistance of writer Lynette Silver, has overturned the official version and uncovered the truth. Aided by thousands of Japanese and Allied documents and by the first-hand accounts of several Indonesians and Malays, sole witnesses to the events of 1944, they have established the fate of every member of the party and unravelled the story of *The Heroes of Rimau* – a story that has for forty-five years been all but lost, distorted by hearsay and fantasy, by military cover-ups and conspiracy, by official bungling, ineptitude and apathy. *The Heroes of Rimau* not only chronicles a feat of extraordinary daring in the face of overwhelming odds – a gripping tale of

inspired courage, self-sacrifice and eventual tragedy – it also exposes the appalling sequence of events which has, until now, resulted in the shameful suppression of the truth about one of the most amazing stories to emerge from World War II.



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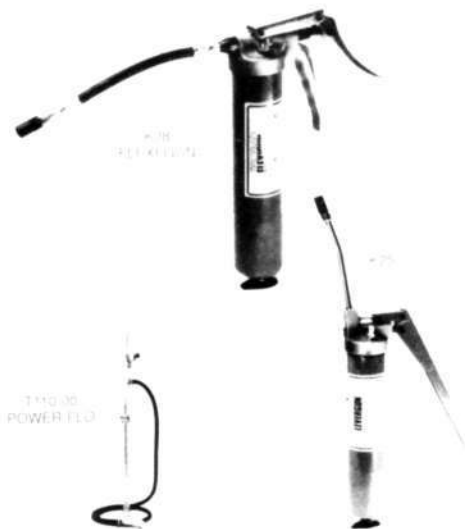


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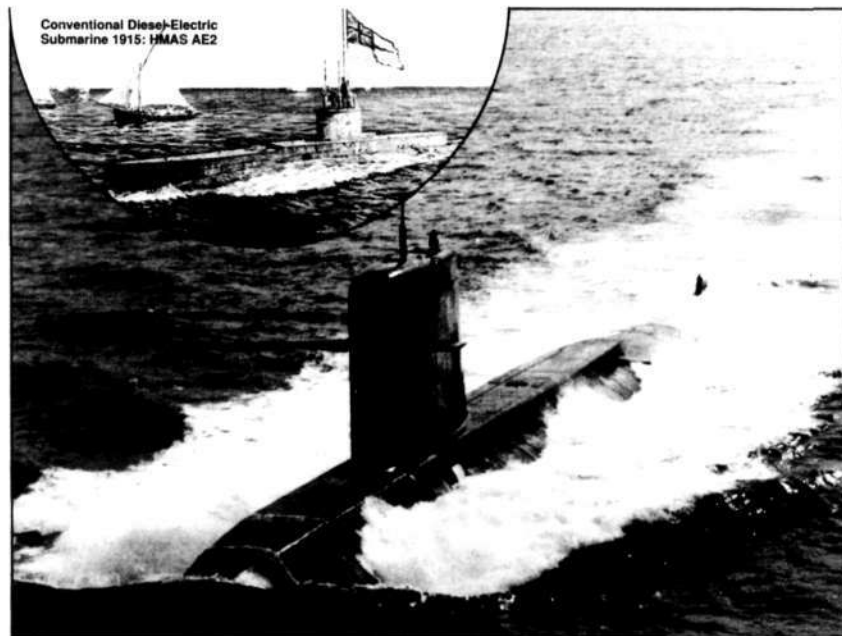
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The Navy League of Australia

Nuclear-Powered Submarines for the Royal Australian Navy?



Conventional Diesel-Electric
Submarine 1915: HMAS AE2

A paper written for

The Navy League of Australia

by John C. Grover, OBE, BE, MSc, FRGS, FIEAust, FIMM, FAusIMM, FGS
with Rear-Admiral Andrew J. Robertson, AO, DSC, RAN (Retd)

published by The League in conjunction with The Navy magazine of July/September 1991

This paper is based on a presentation by John Grover to the Sydney Branch of the Institution of Engineers Australia on 22 November 1989.

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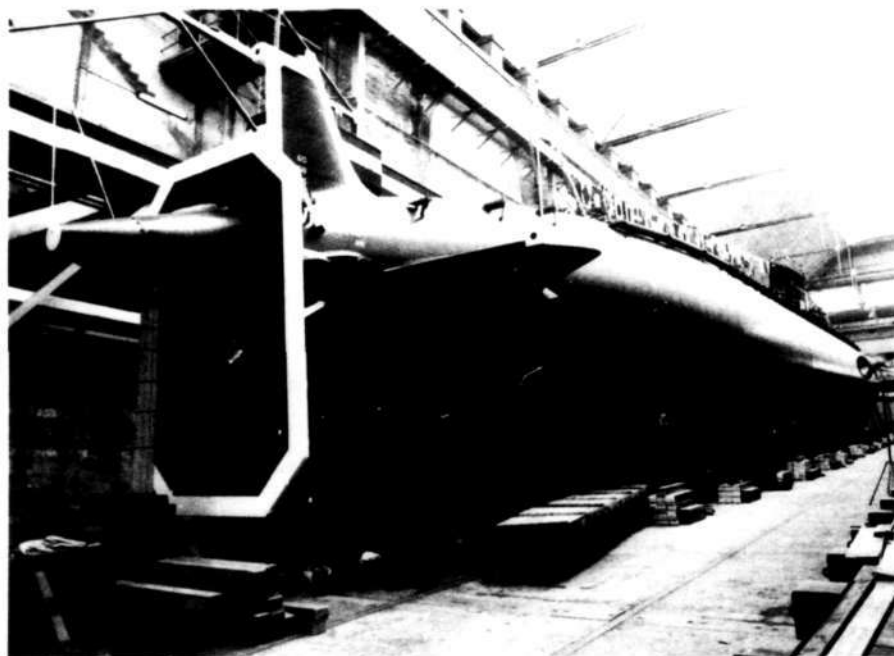


Fig 1: A smaller-sized modern nuclear-powered submarine under construction.

INTRODUCTION

What are the facts about Nuclear Energy?

While the nuclear-powering of ships is an issue which can be discussed on its own merits, it is often discussed in the context of nuclear power stations as a whole. It therefore seems appropriate to consider briefly the nuclear power question before moving onto the subject of power for warships.

A kilogram of washed Australian coal averages **35 megajoule units** of energy. Oil has roughly **38 units**. But a kilogram of natural uranium burned in the fast neutron breeder reactors of tomorrow would give more than **24 million megajoule units** per kilogram! The difference is 35 versus 24,000,000 units of energy per kilogram.

Thus very small quantities of uranium, easy to transport and store, can replace huge quantities of coal or oil for the production of electricity in power stations or for powering ships.

While acknowledging the vital need for very high standards of design, quality control, construction, training, operation and safety in nuclear power stations or nuclear-powered ships, this technology has considerable advantages over coal-fired installations, not only with respect to the bulk of the feedstock used, but also with respect to pollution.

The results of failure to observe high safety standards are obvious, particularly as shown by the Soviet disasters of Chernobyl and lately Ust-Komenogorsk, and in Soviet submarines.

It must be remembered, however, that nuclear facilities are not alone in posing latent hazards. There have been major disasters in other areas of production where appropriate standards have not been observed, for example in chemical works (such as at Bhopal in India), and in coal mine explosion disasters all over the world.

While much effort is being devoted to reducing pollution from coal, the problem is formidable as most 1000 megawatt coal-fired power stations use about 400 tonnes of coal per hour, producing the following pollution burned in 4500 tonnes of air:

- carbon dioxide: about 1200 tonnes per hour;
- nitrogen oxides: as from 200,000 motor cars running continuously;
- organic compounds: about 50, some known to be carcinogens;
- radioactive isotopes: about 50, including highly toxic Protactinium 231 and Radium.

Nuclear power stations produce no such pollution and the radioactivity therefrom is much less than from coal-fired stations. (The design allows for the radioactivity in the event of mishaps to be confined to the containment building. Only the Russians have been building stations generally without such reinforced concrete buildings, until recent years).

While oil, being a liquid, is more flexible as an energy source than either coal or uranium because it can be readily piped, it is also polluting, but not quite as seriously as coal.

However, our oil production is set to decline substantially during the 1990s while our consumption increases about 2% annually (APEA 1990).

In spite of recent finds on the NW Shelf of Western Australia, more discoveries are needed if Australia is to be even 50% self-sufficient in the year 2000. We could be in serious trouble by then.

On the other hand Australia has an abundant supply of uranium (as it has of coal), a good reason for discussing nuclear energy and its applicability to us, for part of our future power production, particularly in remote areas, and for ship propulsion.

Australia's uranium has more energy potential than all the oil of Saudi Arabia, yet most of it lies undeveloped.

Despite Chernobyl the world's nuclear power-station development continues apace. World-wide, 19 large nuclear reactors went onto electricity grids in 1989¹. Some are being decommissioned after 30 years or so. The world total is now 422 with 68 more under construction and another 83 under firm plan (March 1991).

France now has 55 reactors which produce between 75 and 80 per cent of her electricity, and supply other European countries including Britain. This is a remarkable achievement, without major incidents. (Eight more reactors are under construction.)

In our general region Japan has 40 operating, 12 more under construction, 15 more under firm plan, for a total of 67.

China has three reactors building and four more on firm plan.

Taiwan has six reactors operating and two more planned, totalling eight.

South Korea has nine operating, two building and another three planned, totalling 14.

India has seven operating, seven more building and 12 more under firm plan, for a total of 26.

Indonesia's first nuclear power station is scheduled for construction in 1995.

While Sweden had ideas of phasing out nuclear power stations, the great increase in the price of oil following the invasion of Kuwait has caused a rethink of this policy.

But Australia has so far not embraced nuclear energy. We are therefore to a large extent cut off from this very important technology of the 20th century and run the risk of technological decline in comparison with our trading partners.

While this is of significance to national development, of importance also is the use of nuclear power for the propulsion of warships.

By nuclear propulsion is meant the use of nuclear fuel to heat water to produce steam which drives a turbine in the same way as a coal-fired or oil-fired ship. The nuclear argument is thus about heating water for steam and not about nuclear weapons.

The Naval use of Nuclear Power for Ship Propulsion

The historic message from US Submarine *Nautilus*, "Under way on nuclear power" came in 1955, more than 35 years ago. Voyages under the North Polar ice-cap signalled a world moving into the nuclear age.

The nuclear-powered submarine's submerged speed of 25+ knots could be sustained almost indefinitely with almost total discretion.

Air-independence made snorkel masts obsolete; for *Nautilus* did not have to stop and raise such a mast to recharge her batteries.

Better living conditions included virtually limitless fresh water from distillation, as well as air conditioning.

For the first time since the days of sail, nuclear power gave navies vessels whose range was limited only by the endurance of machinery, supplies and crew – and not by fuel.

Nuclear power for submarines has now been accepted by the USA, Britain, France, the USSR, China, India and probably Pakistan.

Launched in 1960, Britain's first nuclear-powered submarine, *HMS Dreadnought*, displaced 4000 tons dived.

Her largest nuclear-powered submarines are the four *Resolution* Class carrying long-range ballistic missiles and displacing 7500 tons dived.

The Russian double titanium hulled *Alpha* Class SSN has a reported world record speed of about 40 knots submerged, and can operate at a depth of 700 metres. Built in the 1960s, it has several times the power of the US nuclear-powered submarines (SSNs).

The largest submarines in the world are the Soviet nuclear-powered *Typhoon* Class of 26,500 tons dived, each about half the size of the Battleship *USS Missouri*, a recent visitor to Sydney Harbour.

Lately one nuclear-powered submarine was being launched every few weeks by the Soviets, whose nuclear fleet totalled about 229 compared with 133 in the USA, according to the 1990 *Jane's Fighting Ships*. However, numbers were being cut back in 1990 – in older boats – as superpower tension eased.

France launched in 1967 the first of her nuclear-powered submarines: *Le Redoutable* displacing 9000 tons submerged. She now has eleven nuclear-powered submarines, five of which are the very interesting small *Rubis* class.

Initially built around large reactors, nuclear-powered submarines were too large and too expensive for smaller navies to consider.

So in 1955, the year of the *Nautilus*, France began thinking about nuclear power for the propulsion of smaller vessels comparable in size and cost with the newest designs of diesel-electric submarines.

A new nuclear boiler concept with its steam generator placed above and within the reactor achieved a silent primary water circulation by convection.

For speeds up to 18 knots this eliminated the need for primary booster pumps, the major radiated noise factor in nuclear-powered submarines until then. It also occupied less space.

This concept has been proven in the *Rubis*, first tested in 1975, and in the *Amethyste*, the latest version fitted with updated technology and weapon and sensor systems.

In the natural convection mode the submarine runs silently. The noise of reduction gearing has been eliminated by electrical transmission: the steam turbine drives alternators which power an electric motor on the propeller shaft.

The *Rubis*' reported top speed of about 25 knots submerged is, of course, less than that of the more powerful and larger British *Trufulgar* (5200 tonnes) and the US *Los Angeles* (7000 tonnes) class submarines. But 25 knots continuously is an enormous improvement over the limited endurance at speed of the latest diesel-electric submarines.

The 48 megawatts nuclear reactor of the *Rubis* Class requires only about one tonne of fabricated uranium fuel.

Depending on operational speeds, refuelling would not be needed for years – perhaps once in the submarine's lifetime of about 30 years.

In 1985 the *Rubis* steamed submerged from Toulon via the Cape of Good Hope to Noumea in New Caledonia, where her maintenance tender joined her a few weeks later. But no maintenance was needed on the nuclear plant side, and only minor attention to the non-nuclear steam turbine circuit, which was not beyond the resources of the crew.

The *Rubis* then steamed submerged to Tahiti, and thence submerged for 35 days back to Toulon.

In her underwater circumnavigation she covered 32,500 nautical miles at a mean transit speed of 15 knots.

A diesel-electric submarine could not have undertaken this venture without support from shore-bases or surface ships for refuelling and probably diesel maintenance. It would have taken perhaps three times as long.

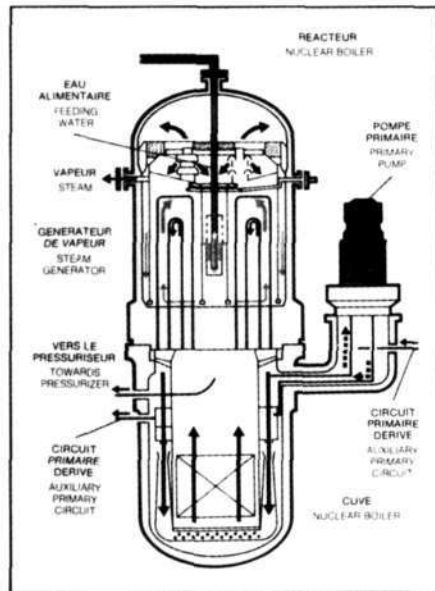


Fig 2: The *Rubis* Class Submarine's Nuclear Boiler.

India to get 6 Soviet N-sub

FROM PETER SAMUEL in Washington

'AUSTRALIAN' 5/6 MARCH 1988



The Charlie I submarine, armed with missiles, rockets and torpedoes.

India is reported to have signed a contract with the Soviet Union for the purchase of six Soviet-built nuclear-powered submarines. The submarines are expected to be delivered to India by 1995.

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Fig 3: Editorial

How do Diesel-Electric Submarines Compare with Nuclear-Powered?

Diesel-electric submarines similar to our present *Oberon* class are silent when running on their batteries. At four knots they can cruise for about a day and a half submerged – say 150 nautical miles in still water. However, normally they need to "snort" – to raise the snorkel-mast – after about 12 hours to get air to the noisy fast-revving diesel engines in order to recharge batteries. Ventilation and replenishment of the atmosphere is a by-product of that action.

At a top speed of about 22 knots, modern diesel-electric submarine batteries would last about one hour – from Garden Island they would be able to reach Palm Beach with a flat battery.

They would then require to snort to recharge batteries for several hours.

While charging, the submarine listening capability is degraded and it moves very slowly. It is vulnerable to detection of its snort mast by radar, by the recognition of its gases exhausted into the atmosphere and by the noise from the diesel generators.

Most modern diesel-electric submarines operating at five knots would have to "snort" for about 7% of the time, and at 10 knots for about 20% of the time. This is known as the "indiscrction ratio", a measure of the risk of detection.

In practice they would "snort" in bursts to minimise the possibility of being detected.

Equipment for detecting submarines was already well advanced 50 years ago and recent improvements have been such

In 1988 India took delivery of her first Soviet-built nuclear-powered submarine – of six reportedly planned. A second is believed to have been handed over in 1989 although there are contrary reports of the return of the original submarine to the USSR. India's navy, based on two aircraft carriers and a force including submarines, escorts and marines, is now the most balanced and powerful in our general region.

China has four 8000 ton nuclear-powered submarines, with others planned.

Pakistan is reported to be acquiring at least one nuclear-powered submarine from China.

While commercial uses of marine nuclear power are limited to Arctic icebreakers and barges and one Japanese cargo ship under test, there are now more than 370 nuclear-powered warships operating in the navies of six nations.

While these are mostly submarines, the Americans have entire Carrier Task Forces – carriers, cruisers and escorts – all nuclear-powered, thus giving immense flexibility and freedom from the need for bases or costly and vulnerable tanker support. France also is now building a nuclear-powered aircraft carrier.

Maritime nuclear power shares with supersonic aircraft the distinction of having been a most remarkable success.

that many doubt whether diesel-electric submarines using snorkel masts could survive for long in modern war against a well-equipped and trained enemy. The exposure of any mast above the surface considerably increases the risk.

Towards the end of World War II, faced by experienced radar-equipped corvettes, destroyers, escort aircraft carriers and shore-based aircraft, only two out of every 10 German U-boats which set out could be expected to return. New Captains, even with veteran crews, stood little chance of returning from their first patrols. This was mainly because they had to surface to charge batteries. The snorkel system in the newer U-Boats reduced the detection rate.

But the overall figures are revealing: of the 842 conventional diesel-electric U-Boats which saw action, 781 were lost – 93%. Their crews suffered 85% losses.

The modern diesel-electric submarine, while of better endurance and armament, and much quieter, still has serious limitations: slow continuous submerged speed and a significant "indiscrction ratio".

The Swedish Kockums diesel-electric submarines now being partly built in South Australia will be among the best equipped and most modern diesel-electric submarines in the world. Additionally, air-independence is a possible development, using a Stirling Heat Engine and liquid oxygen supply – some of which is used for air purification in conjunction with carbon dioxide removal.

Invented by a Scottish Presbyterian Minister more than a century ago, the Stirling Engine runs on a mixture of oils and oxygen, exhausting into the sea. The first Stirling unit was installed in the diesel-electric Swedish submarine *Nachen* for maintaining batteries at full charge while operating at very slow speeds, preferably four knots.

Continued on Page 6

Nuclear fuel 1 contained in reactor vessel 2 boils the primary water 3. This water circulates by natural convection into the steam generator 4 and causes the evaporation of the secondary water 5 to feed the turbines 6. The secondary water is cooled in the condenser 7 before being returned to the steam generator. Each turbine drives two alternators 8 and 9. The propulsion alternator 9 produces the necessary electricity for the main electric motor 10 that drives the propeller 11. Power alternator 8 provides the necessary electricity for the ship's services.

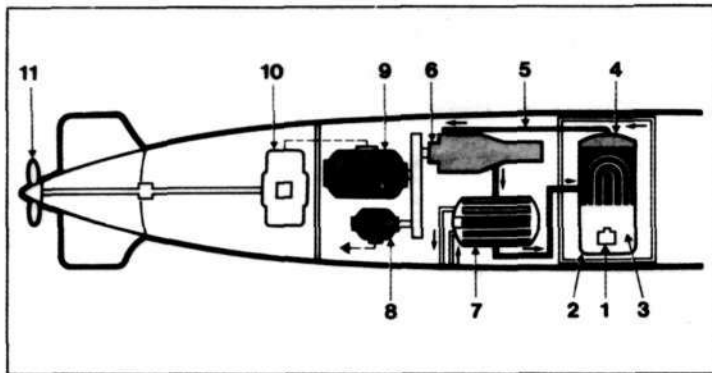


Fig 4: Rubis Class Nuclear Submarine's Electric Motor Propulsion System.

While it would greatly increase underwater endurance at low speeds, it offers no solution to covering Australia's vast distances quickly.

Nor does it overcome the other disabilities inherent in lack of sustainable high speed and low endurance at high speed. It is not at present planned to fit this system in Australian submarines.

The Captain of even a modern diesel-electric-powered submarine is forever concerned at the state of his batteries.

Although, if fitted with modern long-range missiles, these disadvantages are reduced, he will often still be unable to intercept fast targets or chase at high speed, or to escape by using maximum speed for more than an hour or so – which is not very satisfactory.

The limitations caused by his battery capacity prevent him from keeping up with surface warships or merchant vessels and thus he cannot act as an escort. He cannot be deployed at high speed submerged in an emergency, and he uses diesel fuel, which could be in short supply, for charging his batteries.

In contrast, small nuclear-powered submarines can steam submerged and sustain high speed for thousands of miles without stopping – with very little indiscretion. Their mobility and small size inhibits detection.

With their modern nuclear steam generators, convection cooling up to a speed of about 18 knots, and very powerful electric motor drive, they are silent in operation and they do not require refuelling for years.

Thus they are very flexible in operation and there is no need for the Captain to worry about conserving energy in a wartime situation.

While they have a slightly larger crew than a diesel-electric submarine of comparable size, and a slightly higher running cost, operational advantages far outweigh these considerations.

Independent of air, they are faster for virtually unlimited distances, they could never run short of fuel in operations; they make no call on possibly short diesel fuel supplies; and they can escort shipping (but not protect against air attack).

They can go places submerged in about one-third the time of a diesel-electric submarine and thus can be deployed quickly from ocean to ocean if necessary.

Given our two-coast defence policy, the great distances between our bases and our northern areas, and the ever-present possibility of last-minute decisions in a democratic society, this rapid reaction capability could be of great importance to Australia.

In addition, because of the speed of deployment, more time can be spent on patrol. Sustained silent speed means that larger areas can be patrolled in the same time as a slower diesel-electric submarine.

As a rough rule, to deploy two submarines continuously on patrol needs a total force of five nuclear-powered or eight diesel-electric with similar detection equipment.

Under some circumstances nuclear-powered submarines have a higher chance of survival than do diesel-electric submarines. For example the higher speed of nuclear-powered submarines could sometimes enable them to outrun torpedoes fired at them. Similarly, provided conditions enable them to use their high speed, they can evade or escape more easily.

Objections to nuclear-powered submarines, highlighted in the press, state that they are "noisy" and "too large to operate in shallow waters". This is no longer true.

The Rubis Class nuclear-powered submarine can go anywhere a similar-sized diesel-electric submarine can go. It is neither noisy nor too large.

Nuclear-powered submarines are considered so superior to diesel-electric submarines that the US Navy has refused to build any more of the latter for itself or for its Allies. (Other countries, however, continue to build them.)

The only war experience with nuclear-powered submarines was in the Falklands War. Britain's nuclear-powered submarine HMS Conqueror steamed from the North Atlantic at high speed submerged for 6500 miles, then shadowed and sank a cruiser when ordered to do so. With others, she bottled up Argentina's Navy for the rest of the war – a convincing demonstration of the speed of deployment, flexibility and deterrent power of nuclear-powered submarines.

What about the Nuclear Waste?

The technology for handling and storing waste from nuclear reactors is now a reality.

Before the fuel is sent for reprocessing it is stored in water until about 85% of the radioactivity has been dissipated. It is then separated and the waste stored in tanks until about 99% of the radioactivity has decayed. Dried out, it emerges as a black sand which is mixed with glass "frit" and heated until molten.

Since July 1978 the "high active" nuclear waste has been commercially treated in this way at Marcoule in France. It is then poured into stainless steel containers where it cools to resemble glassy lava. In 1981 one of the authors observed how it was done in the "hot cell" – watching through a window of glass one metre thick.

The sealed containers were lifted from the "hot cell" and lowered into wells in the floor of the outside hall. Red lids indicated waste containers below, one atop the other. There were enough wells for thirty years of waste from the French nuclear industry, for the quantities per year from each reactor were very small.

Australia's own nuclear waste disposal method SYNROC has also been well-studied and researched.

It should be remembered that the waste from a nuclear-powered submarine after many years is only about the size of a car battery. This could be easily dealt with overseas if facilities were not developed in Australia.

Disposal into the sea of solid low-level radioactive wastes (contaminated bags, cloths, clothes, resins, etc) has been prohibited in the US since 1970. This material is packed and shipped to Nuclear Regulatory Commission burial sites.

Thus high and low radioactive nuclear waste disposal seems no longer to be a major technological problem.

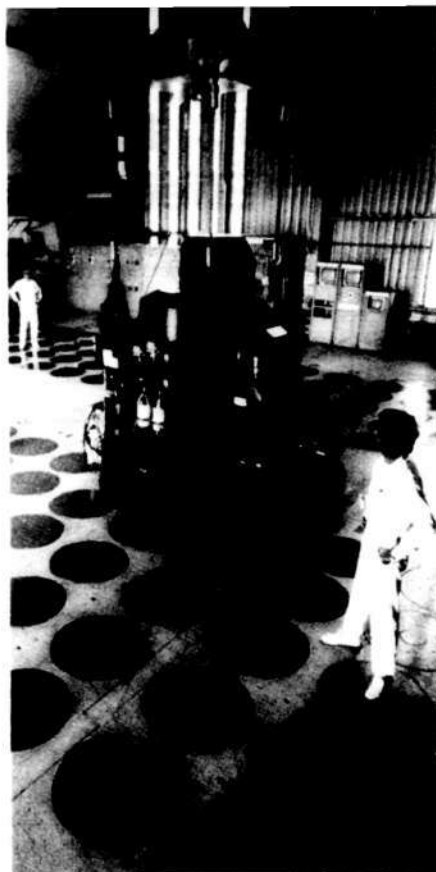


Fig 5: Marcoule, France: storage wells for nuclear waste glass after melting with "frit" and pouring (as a molten rock) into stainless steel containers.

What if a Nuclear-Powered Submarine is Sunk?

The only information on this comes from US sources.

The USS "Thresher" (1963) went down 160km from land in waters 2590 metres deep, and the USS "Scorpion" (1968) 64km SW of the Azores at a depth of more than 3050 metres.

Water and sediment samples were taken close to the sunken submarines (the only ones lost by the US Navy), and analysed soon afterwards. New samples were taken much later. No radioactivity was found in excess of that which occurs naturally.

Built-in safety features are designed to ensure that the reactor core cannot explode like a bomb. Fuel rods are solid metal alloy rounds which cannot leak and are corrosion-resistant, even in sea water.

Submerged for decades, scientific opinion is that they would not release fission products.

The corrosion rate with salt water exposed to the air might be a few millionths of an inch per year, but completely submerged it would remain intact indefinitely.

The Western countries' design criteria are superior to those for their land-based reactors. It is hard to see how fission products could escape from the very thick special-steel reactor pressure vessel. (Soviet design standards in their earlier submarines seem to have been to some extent inferior to those of the US, Britain and France.)

What about

Radioactivity Effects on the Crew?

Ambient radiation is continuously monitored in the USN. The total radiation exposure in 1983 for all US submariners was only 1/4 of that in 1966, as shown in Figure 6.

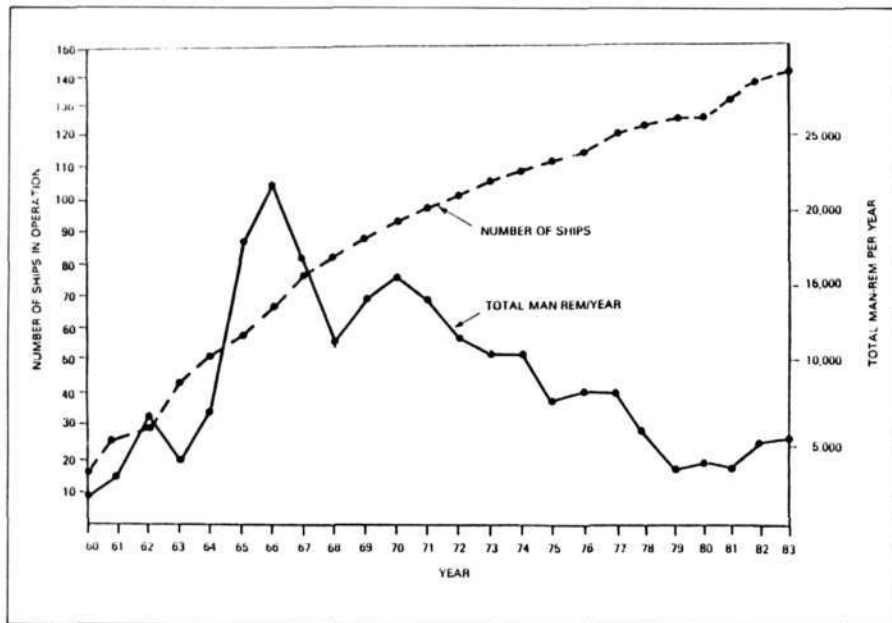


Fig 6

This graph shows the total radiation exposure of both military and civil personnel in the US Naval Nuclear Propulsion Program from 1960 to 1983.

In spite of the increase in nuclear-powered vessels from 10 to 142, after 1966 the total radiation exposure of thousands of men was reduced from 20,000 man-rem to 5,000 man-rem per year: a 75% reduction.

Each successive program had successfully reduced the radiation effects further.

(Radiation comes in three kinds. Alpha particles cannot penetrate a sheet of paper or your skin; beta particles will pass through your hand; gamma rays will penetrate deeply into concrete.)

Sailors at sea in nuclear-powered submarines get less radiation than people ashore because the natural radiation exposure at sea is

less. Radiation increases considerably with altitude above sea level because of cosmic rays – which do not penetrate beneath the sea surface.

Additionally, tenders or barges which service nuclear-powered vessels in port are shielded as are all nuclear support facilities.

In shore bases, radioactive materials are limited to a minimum number of places, and specific traffic routes have to be followed. An accountability system covers transport of nuclear materials outside the established facilities – to ensure that none is lost or misplaced.

From the foregoing the US naval nuclear experience seems reassuring with respect to radiation effects on crews.

What about the

Environmental Impact of Nuclear-powered Submarines?

The environmental impact of US nuclear wastes in all ports and harbours from 142 nuclear powered vessels⁷, was less than 0.002 curies in 1983 – a remarkable achievement. (A curie is the radiation given off by a gram of radium⁸.)

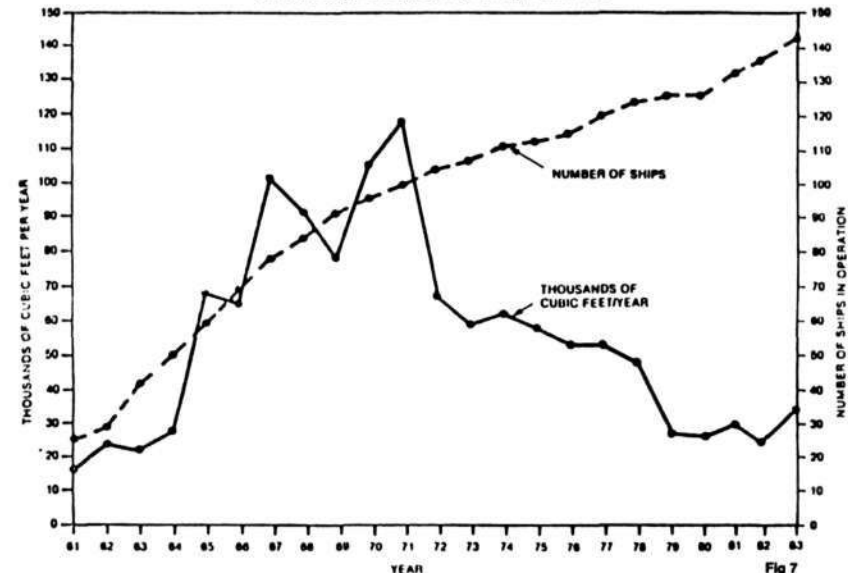


Fig 7

Two-thousandths of a curie is so small that if it were possible to drink all this annual discharge of waters at once, one would not exceed the annual radiation exposure allowed to an individual nuclear worker.

Great improvements were made between 1961 (with 25 ships) and 1983 (with 142 ships) – the upper dotted line in Figure 7 gives numbers. The thousands of cubic feet per year of all kinds of waste are shown by the lower full line. It also represents a major achievement in mastering what was a new technology in the 1960s.

Monitoring is checked by the US Dept of Energy Laboratories, and the US Environmental Protection Agency (EPA), sampling independently.

Water with radio-nuclides is filtered through an ion-exchange resin bed to containers which are then carried ashore and again processed prior to re-use instead of being discharged. High quality water is produced.

In the 1960s millions of gallons of radioactive waters were discharged into the sea within 12 miles of harbours, but by 1973 this had been reduced to less than 25,000 gallons.

Releases at sea are now close to zero – very much less than recommended by the authorities (the Council for Environmental Quality⁹, Marine Protection Law¹⁰ and the National Research Council¹¹.)

Of course, the sea is radioactive naturally, to the extent of about

390 picocurie units of radioactivity per litre, about the same as beer. (A picocurie = 10^{-12} curies.)

Whisky is even more radioactive, 1200 picocurie units per litre, milk about 1400 and salad oil about 4900 picocuries per litre. Brazil nuts may have between 200 and 7000 picocuries per kilogram.

Everything we eat and drink is radioactive to some extent but in such small quantities that it is not harmful to us!

Thus evidence so far indicates that nuclear-powered ships have no discernible effect on the quality of the environment.

But what if, despite all the evidence of careful over-design, quality control and experience, the unthinkable should happen: an accident in port with a nuclear submarine's reactor?

All such marine reactors have supplementary alternate cooling arrangements.

Common sense arrangements limit the danger to the public. Nuclear-powered warships could be based away from centres of population – there is already one such suitable base in Western Australia.

The provision of tugs with trained crews to tow away damaged vessels to remote anchorages is clearly another sensible precaution.

Comprehensive and competent organisations in naval dockyards and bases with equipment, facilities, and trained staff to deal with nuclear matters would be a normal part of planning for operation and maintenance.

But What About Cost?

Definitive information on costs is always difficult to obtain, and there are different ways of measuring such costs. However, according to some sources the Swedish-designed diesel-electric submarines being assembled in South Australia were originally to have cost about 30% less than a small nuclear-powered submarine of the *Rubis* class built overseas¹².

While the cost of a new *Rubis/Amethyste* Class submarine is not known accurately, given that the cost escalation of our own submarine building programme is likely, it seems a reasonable assumption that it would be comparable to that of a modern diesel-electric submarine fitted with a Stirling Engine built here.

There is also the possibility of acquiring surplus US or British submarines at a fraction of the cost of new vessels, in view of impending cut-backs overseas.

Australia would need an Atomic Energy Authority responsible for advice on safety measures for the population and for the control and licensing of the nuclear energy activities by the RAN.

Appropriate infrastructure would also be needed, but this is not prohibitively expensive. After all, US Navy nuclear-powered submarines have been maintained from time to time at Cockburn Sound in Western Australia. To reduce infrastructure costs, submarines requiring refuelling could be returned to the country of origin, noting that this might be only once in their lifetime.

But how will any additional cost be met, given the economic condition of the nation, falling defence allocations, and the announced re-organisation of our defence arrangements?

Basically this comes down to the resolution of two priorities. Firstly, what priority the nation itself is prepared to give to long-term defence; and secondly, what priority should be given to the future provision of nuclear-powered submarines in the defence budget itself.

Clearly if the Government of the day gave either of these priorities sufficient emphasis, the money could be provided noting that it would not be required for some years, by which time the nation should have emerged from its current economic malaise.

Training and Morale

Finally it must be remembered that one of the important tasks of submarines is to train our anti-submarine forces.

Since there are now so many fast nuclear-powered submarines in the world's navies, including those of some of our neighbours, it is essential that our forces (warships, submarines, naval helicopters, RAAF anti-submarine aircraft) be trained to detect and combat them.

Such training can only be done effectively for the total force if we possess nuclear-powered submarines ourselves, for their sustained high speeds offer a much more challenging problem for both RAAF and RAN anti-submarine forces than do diesel-electric powered submarines.

Such a decision would give a huge boost to morale, an incentive to service in our submarine forces, improve the retention rate of sailors, and provide the RAN with some real teeth.

So why has Australia not seriously considered the acquisition of Nuclear-Powered Submarines?

The failure to inform the public on nuclear power issues has been compounded by consistent media promotion of the emotional arguments, by confusion with nuclear weapons, and by official measures which have militated against a balanced perspective.

For example, the Cain Government of Victoria, soon after its first election to office, was reported as having instructed the Department of Industry, Technology and Resources to cease distributing to enquirers printed information on the peaceful uses of nuclear energy and return it all to the Uranium Information Centre¹³.

Public enquiries were thereafter to be referred to the Movement Against Uranium Mining, The Australian Conservation Foundation and the Centre.

The "Victorian Government Nuclear Prohibitions Act" is still law, as is a similarly restrictive law in NSW initiated by the Wran Government, the "Uranium Mining and Nuclear Facilities (Prohibitions) Act 1986" – which seems to outlaw uranium.

Books on nuclear power are not readily available in libraries.

The lack of public debate and censorship of information by omission has led to disinformation and confusion on all nuclear matters, and to ill-informed reactions and breaches of normal civilised behaviour with international ramifications¹⁴.

This has earned us a shameful reputation with those Western Allies who had been our protectors, friends and brothers-in-arms in former times.

It seems clear that the main opposition to the acquisition of nuclear-powered submarines centres on a low level of public understanding of the issues involved, and on perceived political attitudes¹⁵.

CONCLUSION

There has been far too little informed debate on the advantages and disadvantages of nuclear power for submarines and ships of the Royal Australian Navy – in spite of 35 years of highly successful world experience with hundreds of nuclear-powered submarines and surface warships.

The considerations of cost, disposal of nuclear waste, infrastructure needed, environmental issues and safety seem solvable and certainly not beyond Australia's means.

All warships including submarines have inherent dangers from the weapons, ammunition, and the fuel they carry. However, with very exacting standards of design, quality control, construction and operation, western warships have achieved high levels of safety. Similar considerations apply to nuclear power.

Given our immense oceanic distances, our almost complete dependence on shipping for imports and exports, our developing shortage of local oil supplies, and the clear military advantages of maritime nuclear power, there is a convincing argument that Australia should acquire at least two small nuclear-powered submarines, and in due course consider the application of nuclear propulsion for surface warships.

Such submarines would augment our future force of six modern diesel-electric submarines for the tougher and more rapid deployment tasks in war, for which only nuclear-powered submarines have the needed capability. They would also ensure that our anti-submarine forces could be trained effectively.

Together with the new diesel-electric submarines, if effectively

armed¹⁶, they would provide a modest deterrent to possible foes – arguably the most cost-effective type of deterrent in manpower, capability and flexibility for an island maritime nation.

They would also augment our small escort forces for the defence of our surface warships and vital merchant shipping.

Like our Army and Air Force, our Navy must be equipped with the most modern technology, including nuclear-powered submarines, if it is to attract high calibre personnel and carry out effectively its vital role in the defence of the nation.

While the May announcement of major defence changes must put in doubt the immediate possibility of new programmes, the building of an effective navy for the 21st century is a matter of major national security importance to an increasingly exposed and isolated island nation. This requires not only vision but a bipartisan continuity of decision-making and allocation of resources in future years.

In this rapidly-changing world, when self-reliance in defence becomes more important, one must seriously question whether, given the facts, Australia would really accept that its Navy should be denied the most potent and rapidly deployable submarines while at least two nations in our general region already possess such vessels.

ENDNOTES

- (1) ANSTO: *Quarterly Review of Overseas Events* for September 1989, June 1990 and October 1990. *Only for reactors >30 MWe.*
- (2) Commander N.S. Stewart, RN (ret'd), FRINA, MIMechE: *Technical Aspects of Nuclear Submarines for the Royal Australian Navy* a lecture to the Australian Nuclear Association, 12 March 1985.
- (3) Perhaps at the half-life 15-year refit. The new core would not be dangerous. The used one would be kept in a pool of water, later trans-shipped in a water-cooled container, a well-organised procedure in ships regularly plying between Japan and Europe.
- (4) Betzinger: "The RUBIS-Class SSN" in *Defence 2000*, 13, 12, 85 p6.
- (5) In NAVINT of 28 September 1990, page 8.
- (6) It is misleading to compare a 2400 T diesel electric submarine with a large American nuclear-powered submarine. Valid comparison is only possible between diesel-electric and the nuclear submarine having the same sized and shaped body. French calculations indicate that over 30 years the nuclear *Rubis* operation costs about 37% more than the diesel-electric equivalent. But the cost per day at sea over the same area at much greater speed is only about 3% more. The cost per square km patrolled is much less.
- (7) See *Environmental Monitoring and Disposal of Radioactive Wastes from US Naval Powered Ships and their Support Facilities*, Naval Nuclear Propulsion Program, Dept of the Navy, Washington, DC.
- (8) The number of disintegrations per second being officially defined as 3.7×10^{10} .
- (9) Council for Environmental Quality (CEQ) Report to the US President, Oct 1970: *Ocean Dumping: a Nation's Policy.*
- (10) US Public Law 92-532: *Marine Protection, Research and Sanctuaries Act of 1972.*
- (11) Report 658, Nat Acad of Sci, Nat Rsch Ccl: *Radioactive Waste Disposal from Nuclear Powered Ships, 1959.*
- (12) See (6) on left.
- (13) The Uranium Information Centre, GPO Box 1649N, Melbourne, Vic 3001.
- (14) (a) The refusal of refuelling facilities to a US Navy observer aircraft during the MX Missile tests in the Pacific.
(b) The refusal of dockyard facilities in NSW to some British warships.
(c) The tug bans after anti-nuclear demonstrations, when thousands of British sailors who had been invited to Melbourne's Bicentennial Celebrations were unable to land.
While some of these incidents have been related to the possible carriage of nuclear weapons, there have been cases of allied nuclear-powered vessels being harassed.
- (15) The Chief of the Defence Force had suggested that nuclear-powered submarines should be considered for the RAN according to a report in the *Sydney Morning Herald* of 16.5.88 ("Beazley sidesteps nuclear sub debate"). The Chief of Naval Staff had also argued for "a study of the nuclear-powered option" according to *The Australian* of the same date ("Hawke swamped by water hazards").
- (16) Possibly with *Tomahawk* weapons.

THE NAVY

The magazine of
THE NAVY LEAGUE OF AUSTRALIA



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BOOK REVIEWS FOUDRE NAVAL NEWS UPDATE
SYDNEY SCENE

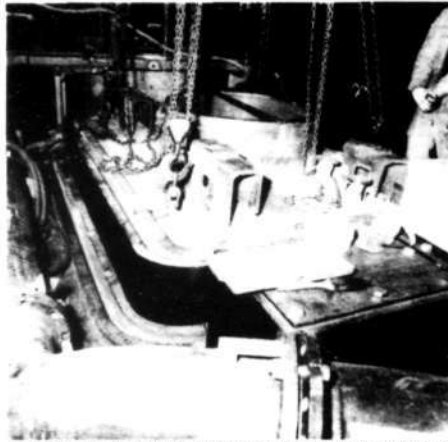
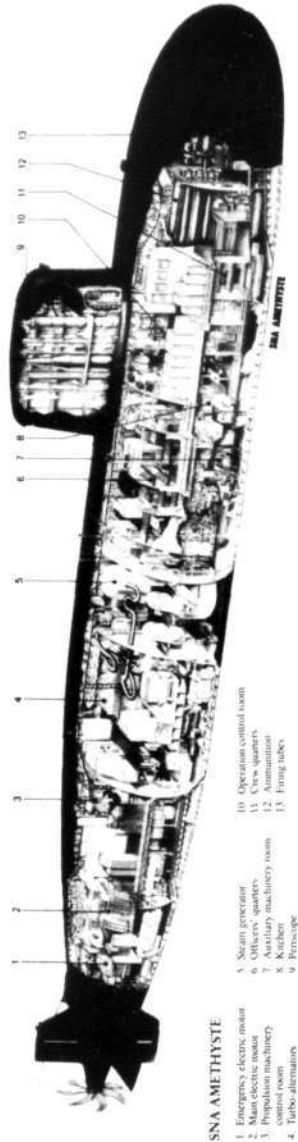


Fig 9: Detail of one of RUBIS's hull hatches being opened. The presence of these hatches allows maintenance and conversions to be performed without openings being cut in the pressure-resistant hull.

	'Rubis'/'Amethyste'	'Trafalgar'	'Oberon'
Tonnage (submerged)	2,600	5,200	2,400
Length (m)	72	85	90
Torpedo-tubes	4	5	6
Weapons - (torpedoes, missiles)	18	20	20
Speed (kts) - max. (subm.)	25 +	32 +	17 (burst)
Transit	15-20	15-20	7
Diving depth (m)	300 +	300 +	200 +
Crew	66	97	64

Size comparisons of two nuclear-powered submarines with Oberon Class.



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2. Emergency electric motor
3. Propulsion machinery control room
4. Turbo alternator
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OUR FRONT COVER PHOTOGRAPH

HMAS PROTECTOR (RAN)

(INSET) — HMAS DERWENT after her \$18 million refit (LSPH Scott Connolly)

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viewpoint

NAVY LEAGUE RAMBLINGS

Looking back over the past few issues of THE NAVY the writer notes that foreign affairs and defence have been the topics discussed in the "presidential" part of Viewpoint. More than twelve months have passed since Navy League affairs received a mention and that concerned completion of the video "The Sea and Australia". The writer feels it is time to comment on League matters again, starting with the video.

"THE SEA AND AUSTRALIA" is surely a success story. Conceived as an enjoyable way young Australians could discover the way the sea influences their lives, the video has now been supplied free of charge to over 2500 secondary schools throughout Australia.

Apart from the interest created among school students, one of the most gratifying features has been the support received by the Navy League from educational authorities nationwide.

Educational arrangements vary in Australia and for this reason distribution had to be undertaken on a State and Territorial basis. This involved several "launches" several of which were attended by the writer, the last being in Darwin in July. On each of these occasions the League's initiative has been acclaimed by those present. A disappointing feature has been media disinterest, Darwin being an exception, with print and radio attention.

Indicative of the wider appeal of "The Sea and Australia", representatives of organisations present at launch functions, including members of the RAN, subsequently ordered copies of the video for their own purposes and these have been supplied at very reasonable cost. A limited number of copies are still available and anyone interested should contact their local Navy League secretary; names and addresses are listed in the adjoining block.

DARWIN: As mentioned the writer recently visited the Northern Territory, his first visit for more years than he cares to remember. Darwin must surely be the most cosmopolitan city in Australia: indeed one has the impression of more traffic between Darwin and Asia than with Southern Australia. The city's splendid shopping centres (and the casino) are a great attraction.

A steadily increasing Army and Air Force presence, together with a sizeable naval contingent which includes the hard-worked patrol boat crews, cause Territorians to be more conscious of the Services than other capitals. The civil and military communities appear to be integrating extremely well.

A visit to the beautifully kept Adelaide River war cemetery was a sobering experience and one not to be missed by visitors to the Territory.

To continue with the "visits" theme, the NATIONAL PRESIDENT OF THE NAVY LEAGUE OF THE UNITED STATES, Mr. Alvin Cobb, accompanied by his wife, arrived in Australia in January in the course of a visit to a number of countries in our region. Mr. and Mrs. Cobb met Navy League Office-bearers in Cairns, Sydney, Canberra, Melbourne, Perth and Darwin before moving on to Singapore.

Subsequently the writer and several others received invitations to attend the NLUS annual convention at Anaheim in May, and in June a "strategy forum" at the Naval War College, Rhode Island. Unfortunately it was not possible for these invitations to be accepted but it is understood they are to be extended again next year.

THE NAVY LEAGUE OF NEW ZEALAND, which has been heavily involved in Sea Cadet activities for many years, proposes to broaden its interests and has invited the writer to be guest speaker at a conference to be held in Auckland in mid-October. This invitation has been accepted (although an invitation to fish in the icy waters of the South Island before returning is "on-hold").

These visits and invitations are mentioned as a reminder that Navy Leagues are active in many countries and our common interests provide an excellent opportunity for information exchanges and a better understanding of the problems that no country today is without. Not least the maritime countries of which Australia is one.

Geoffrey Evans

Federal President

viewpoint

From our

Readers

Dear Sir,

In the review of 'Battleship Warspite' there are a number of omissions and inaccuracies. The mention of damage to 'Warspite' at Jutland is misleading in that she was struck 15 times by heavy shell - not 29, the other hits were by light calibre.

While it is true that she was badly damaged during the Crete campaign, she was much more severely damaged at Salerno when a 'Fritz' radio guided bomb penetrated the deck armour and exploded in one of the boiler rooms, blowing a hole in the bottom while another damaged with a near miss. After a difficult journey back to the UK she was partly patched up for bombardment duty for the Normandy invasion. Returning to UK for gun barrel replacement she detonated an acoustic mine on the way and was further damaged. Again patched up, she was sent back to bombardment duty - at this stage she had only 3 turrets in operation and was running on three shafts.

Of 'The Discovery of the Bismarck' - all one can say about this work is that it is superlative. Unfortunately, at \$49.95, it is too highly priced for my modest pocket. Mention is made in the review of the possibility of finding the 'Yamato'. The 'Yamato' was located and surveyed in August 1985 - the hull, broken into several parts, lies about 150 kilometres southwest of Kagoshima.

Yours faithfully,

Bill Eneberg
 Gymba Bay NSW 2227

The Navy, October-December, 1991 3

NAVAL NEWS

Australia to continue Naval presence in the Gulf

Australia will continue its contribution to the Multi-national Naval Force (MNF) enforcing United Nations sanctions against Iraq, the Minister for Defence, Senator Robert Ray, has announced.

Senator Ray said the guided missile frigate HMAS SYDNEY will replace HMAS DARWIN deployed in the Arabian Gulf.

"HMAS SYDNEY will be deployed in the Red Sea where its presence will be particularly important to the UN operation," Senator Ray said.

"It is in the Red Sea where all the recent boarding operations have taken place.

"Between June 4 and July 3 this year, 165 ships were boarded and 10 diverted."

Commissioned in 1983, HMAS SYDNEY is armed with a 76mm gun, Standard anti-air missiles, Harpoon anti-ship missiles, a close-in weapons system and carries a Seahawk helicopter.

Senator Ray said that Australia would continue to contribute to the Multi-national Naval Force as long as there was a useful role to play in enforcing sanctions.

The sanctions will not be lifted until Iraq fully complies with all the conditions outlined by the UN.

Passing Out Parade

A bypast of Seahawk helicopters and music by a Defence band marked the graduation of 160 officers in courses from HMAS CRESWELL, the Royal Australian Naval College at Jervis Bay on 16 August.

The Chief of Naval Staff, Vice Admiral Ian MacDougall, reviewed the parade which included officers who passed the Supplementary List and Special Duties Officers' Courses and Junior Naval Command Course. In addition he presented prizes to students who had excelled.

Eight retired RAN officers from the Year

1941 - 50 years after graduating from the RAN College themselves - joined the 1000 family and friends at CRESWELL for the passing out ceremony.

Royal Australian Navy to abolish female rank titles

The Royal Australian Navy abolished all remaining female ranks at the end of August.

From September 1, the acronym 'WRAN' disappeared from the Royal Australian Navy lexicon; the same ranks will apply to all irrespective of sex.

The changes (in ascending order of rank) are:

within the RAN in January 1, 1985."

Admiral MacDougall said his predecessor had announced sweeping changes in the range of jobs available for women in the Service in March 1990.

"Perhaps the most significant change was the opening up of a variety of sea billets to women," he said, "and it recognises that women have served with distinction in the most recent Gulf commitment."

VADM MacDougall said, however, that while 'WRAN' and the female ranks would be obsolete on September 1, the distinction in mode of address to female superior officers will be retained.

"They will still be 'Ma'am' rather than 'Sir,'" he said. "There has always been an emphasis on discipline but there's more equality of opportunity and more recognition of the contribution made by women in the Service now than ever before."

Admiral MacDougall believes the rank titles changes reflect an era of enlightenment in the Royal Australian Navy.

Kuwait Government invites Australian sailors

Officers and crew of the Australian guided missile frigate (FFG), HMAS DARWIN, were

invited by the Kuwait Government to attend a reception to celebrate the re-activation of a port following a post-war clean-up in the Arabian Gulf.

Many of the 230 ship's company attended the reception during a visit to Ash Shuwaikh in Kuwait City on 14 August.

DARWIN represented Australia. Other Multinational Naval Force ships included the United States, Danish, Norwegian, Bahrain, Saudi Arabian, United Kingdom and French Navies.

The Commanding Officer of HMAS DARWIN, Commander Martyn Bell, said the harbour at Ash Shuwaikh had finally been cleared of mines and other debris to a level acceptable for the operation of merchant ships.

He said DARWIN - on her second tour



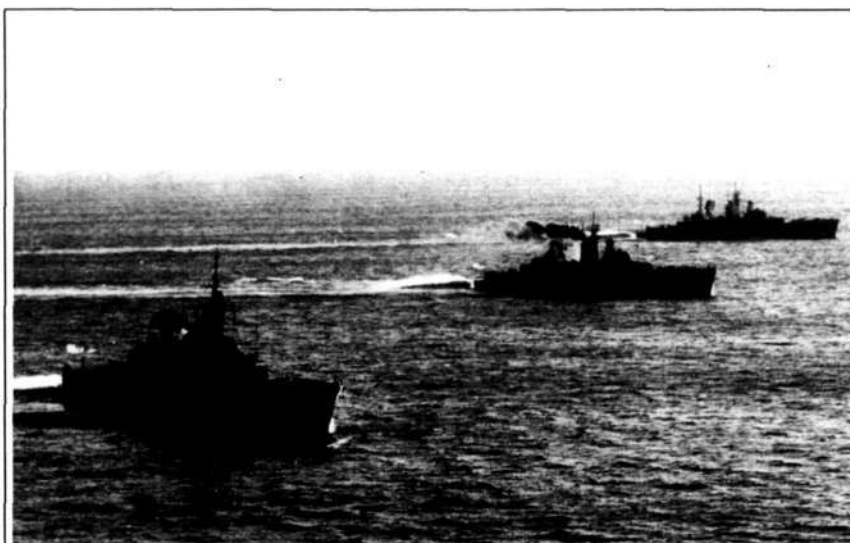
HMAS SYDNEY, August 1991 (B. Morrison)

- WRAN Recruit to Recruit;
- WRAN to Seaman
- Senior WRAN to Able Seaman;
- Leading WRAN to Leading Seaman;
- Petty Officer WRAN to Petty Officer;
- Chief Petty Officer WRAN to Chief Petty Officer; and
- Warrant Officer WRAN to Warrant Officer.

The Chief of Naval Staff, Vice Admiral Ian MacDougall, said the change will be the last of a series to remove the distinctions in title between male and female members of the Service.

"The separate ranks used for female commissioned officers were deleted from the Navy List of officers in January 1980," he said, "and the Women's Royal Australian Navy ceased to exist as a separate Service

NAVAL NEWS — CONTINUED



Three sisters, seen together for the last time off the WA coast. From left, HMAS SWAN, HMAS DERWENT and HMAS STUART. The latter spent her last day at sea on 31 May (ABPH N. Brent)

of duty to the Gulf - had in recent months provide escort to merchant vessels allowing them access along the cleared channels through the minefields to another Kuwait port, Ash Shuaybah, about 40 kilometres to the south of Kuwait City.

The RAN's Clearance Diving Team 3 was prominent in the major clearance operation to have Ash Shuaybah re-opened for shipping after the cessation of hostilities and numerous improvised explosive devices ashore rendered safe.

"The re-opening of Ash Shuwaikh will also provide the opportunity for Kuwait to commence oil exports once again. CMDR Bell said, "although perhaps in a somewhat limited capacity at this stage."

Australian Submarine Commander Moves West

The Commander of the Australian Submarine Squadron, Captain John Dickenberg opened a new era for the Royal Australian Navy in Western Australia when he commenced working from a temporary office in the Naval Headquarters located at the HMAS STIRLING fleet support facility from Monday, 5 August.

Normally based at the home of the Australian Submarine Squadron at HMAS PLATYPUS in Sydney, Captain Dickenberg was invited to cut a symbolic chain with a pair of bolt cutters to gain admission to his new west coast office.

For the inaugural visit Captain Dickenberg was accompanied by three staff members. The visit was also designed to

coincide with the arrival home from a south east Asian deployment of HMAS OXLEY.

It is intended to arrange more regular and formal visits by Captain Dickenberg and his senior Submarine Squadron staff officers. Currently this is planned to be on a 6-8 week cycle and each visit comprising 4-5 people will include the Squadron Commander.

Construction will commence on the new



The RAN's new submarine school at HMAS STIRLING (LSPH Scott Connolly)

Construction will commence on the new RAN Submarine Squadron Headquarters at HMAS STIRLING next month and the building is expected to be completed in 12 months.

The prime aims of the proposed visits are:

a. Progress the necessary liaison between NOCWA Headquarters, HMAS STIRLING and the Submarine Squadron in developing plans and submissions relevant to the move of the Squadron to Western Australia; and

b. Enhance the liaison between HMAS STIRLING and the Squadron in the management support for the WA-based HMAS OXLEY.

Gulf welcome home and Sydney Navy Week

Thousands of Sydneysiders flocked to Circular Quay to visit the Gulf warships BRISBANE and SYDNEY during Navy Week in August.

The unseasonably warm weather attracted big crowds who were eager to inspect the ships and enjoy the Navy bands, ceremonial sunsets and displays by the physical training team. A highlight was the colourful fleet entry by six RAN ships who were escorted up the harbour by scores of pleasure craft.

The weekend ended with the highly successful welcome home parade along George Street for the defence personnel who served in the Gulf. Watched by tens of thousands of cheering supporters, the parade was a fitting tribute to the 1500 men and women who served in the Gulf.

Old timers sold

Regular users of Sydney Harbour will have grown used to the sight of HMAS YARRA moored in Athol Bight at Bradley's Head. The former destroyer escort has been laid up there as part of the Navy's reserve fleet since being decommissioned in 1985.

However, YARRA and her sister ship PARRAMATTA will disappear shortly, after



Ex HMAS PARRAMATTA with the decommissioned COOK at Garden Island, August 1991 (R. Gillett)

being sold for scrap by AUSSALES the Commonwealth sales agency. The new owners, Silooka Steels of Karachi, are making arrangements to tow the ships to Pakistan.

YARRA and PARRAMATTA were two of six River class destroyer escorts built in Australia between 1957 and 1970. Built as sister ships, they were similar to the British Type 12 frigate although their design was modified to incorporate improvements in equipment and habitability.

Both served with distinction in the RAN, making three trips each to Vietnam on escort duties. PARRAMATTA has been laid up at Garden Island since being decommissioned last January.

South-East Asian Visits

Sydney hosted a visit by five warships from two of Australia's regional allies between September 19-23.

Two Singaporean Navy missile corvettes, VALOUR and VIGOUR, supported by PERSISTENCE, an amphibious landing ship, berthed at the Fleet Base. The Royal

Malaysian Navy corvette LEKIR and support ship MAHAWANGSA also came alongside.

The ships also exercised with RAN units before sailing for Auckland to participate in the Royal New Zealand Navy's 50th anniversary fleet review in October. Several Australian ships are also taking part in the NZ celebrations.

Protector - charity concert

The Navy's trials and safety ship HMAS PROTECTOR and patrol boat HMAS FREMANTLE were at Darling Harbour on Saturday, 21 September supporting a charity concert organised by Pepsi. PROTECTOR's sturdy helicopter pad was used as the stage for a celebrity rock concert, with proceeds going to various Sydney charities.

Presentation of Peter Ballesty Memorial Trophy

The Peter Ballesty Memorial Trophy was recently presented to TS VENDETTA, Coffs Harbour.

The Trophy is a perpetual trophy donated by the New South Wales Division of the Navy League of Australia in memory of its former President, Commander Peter Ballesty RD RANR. It is awarded annually to the Naval Reserve Cadet Unit in New South Wales exhibiting the most proficiency in Seamanship.

The Trophy is a scale model of HMAS ARCHER, an Attack Class Patrol Boat, at one time commanded by Commander Ballesty and attached to the Sydney Port Division of the RANR, of which Commander Ballesty was the Commanding Officer. The model was constructed by Lieutenant Michael P. Richards NRC who had at one time served with Commander Ballesty.

A colour photograph, suitably framed and inscribed, is presented to the winning Unit and the name of the Unit and the date



of award is engraved on the base plate of the actual model which is housed permanently in NRC Headquarters, HMAS WATSON.

On the day of the presentation, a full Parade of all members of TS VENDETTA was held and was witnessed by the local State member, the Mayor of Coffs Harbour, representatives from service organisations and relatives and friends of the Cadets. It is of interest to note that TS VENDETTA has recently been named as the Most Efficient NRC Unit in New South Wales.

'Tartan Terror' loses teeth

The decommissioned destroyer escort STUART's 4.5-inch gun turret was removed from the ship which was alongside at the HMAS STIRLING fleet support facility on 21st August.

The 45 tonne turret has been re-located on a concrete base outside HMAS STIRLING's ceremonial gates and a plaque commemorating STUART being the first destroyer to be homeported in Western Australia (20th January, 1984) will be mounted on the turret as a lasting tribute to the ship.

Oxley returns from South East Asian deployment

The HMAS STIRLING-based submarine HMAS OXLEY returned to its home port on Monday, 5 August after a 15-week South East Asian deployment.

OXLEY was met by the Commander of the Australian Submarine Squadron, who was making his first visit to Western Australia as part of a proposed program which will see him and his staff spending one week in six to ensure a smooth transition of the Squadron to the west over the coming years.



Removing the turret from Stuart.

(LSPH Scott Connolly, RAN)

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HMAS Oxley on her return to her home port

(LSPH Scott Connolly, RAN)

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ANTI-SUBMARINE VESSELS 1939 – 1945

by ROSS GILLET

To help bridge the gap in the all-important anti-submarine sphere of naval operations during the Second World War four large coasters, operated by Australian shipping companies, a former Royal Navy minesweeper converted to a River excursion ferry, two ex-British Admiralty tugs and a former Northern Territory patrol vessel were requisitioned for service as auxiliary anti-submarine and patrol craft. In addition the Dutch minesweeper ABRAHAM CRIJNSSEN was commissioned for similar duties in September 1942.

The first of the coasters to join naval ranks was AUSN's BINGERA, just four years old and designed for operating along the Queensland coast. The ship experienced a much varied commission from patrol, training, stores to service vessel. Fourth of the group to enter the RAN was the Western Australian KYBRA, constructed for the State Shipping Service. KYBRA had spent most of her career sailing to ports in the south of the state, carrying both passengers and cargo.

At 1049 gross tons the 1934 vintage WILCANNIA ex WYRALLAH was the largest of the four coasters. Owned by the North Coast Steam Navigation Co the vessel had operated for only six years when taken over for war service. After WILCANNIA, in size, was Coast Steamships 1928 YANDRA, built for service from Adelaide to the ports

of the Great Australian Bight.

DOOMBA was originally taken over for conversion to an auxiliary minesweeper and in June 1942 commenced duties as an anti-submarine vessel. The tugs HEROS and ST GILES were commissioned as anti-submarine vessels on 12 January 1940 and 15 January 1940 respectively. Both had been constructed in 1919 as units of the Rescue/Saint class and sold to Australian owners in 1925 and 1922. After ending their A/S roles the vessels were employed as tugs in both Australian and New Guinea waters.

ABRAHAM CRIJNSSEN was one of several Dutch warships which had escaped to Australia after the fall of their East Indies possessions. The ship, in good condition, was soon accepted as a valuable addition to the RAN's anti-submarine forces and accordingly was commissioned for these

duties as well as the minesweeping and escort roles.

The final vessel requisitioned as anti-submarine patrol vessel was the 1938 VIGILANT. As well as this role she was also employed in the examination service, as an air sea rescue vessel, boom defence boat and finally for salvaging and surveying.

ARMAMENT

The coasters provided excellent deck space for the mounting of various weapons from the 4 inch QF (Quick Firing) Mk IV LA (Low Angle) gun on a CPIII mounting to the anti-submarine depth charges, dropped overboard at the stern by throwers or chutes. The 4 inch gun was mounted in the bow of each ship with an ammunition establishment of 100 rounds. A single 2 pounder QF Mk II C was fitted aft with 500 rounds against air and surface targets.



HMAS ABRAHAM CRIJNSSEN in December 1942 (RAN)

ANTI-SUBMARINE VESSELS — continued

Machine guns were mounted on the bridge wings with a normal outfit of 4000 ball and 1000 tracer rounds. Depth charge establishments varied with BINGERA, 61 weapons, KYBRA, 34, YANDRA, 31 and WILCANNIA, 41, all Mk VII.

IN SERVICE

Like the requisitioned mine warfare ships of the Second World War, the nine large auxiliary anti-submarine vessels allowed the Navy to provide a relatively capable force at short notice. Although the ships were constructed to mercantile standards they could be quickly converted and fitted with a suitable armament. The speeds of all units, was, at the best, just sufficient for their role, and after the commissioning of the new Bathurst class Australian Minesweepers, the auxiliary A/S vessels were replaced in the convoy escort and anti-submarine roles by the new construction corvettes. Operationally the vessels served far and wide, and ultimately in a variety of roles.

The presence of such ships allowed the more capable/ocean going units to meet the enemy at first hand, leaving the auxiliaries to form the so-called 'home-front'.

DISTINGUISHING LETTERS — Requisitioned A/S Vessels

BG — BINGERA
HR — HEROS
KY — KYBRA
SG — ST GILES



HMAS HEROS with the armed merchant cruiser HMAS WESTRALIA (RAN)

VG — VIGILANT
WN — WILCANNIA
YD — YANDRA

ABRAHAM CRIJNSSEN 1942-1943

FY 55, 525 tons, 184.4/25.7/7, 1690hp = 15 knots, one 3 inch, four 12.7mm, two 20mm Oerlikons, one MG, 46 crew (RNN).

ABRAHAM CRIJNSSEN was built for the Royal Netherlands Navy by Werf Gusto, Schiedam, Holland. She was launched on 22 September 1936 and completed for service

in the East Indies in 1937. Prior to the fall of the Colony to advancing Japanese forces the ship escaped to Australia in March 1942 and arrived in Fremantle on 20th of the month.

During her voyage south, the ship avoided detection from the enemy by sailing at night and laying up, camouflaged with foliage by the day.

ABRAHAM CRIJNSSEN was commissioned into the RAN on 28 September 1942 to provide convoy/anti-submarine patrols to 5 May 1943. Thereafter

ANTI-SUBMARINE VESSELS — continued

the ship was returned to the Dutch authorities, but remained in coastal waters until 7 June 1945, when she sailed from Sydney to Darwin. From the latter port the ship performed minesweeping in the region and into Koepang Harbour.

Following the war she was converted to a boom defence vessel and in 1960 reduced to a hulk.

BINGERA 1939-1946

FY 88, 922 gross, 200.2/34.1/9, 12 knots, 6798 miles at 11, one 4 inch, one 2 pdr, two .303 inch Vickers MGs, two DCTs, 58 crew.

The four year old BINGERA was built by William Denny and Bros Ltd at Dumbarton, Scotland for the Australasian United Steam Navigation Co for the Queensland coastal trade. Total cost was \$95,625. She was requisitioned for naval service on 2 December 1939 and commissioned on 5 February 1940. The ship was employed for training purposes at Flinders Naval Depot

and Jervis Bay from 1940, as a stores carrier in New Guinea waters from September 1944 and finally as a troop transport and lighthouse services vessel from March 1946.

BINGERA paid off at Brisbane on 12 August 1946 and was returned to her owners on 13 December.

BINGERA carried 108 tons of fuel oil.



On the Brisbane River, HMAS KYBRA in August 1941 (RAN)

HEROS 1939-1947

FY 87, W 130, 382 gross, 135.4/29/13.6, 1200hp = 12 knots, one 12 pounder, two .303 inch Vickers MGs, two DCTs, 32 crew.

Launched by Murdoch and Murray Ltd, Port Glasgow in the United Kingdom on 28 February 1919 and completed May 1919 as the Rescue/Saint class ocean tug ST ERTH for the British Admiralty. In September 1925 the tug was sold to J. Fenwick and Co Ltd of Sydney and renamed HEROS.

During the periods in 1934 and 1937 HEROS was hired by the RAN for short periods to tow battle practice targets. On 2 November 1939 she was requisitioned for naval duties and converted for use as an auxiliary anti-submarine vessel. HEROS commissioned on 12 January 1940 and remained active around the continent until returned to her owners on 13 August 1942.

Subsequently the tug was taken over for brief periods, 96 days in total from late August 1942 to mid January 1943. On 12 February she was again requisitioned,

then recommissioned at Brisbane on 25th of the month. Now operating as a tug HEROS was active in northern Australian and New Guinea waters. HEROS sailed from Brisbane to Sydney on 12 January 1946 and was paid off 12 February. She was returned on 5 November 1947.

The tug was sold by her owners to be broken up on 9 December 1964 and her hull beached for scrapping on 7 December 1966.

During her war service HEROS was fitted with a raised forecastle. She expended 27 tons of coal per day at 12 knots and 16 tons at 9 knots. The single HA/LA 12 pounder gun was mounted forward before the bridge and carried 40 rounds of ammunition. In addition she was fitted with two PAC rocket projectors and a depth charge establishment of 26 weapons.

KYBRA 1940-1946

FY 90, 858 gross, 204.2/31.1/12, 800hp = 10.5 knots, 20 days at 10.5, one 4 inch, four 2 pdr, one .303 inch Vickers MG, one .303 inch Maxim MG, two DCTs, 55 crew.

Built in 1926 as a single screw passenger and cargo motor vessel by the Coaster Construction Co Ltd of Montrose, Scotland for the State Shipping Service of Western Australia. KYBRA was requisitioned for conversion to an anti-submarine training vessel on 8 July 1940. The work was performed at Garden Island and the ship commissioned on 30 December, attached to the shore establishment HMAS Rushcutter.

The ship began radar training cruises from Sydney in March 1943 and was not paid off until 23 November 1945. She returned to her owners on 25 March 1946.

The Navy, October-December, 1991 11



HMAS BINGERA (RAN)



HMAS ST GILES (RAN)

ANTI-SUBMARINE VESSELS — continued

KYBRA was sold to Hong Kong interests and operated under various operators in South East Asia until broken up in April 1968.

KYBRA carried a total of 170 tons of fuel, including 100 in reserve. At 10 knots the ship's endurance was 23 days. Hold capacity was 34,270 cubic feet with a lift of 3 tons. Later reports show the ship fitted with a 'Hedgehog' anti-submarine weapon and three 20mm Oerlikons in lieu of the four 2 pounders fitted. Also mounted one PAC rocket projector.

ST GILES 1939-1947

FY 86, 430 gross, 135.4/29/13.6, 1200shp = 12 knots, one 12 pounder, two .303 inch Vickers MGs, DCTs.

Launched on 14 May 1919 by Ferguson Bros, Port Glasgow and completed 13 August as a unit of the Rescue/Saint class for the British Admiralty. Sold in July 1922 to J. and A. Brown and arrived in Newcastle 7 November 1922. Resold in May 1931 to Waratah Tugs, her forecastle removed and tonnage dropped from 463 to 380 gross.

ST GILES was requisitioned for naval service on 2 November 1939 and commissioned for the anti-submarine role on 15 January 1940. Conversion work was undertaken at the Garden Island Dockyard when her forecastle was rebuilt and tonnage increased to 430 gross. The tug operated in south-eastern waters until taken over by the Commonwealth Salvage Board on 18 May 1942. Following operations under the Red Ensign she was requisitioned again in August 1945, commissioning on 23rd of the month. The tug was active in northern Australian and New Guinea waters.

ST GILES paid off on 11 March 1946 and was returned to the Waratah Tug and Salvage Co Pty Ltd of Sydney on 4 June 1947. Sold August 1956 to be broken up in Hong Kong.

VIGILANT 1940-1946

FY 06, Q 80, 106 gross, 102/16.4/5.6, 60hp = 13.5 knots, six days at 13.5, one 20mm Oerlikon, two .303 inch Lewis MGs, one .303 inch Vickers MG, two DCCs, 15 crew.

Launched by the floating crane TITAN at Cockatoo Island, Sydney, in February, 1938, the patrol vessel VIGILANT was operated by the Commonwealth Government in Northern Territory waters. She was taken over for naval duties in October 1940 and subsequently commissioned on 12 November.

VIGILANT operated from Sydney until sailing to Darwin in May 1941. At first the vessel was used for the examination service and then in July began a survey of the upper reaches of the Bynoe Harbour. She began duty as a Channel Patrol Boat and for the



VIGILANT being launched (Cockatoo Island)

next one year and nine months operated in this role. VIGILANT's other responsibilities included rendering mines safe in July 1942, boom defence at Darwin from January to June 1943, surveying from June to July and air sea rescue. During December 1942 the vessel operated with Special Operations with the re-inforcement of Australian and Dutch guerrillas to enemy controlled Timor.

VIGILANT sailed for New Guinea on 1 September to commence surveying in the approaches to the Merauke River. During November the vessel proceeded to Cairns and on 17 April 1944 was renamed and recommissioned SLEUTH. Like the

previous ship of the name, she was based at Thursday Island. This posting was changed to Darwin, where she arrived on 22 December 1944. For the ensuing six months SLEUTH operated with the Survey Task Unit in the north-west region.

SLEUTH was renamed HAWK on 13 March but in July departed for Sydney to decommission on 13 September 1945. She was sold on 14 October 1946 for \$5,600. After operating as a trawler VIGILANT ended her days in Sydney, hulked in Homebush Bay during the 1970s.

VIGILANT could carry 11.61 tons of diesel fuel and had an endurance of 12 days



HMAS WILCANNIA (RAN)

ANTI-SUBMARINE VESSELS — continued

at 9/10 knots. The vessel was fitted with echo sounding gear and a refrigerating plant. Her hold could carry 643 cubic feet of cargo. Fresh water totalled 5.11 tons. Armament establishment was 96 rounds for the single Oerlikon.

was repaired in a month. From July 1944 the ship was altered to the role of a stores ship for duties in New Guinea. She decommissioned on 7 February 1947 and returned to her pre-war owners on 4 July 1949. In 1954 WILCANNIA was sold to J. Burke and Co of Brisbane, resold in 1960 to Noumea as the COLORADO DEL MAR. In 1964 to Fiji as the TAMATA and finally resold back to Noumea, reverting to her earlier name.

career.

YANDRA was requisitioned for naval service on 27 June 1940 and proceeded to Sydney to be converted to her new role. After commissioning on 22 September the ship was based at Fremantle from 24 October to 21 April 1941 and later from 15 June 1941 to 27 December 1941. During the years 1942 to 1945 YANDRA was operated in eastern waters and as far north as New Guinea. The ship's moment of glory came in



YANDRA, during her pre-war commercial career (RAN)

WILCANNIA 1940-1949

FY 92, 1049 gross, 216.4/36.7/12.9, 12 knots, 62 days at 12.64, one 4 inch, one 12 pdr, three .303 inch Vickers MGs, two DCTs, 61 crew.

Another of the North Coast Steam Navigation ships to see naval service, the 1934 vintage WYRALLAH was requisitioned on 28 June 1940. After commissioning on 2 September 1940 the ship experienced escort and anti-submarine patrols around the coast line. In February 1942 her name was changed to WILCANNIA, to avoid confusion with the AMS WHYALLA.

WILCANNIA's war record included being attacked by a Japanese floatplane on 30 January 1943 and colliding with FREMANTLE on 27 July 1943. Damage

WILCANNIA carried 142 tons of oil fuel plus 112 tons in reserve. At 11 knots the endurance was 73 days. Fresh water amounted to 109 tons, with 53,100 cubic feet in the hold. Fitted with one PAC rocket launcher.

YANDRA 1940-1946

FY 91, 990 gross 218/35.2/12.9, 1025bhp = 12 knots, 32.5 days at 11.75, one 4 inch, one 2 pdr, one .303 inch Vickers MG, one .303 inch Maxim MG, two DCTs, two DCRs, 56 crew.

In 1928 the Swedish shipbuilders Burmeister and Wain of Copenhagen constructed the 990 gross ton YANDRA for Coast Steamships Ltd for operations in the Great Australian Bight. The new ship arrived in Adelaide on 23 October and in the following month began her commercial

Sydney Harbour on the night of 31 May 1942, when YANDRA located a Japanese midget submarine and destroyed the enemy by depth charges.

YANDRA assumed the role of the seagoing radar training ship when she relieved KYBRA in March 1943. Paid off in Port Adelaide on 25 March 1946 YANDRA was overhauled and returned to her owners on 19 July 1946. The ship was due to be retired when on 24 January 1959 she grounded on South Neptune Island. YANDRA was abandoned and broken up where she lay.

During her naval career YANDRA carried 140 tons of diesel and in the cargo hold, 49,300 cubic feet. Her endurance at 10.25 knots was 40.5 days or 10,000 miles. The ship was fitted with a PAC rocket launcher.

HMAS PROTECTOR

by JOHN MORTIMER

Throughout most of the 1960s and 1970s the Royal Australian Navy's trials requirements were largely met by HMAS DIAMANTINA, an ex Second World War frigate and HMAS KIMBLA, a boom defence vessel which was built in the 1950s. With the disposal of these vessels in the 1970s the only ship which was available for support of long term Navy and the Defence Science and Technology Organisation's (DSTO) trials requirements was HMAS COOK.

Aside from these ships, various trials were also carried out employing other naval vessels largely on an opportunity basis. The most notable exception being HMAS YARRA which was used extensively in the development and testing of the Mulloka sonar system.

The requirement for a new dedicated trials ship was first outlined in 1970, however, the proposal was not generally accorded a high priority within defence planning. This resulted in part from the lack of a clear articulation of the specific need for such a platform and changing perceptions of the characteristics that should be sought in a trials ship.

An examination of the requirements for specialised features of a trials ship in the early 1980s led to some reductions in the earlier capabilities which had been sought. This examination culminated in Navy's endorsement of revised ship characteristics in 1983. At this stage, the basic requirement was for a purpose built ultra quiet ship of about 2400 tonnes, which was estimated to cost some \$50m.

It became clear after a short time that funding for this proposal was unlikely in the near future and DSTO consequently undertook a review of all its requirements for research at sea and the options for meeting them. This review concluded that HMAS COOK could meet the requirements of those trials which required a ship of low noise signature and that it could be complemented by a less capable vessel procured under Navy Project 1167.

In March 1985, the DSTO agreed to the basic characteristics of a ship to meet their

trials requirements in conjunction with HMAS COOK. This reduced requirement now meant that a range of commercial vessels were suitable for the role of a trials ship.

In August 1987 the New Submarine Project advised their requirements for an escort and safety vessel to support the sea trials of the new Collins class submarines, which the Commonwealth was contractually obliged to provide. The characteristics sought were similar to those of the trials ship. Project 1167 was subsequently retitled the 'Trials and Safety Ship', to incorporate the escort and safety roles.

A brief study was undertaken to determine the preferred method of procuring a trials and safety ship. Four options were addressed, ie:

- charter a vessel;
- design and build a special purpose vessel;
- modify an existing design and then build; and
- purchase an existing ship which most nearly meets the requirements and modify as necessary.

The purchase and modification of an existing ship was assessed to be the least cost option and would also enable the early entry of the vessel into naval service. Ships assessed as potentially suitable for the trials and safety task included Offshore Supply Vessels, Fishing Trawlers, Purse seiners and small Roll-on Roll-off vessels.

Navy first became involved with BLUE NABILLA when the National Safety Council of Australia (NSCA), Victorian Division offered submarine rescue services on a charter basis using its PC-1804 submersible.

The proposal was based around BLUE NABILLA being fitted with the following equipments:

- recompression chamber,
- remotely operated vehicle system,
- rescue vehicle launch and recovery system,
- rescue vehicle,
- dynamic positioning,
- underwater telephone,

HMAS PROTECTOR — continued

- life support equipment containers,
- inflatable boats,
- helicopter transfer facilities, and
- acoustic tracker.

To provide these facilities it was proposed to lengthen the vessel by 8 metres between the superstructure and funnels, thus increasing her overall length to 42.7 metres. These modifications were subsequently undertaken by North Queensland Engineers and Agents (NQE) at Cairns.

In preparation for the acquisition of a ship to meet Navy's requirements the New Submarine Project Director commissioned Burness, Corlett Australia Pty Ltd to act as brokers in the search for a suitable existing Offshore Support Vessel on the world market. The brokers report identified some 47 ships which were short listed down to four main contenders. During this process the NSCA was dissolved by liquidators and BLUE NABILLA was offered for sale and added to the list of primary contenders. The short listed contenders comprised WILFOND (built in Japan in 1984), LADY KATHLEEN (built in Newcastle in 1982), RUNDE SUPPLIER (built in Norway in 1981), NORMAND SKY (built in Singapore in 1984), and BLUE NABILLA (built in Western Australia in 1984).



HMAS PROTECTOR (B. Morrison)

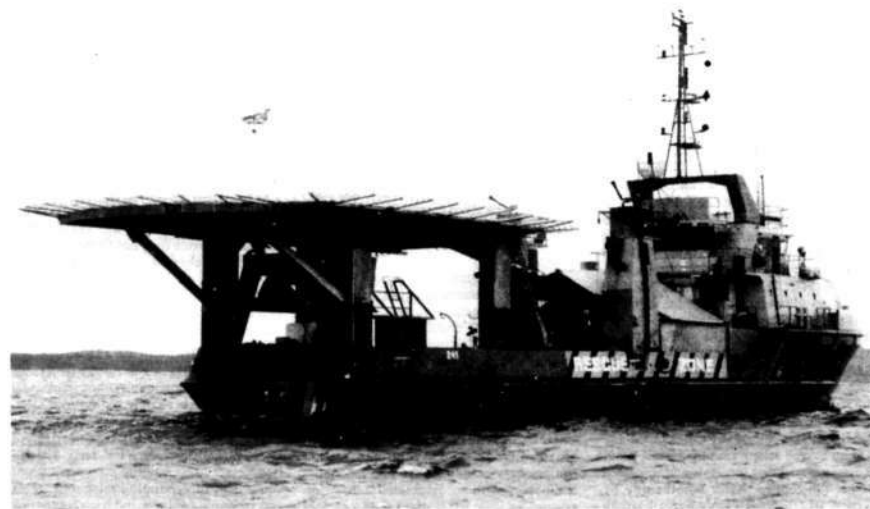
BLUE NABILLA was the preferred contender on two main grounds, namely her lower overall cost and superior facilities. Her main attractions were good manoeuvrability, lifting capacity of A-frame and deck crane, the existing helicopter pad, position keeping facilities, ability to embark a submersible and the ship's almost new condition.

Funding of the trials and safety ship remained a problem when the proposal was excluded from the Five Year Defence Program. However, the importance of the proposal to submarine trials was recognised and it was suggested to Navy in later 1989 that it would not be inappropriate for the vessel to be funded from the New Submarine or other Navy projects. Possible



HMAS PROTECTOR in Jervis Bay (J. Mortimer)

The main advantage of using a dedicated trials vessel was seen to be one of guaranteed ship availability as warships could seldom be allocated for periods long enough to allow for the careful and timely conduct of scientific research work. In addition, a dedicated vessel which is small, relatively cheap and provides flexibility of usage offers an efficient solution to Navy and DSTO requirements.



Stern view of the ship showing her large helicopter deck (J. Mortimer)

HMAS PROTECTOR

continued

sources were subsequently assessed within Navy and funds were made available from the submarine and inshore minehunter projects. The provision of funds from mine warfare activities included an allocation planned for HMAS CURLEW's refit which was not undertaken and the ship was paid off. CURLEW's role in support of mine warfare activities was transferred in part to the trials and safety ship.

The Minister for Defence, Senator Robert Ray, subsequently approved the purchase of BLUE NABILLA in August 1990, at an estimated cost of \$4.94m. The purchase was subsequently implemented through Australian Marine Brokers.

Procurement of the submersible and remotely operated vehicles were progressed separately.

BLUE NABILLA was purchased on 18 October 1990 and arrived in Sydney, on her delivery voyage, the following month. She was commissioned on 30 October and was renamed HMAS PROTECTOR on 20 March 1991, at the Fleet Base, Wollomoolloo, under the command of Lieutenant Commander Graeme Banyer.

Several names were considered for the ship. They included PROTECTOR, KIMBLA, STOKER and HUDSPETH. The choice was quickly narrowed to the first two names. Preference for PROTECTOR prevailed principally because:

- she has a direct association with submarines, as her predecessor acted as a tender to the RAN submarines AE1 and AE2 during the First World War; and
 - PROTECTOR was based in Adelaide for several years and thus has a link to the Collins class construction site.
- PROTECTOR was built by Elder Prince Marine Service, now Stirling Marine Services, of Fremantle, Western Australia. The ship was commenced as the M.V. OSPERY, but was purchased whilst under construction and renamed BLUE NABILLA. As originally constructed she had an overall length of 34.7 metres, beam 9.5 metres, depth 4.0 metres and displaced some 588 tonnes. After lengthening by NQEA BLUE NABILLA's overall length increased to 42.7 metres and her

displacement to 670 tonnes.

The functions of HMAS PROTECTOR are:

- to act as submarine escort and safety vessel during the Collins class trials;
- to act as a support and target vessel for submarine trials;
- to be able to conduct all facets of RAN diving in support of trials and safety activities;
- to support mine warfare trials activities including the survey, laying and recovery of practice minefields; and
- to conduct environmental data gathering in support of the Mine Warfare Pilot and submarine trials.

Performance of these functions requires a ship which has good navigational precision, manoeuvrability, communications and support capabilities. Specifically the ship should have:



PRINCIPAL DETAILS OF HMAS PROTECTOR

Displacement:	670 tonnes
Length Overall:	42.7 metres
Beam:	9.5 metres
Draught:	3.0 metres
Speed:	10.5 knots
Main Engines:	2 x Detroit 12V92TA
BHP:	450 at 1800 RPM
Generators:	2 x 125 KVA
Complement:	4 Officers 13 crew plus 3 submersible crew.
Constructed by:	Elder Prince (now Stirling Marine Services)
Year of Build:	1984
Purchased:	18 October 1990
Helicopter Capacity:	Helicopter Deck and Refuelling facilities.
Other Equipment:	Hiab Sea Crane, 13T "A" Frame, Skipper Sonar, Lips Dynamic positioning 4 x 24/255, Mini-Thrusters, HF, VHF and UHF Communications Equipment, Klein Sidescan Sonar, Magnavox Sat Nav, Skipper RDF, Sperry Sat Coms, Diving air compressors & recompression chamber space.

- the ability to precisely locate and hold itself over a given datum;
- sufficient deck space for the stowage of trials, support, MCM diving and rescue equipments;
- lifting equipment for deployment and recovery of scientific, trials, rescue and MCM equipment.
- facilities to enable communications with other ADF and rescue authorities; and
- vertical replenishment facilities.

Navigation/Manoeuvrability Characteristics

HMAS PROTECTOR is fitted with a broad range of commercial navigation equipments, including gyro and magnetic compasses with an associated auto pilot system; satellite navigation; GPS one log system; echo sounders; and two navigational

radar systems. A Syledis navigation system has also recently been installed for mine warfare related activities. In terms of manoeuvrability PROTECTOR has two controllable pitch propellers; two rudders, which can be independently operated; and four thrusters, two in the bow and two in the stern. In addition, she is fitted with a LIPS dynamic positioning system. The overall result is a ship which has a high degree of positional accuracy as well as very high manoeuvrability to retain the position. PROTECTOR's characteristics in this area are unique in the Royal Australian Navy - no other ship possesses such high manoeuvrability.

Equipment Stowage Capacity

Designed as an Offshore Support Vessel, HMAS PROTECTOR has considerable area aft of her superstructure for storage of trials and support equipment. She is capable of stowing about three standard ISO 20 foot containers plus two half containers on deck and can accommodate a portable six man recompression chamber. The installation of a handling system for the submersible, which incorporates a trolley system on tracks, has reduced the ship's storage capacity on the after deck.

Lifting Equipment

During her modernisation at NQEA, PROTECTOR was fitted with an A frame of 13 tonne capacity for launch and recovery of the submersible. She is also fitted with a HIAB crane of 6 tonne lift capacity and 12.5 metre extension. The crane is sited amidship, on the starboard side, and its lifting capacity at maximum extension is some 1250 kg. These lifting apparatus provide facilities for lowering and retrieving equipment over the stern, in the case of the A frame, and alongside with the HIAB. This latter system is utilised for deployment of the vessel's two Phantom Remote Operated Vehicles.

Communications Facilities

BLUE NABILLA was fitted with a range of commercial communications equipment consistent with her safety and survival roles. These equipments have been retained for her naval tasks. Equipments fitted in HMAS PROTECTOR include VHF, UHF and HF transceivers and satellite communications equipment incorporating telephone, telex and facsimile facilities and a computer link with a visual display unit and printer.

HMAS PROTECTOR

continued

Aviation Facilities

HMAS PROTECTOR is fitted with a helicopter pad aft which is 14.8 metres long and 11.2 metres wide. Helicopters of up to 12,800 lbs (eg Kiowa, Iroquois and Squirrel) may be able to land on very calm waters, however, Navy has not yet evaluated this capability. The ship is also fitted with helicopter refuelling facilities, which are located to port underneath the landing pad. Overall, PROTECTOR's aviation facilities are limited and in an emergency would likely be confined to vertical replenishment and medical evacuation tasks.

PROTECTOR is also fitted with two fire monitors on top of the funnels. Both can be employed for fire fighting on other ships or a helicopter on the flight deck. The system employs both light water and water.

In her civilian guise PROTECTOR had a crew of six, but had capacity to embark 18 passengers. Her naval complement is 20 which are accommodated in six single, five twin and one four berth cabins. There are four officers in the crew and 20 per cent of the ship's complement are female. The latter hold billets in the communications and maintenance areas and as a mine warfare specialist. Age span of the crew is from 18 to 41 with the average age being about 21.

Materially, PROTECTOR is in very good condition and shows little visible sign of corrosion. However, in her naval role several problems arise from her design background and civilian employment. Being designed as an offshore Support Vessel the ship's stability calculations were predicated on carrying heavy weight, in the order of 40 tonnes, on the after deck. Typically, this weight is not carried and hence the ship tends to pitch and roll quite rapidly in even moderate seas. The ship also has very low freeboard aft which means that this area is frequently wet.

Other limitations flow from the ship's intended small civilian complement. The ship has very little hot water, a single 125 litre tank; has no fresh air conditioning; only internal air circulation; and a limited sewage holding plant.

HMAS PROTECTOR is planned to be primarily employed in support of mine countermeasures trials and data collection activities until late 1992. During this time it is also intended to undertake various ship and system trials including embarkation, integration and first of class trials of the PC

1804 submersible and Phantom Remote Operated Vehicle. These two latter systems are central to the ship's submerged recovery capability. PROTECTOR will be subsequently employed in support of new submarine trials off South Australia and Western Australia from early 1994 to about 2001.

Overall, HMAS PROTECTOR is an important asset to the Royal Australian Navy. Its flexibility and broad range of ship systems make it suitable for a number of roles in support of naval, overall Australian Defence Force, and civil tasks.

THE FIRST PROTECTOR



The first HMAS PROTECTOR in the Great War

Prior to Federation the Colonies were responsible for their own defence and in 1884 the South Australian Government took delivery of the 920 ton HMCS PROTECTOR. The ship was built at Newcastle-upon-Tyne in the United Kingdom by Sir W.G. Armstrong and Company and took 3 months to make the voyage to Port Adelaide.

HMCS PROTECTOR at that time carried one 8 inch and five 6 inch guns which ranked her among the most powerful gunboat/cruiser type vessels yet constructed. Based solely in South Australian waters the ship had an uneventful career but was well kept with frequent refitting, maintenance and cleaning at Fletcher's slipway.

In August 1900 the warship was offered to and accepted by the Imperial Government for service in China as part of the Colonial Naval forces in the Boxer Rebellion. The ship's shallow draft made her an ideal

choice for service along the Chinese coast and inland waters. The long voyage to China under the command of Captain Creswell necessitated water replenishment stops at Brisbane, Thursday Island, Manila and Hong Kong.

After nearly three months under the White Ensign of the Royal Navy PROTECTOR was paid off by the RN on 24 November 1900, and reverting to HMCS PROTECTOR, returned to Adelaide on 6 January 1901. Despite the lack of action due to the sudden retreat and capitulation of the Boxer army "the exercise had been a great experience" according to the "Adelaide Observer".

During the years up to the creation of the Australian fleet PROTECTOR was continuously active around the southern and south eastern seaboard and was the sole vessel available for sea training in the southern states. In addition to South Australian patrols the ship steamed as far north as Newcastle and made several voyages to Victoria and Tasmania before being re-boilered in 1910.

In 1911 PROTECTOR was integrated into the Royal Australian Navy firstly serving as a tender, but when war erupted in 1914 she became the depot ship to the submarines AE1 and AE2. PROTECTOR served in New Guinea waters and the Indian Ocean for about a year and then at various times resumed duties as a tender, acted as a minesweeper and also exercised with the torpedo boat HMAS COUNTERSS OF HOPETON in 1918.

After World War I (1920) the ship carried the advance party to Flinders Naval Depot (Western Port Bay) in preparation for the official opening of that establishment. In 1921 PROTECTOR was renamed CERBERUS and became a tender to the new Naval Depot, before finally closing a 40 year naval career in June 1924.

Sold to a private buyer the ship was dismantled and armament, turrets, engines and all movable parts were auctioned. Converted to an oil fuel lighter in 1929 she could transfer 300 tons of oil fuel with her high powered pumps.

In 1931 the ship was again sold and renamed Sidney, was used as a wool lighter by the Victorian Lighterage Co, but in July 1943 was requisitioned by the US Army small ships command for war service. Finally in 1944 PROTECTOR was on her way to New Guinea where she was holed by a tug and eventually abandoned on the beach at Heron Island where the rusting hull is still clearly visible.

BATTLE HONOURS: SADRAS 1758, MEGAPATAM 1758, CAPE OF GOOD HOPE 1806, NORWAY 1940, LIBYA 1940-41.

NAVAL MATTERS

by A.W. GRAZEBROOK

MORE MONEY MUST BE SPENT ON DEFENCE

by A.W. GRAZEBROOK

Once again, the annual Commonwealth Government Budget has been handed down. Once again it includes a round of cuts in training, operations and existing forces and delays in essential programmes for the Australian Defence Force.

This year the cuts and delays are accompanied by a planning directive that Defence Budgets for the next three years are to be based on nil real growth in the Defence Budget.

There is a popular political falsehood about defence expenditure. That is that a nation can have only the defence it can afford.

That approach is dangerously wrong.

A nation must spend on defence the money necessary to defend the nation.

The money must be well spent. It must be spent cost effectively. The nation must get maximum value for its defence expenditure. But enough money must be found to defend Australia and her interests.

Enough money is not being spent now.

Both Government and Opposition have noted the increase in defence spending in our region. Both Government and Opposition have pointed out that the decline in NATO - Warsaw Pact tension in Europe does not involve nations in our region.

It is implicit in these facts that there are no grounds for reducing the Australian Defence Force. On the contrary, the ADF should be being strengthened to at least maintain our relative position in our region.

It is true that much is being done, particularly in acquiring modern equipment, all of which is very necessary. Nevertheless, more needs to be done. Enough is not being spent on equipment to maintain our relative position.

In non-equipment areas, the ADF is declining. Insufficient is being spent on operational training. Unless the ADF exercises extensively and realistically with its equipment the Force will prove inadequate when we need to use the equipment in earnest. That time can come very totally unexpectedly and at very short notice, as we saw in August, 1990. Navy, supported by the other two Services, defence industry and defence civilians, performed superbly in getting its only three available ships away to the Persian Gulf at very short notice.

If operational training continues to be cut annually, the ADF will not be able to repeat that performance. We must ensure the readiness of our front line forces.

Personnel retention problems persist. They will get far worse if the economy recovers and industry intensifies competition for high tech personnel.

In summary, because the cost of defence equipment is increasing at a higher rate than inflation, nil real growth in defence expenditure means a decrease in the relative strength of the ADF at a time when most regional defence forces are getting larger and stronger.

Australia cannot go on year after year reducing its Defence Force when our neighbours are increasing their armed forces.

It is not easy politically to find more money for defence at a time of recession. It requires leadership and political courage to propound the case. Preparedness to do so is the mark of the statesman, as distinct from the politician.

CORPORATE MEMBERS

Computer Sciences of Australia Pty. Ltd.

Dunlop Aerospace Australia

Hawker de Havilland Limited
NQE Australia Pty. Ltd.

Rockwell Electronics (Australasia) Pty. Ltd.

Rockwell Ship Systems Australia Pty. Ltd.

FOUDRE -

New French Landing Ship

CONSTRUCTION

The ship's hull consists of 96 elementary cube welded sections, (an approximately cubic welded sections, (an 80 tonnes approximately and measures between 6 and 10 metres on the side; the first block was laid in March 1986, and the last in October 1987, i.e. eighteen months later.

The laying out phase was the longest, because of the complexity of the installations and the number of rooms (750 approximately); this phase started as early as the construction of the first cube, using the "pre-fitting out" technique, and lasted until official trials started in January 1990. This LPD is therefore the 475th ship launched at the Brest arsenal since its creation by Colbert in 1661. The large shipyard created for laying down and finishing the ship was used as a major test bench to improve state-of-the-art construction techniques (computer-aided design, modular construction) to be used for construction of the Charles de Gaulle nuclear-powered aircraft carrier in the Laninon dock left vacant by the FOUORE.

MISSIONS

The FOUORE amphibious transport dock primary mission consists in taking part

in amphibious operations of the Force d'Action Rapide (rapid intervention force) for the transportation and landing, on a non-prepared beach, in hazardous zone, of the

DATA

- LOA: 168 m
- Beam at the waterline: 22m
- Moulded draft: 5,2 m

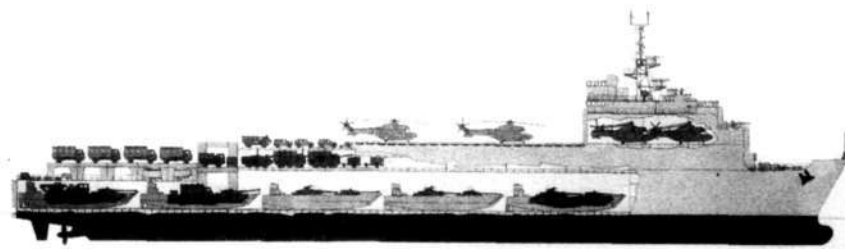
- Mean trial's displacement with freight: 11,300 t
- Well deck: 14 x 122 m
- Ballast volume: 7000 m³
- Maximum speed: 21 knots
- Range: 11 000 nm at 15 knots
- Maximum power: 2 x 10 400 HP
- Electrical power: 5 x 850 kW diesel generators
- Freight capacity: 1 880 t
- Handling facilities:
1 52-tonne lifting platform
1 37-tonne crane at 12 m
- Complement: 226
- Passengers: 467

WELL DECK

The well deck is a 1640 m² surface area floating dock. When carrying an intervention force, the dock can contain:
- 10 LCMs (characteristics: 24 m x 6,4 m; 65 t + 90 t of freight),

- or 4 LCMs + 1 LCV (characteristics: 57 m x 12 m; 275 t + 350 t of freight),
- or 2 LCVs.

In addition to its "landing" version the

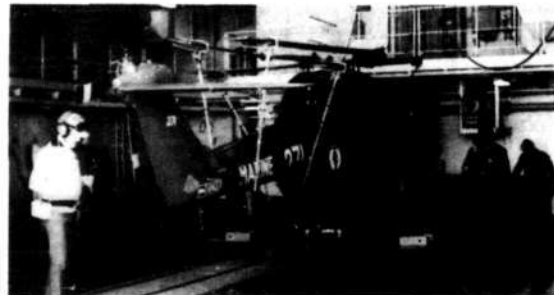


FOUDRE LANDING SHIP continued

FOUDRE LPD can be used as a mobile logistic support ship. The dock can then be used as a dry dock for the following classes of ships:

- 4001 patrol boat,
- BSR (region support ship),
- coastal tugboat.

The well deck is closed during the ship's transit by a hydraulically-actuated gate.



VEHICLE STORAGE CAPACITY

The vehicle storage capacity is such that three LPDs operating jointly can transport a mechanised regiment composed of:

- 22 AMX 30 tanks
- 44 AMX 10 RC tanks,
- 22 FAV's,
- 41 X-country LW vehicles, including 16 MILAN anti-tank missile systems,
- 54 trucks TRM 4000,
- 15 light trucks TRM 2000,
- 5 tank trucks,

- 2 heavy recovery trucks,
- 6 120-mm mortars,
- 67 miscellaneous trailers,
- 1 beaching grating layer i.e. a load of 3 300 tonnes approximately.

VEHICLE MOVEMENT

The ship has been designed for easy vehicle movements.

A 52-tonne lifting platform serves the dock, the vehicle hangar, the mobile decks, the parking area on the vehicle hangar roof and the side ramp door.

1 Boarding of heavy armored vehicles by LCM in the immersed dock. The LCMs are



FOUDRE LANDING SHIP continued

high and dry in the dock during the transport

2 Boarding of vehicles through the side ramp door and the lifting platform serving the vehicle parking areas.

3 Boarding from a quay through the dock gate and the lifting platform or the 37-tonne crane.

AVIATION

The aeronautical installations are designed to allow day and night operation of helicopters the mission of which is to airlift commandos. These installations include:

- a main landing area equipped with two spots for SUPER-PUMA. One of the spots is equipped with a landing grid,
- a secondary landing area made up of the mobile decks,
- landing aid lighting equipment,
- one dual "SAMAHE" equipment for transferring helicopters from the hangar to the forward spot,
- a fixed hangar for storing 4 SUPER-PUMA type (9 tonnes) or 2 SUPER-FRELON type (13 tonnes) helicopters,
- storerooms and helicopter maintenance workshops.

MOBILE DECKS

The mobile decks can be used either as a secondary landing area, or as parking areas for vehicles. The panels are installed on their roller tracks by means of the crane. They are removed to dock high air draft ships.

AMPHIBIOUS OPERATIONS

The arrangements of the FODRE LPD allow preparation and control of amphibious operations.

The following rooms are provided:

- the planning room, used during transit to the theatre of operations for detailed planning of the landing,
- the Joint Control Center where the amphibious operation commander-in-chief and his staff coordinate and control the activities of all the forces involved in the landing,
- the CIC where the amphibious naval force chief of staff prepares his instructions to the other landing craft and chartered civilian ships,
- the "Helicopter - vehicle movements"

control center which coordinates and monitors the movements of the helicopters and landing craft.

- the communications room which provides communications with the naval forces, amphibious forces, the commander of the naval theater, and the Army Staff in France.

surgical support to combating troops, assistance to distressed area populations, etc. This sick bay, with a surface area of 500 m² and a 47 bed capacity has many interesting features. Its location beneath the flight deck, close to the elevator platform makes it easily accessible.

The medico-surgical team can use two operations rooms, one for orthopedic surgery, the other for visceral surgery.

This arrangement is supplemented by a dressing room used for less intensive care.

The sick bay also includes two resuscitation rooms, one of which is specially fitted out for the treatment of severe burns.

- one X-ray examination room,
- one biology lab with blood bank,
- one dental surgery room,
- one sterilization room with an autoclave.

A computer-based management system has been set up for improved efficiency; it handles pharmaceuticals and medicines which have to be checked at regular intervals.

Such materials and human resources make

the FODRE an outstanding hospital ship capable of fast and far-reaching interventions.

CONCLUSION

The hull is constructed around an inner dock which extends over 3/4 of the ship's length.

The ship is designed for the landing of battle tanks and other vehicles, by means of a landing craft. Accordingly, the ship's architecture is determined by these functions of transportation and deployment of landing craft.

During transit to the theatre of operations, the landing craft are transported high and dry in the dock. Deployment of the landing craft is carried out after immersion of the ship by ballasting, flooding of the dock and opening of the LPD's aft gate.

The LPD's main particulars are:

- vast battle tank and vehicle storage areas, hangars and storage decks, served by a 52-tonne lifting platform and a side ramp,
- aeronautical facilities:
- landing deck allowing simultaneous operation of several helicopters,
- hangars accommodating four 9-tonne helicopters.



PROPULSION

Propulsion is by two propeller shafts equipped with variable-pitch reversible propellers: each driven by a 7 640 kw SEMT-PIELSTICK 16 PC 2.5 V 400 diesel engine.

ELECTRICAL

Electrical power is produced by five 850 kw SACM-UNIDIESEL diesel generators, distributed in three stations, two main stations located near the propulsion rooms and one station located forward, near the bow thruster.

ARMAMENT

During the amphibious operation, the LPDs protection is mainly provided by the other ships and aircraft in the force.

However, the ship has anti-aircraft self-defence facilities consisting of:

- a SIMBAD missile self-defence weapon system,
- a 40-mm gun,
- two 20-mm guns,
- two 12.7 mm heavy machine guns.

MEDICAL

The FODRE is fitted out with a large sick bay, which allows execution of large-scale medevac operations, medical and

BOOK REVIEWS



Submarines of the Russian and Soviet Navies 1718-1990

By NORMAN POLMAR and JURRIEN NOOT
Published by Naval Institute Press,
Annapolis, Maryland,
USA 21402
Reviewed by ROSS GILLET

This extremely detailed book is divided into two principal sections. The first is a narrative technical and service history of the dozens of submarine classes operated by the Russian and Soviet Navies since the earliest 18th century and the second, a la Janes, provides all relevant boat details, armaments, dates of construction and final disposition.

Coverage begins in 1718 with the first submarine project for Tsar Peter the Great and concludes in the year 1990 with the commissioning of the giant Typhoon class ballistic missile submarines.

Excellent coverage is also provided of the various submarine weapons, from the early mines and torpedoes to

the current generation of missiles and related warfare systems as well as the crews who have the boats for nearly 300 years.

Photographically, the various classes are well illustrated with both overall and onboard views. Various classes or boats never built are included with characteristics. The appendices examine the building years and list all boats known to have been transferred to other navies.

Submarines of the Russian and Soviet Navies, 1718 to 1990 will undoubtedly become a welcome addition to libraries of many naval enthusiasts, especially with the demise of the USSR as all have known it for much of the 20th century. Highly recommended.

The Changing Face of the World's Navies - 1945 to the Present

By BRUCE W. WATSON
Published by Arms and Armour Press
Price: \$55

World War Two marked a turning-point in naval historical development. Since then, politics, the emergence of the 'bi-polar' world, and incredibly rapid technological change have combined with

newly evolved or refined strategies to produce a wholly new naval situation as we enter the twenty-first century.

The past fifty years have witnessed some remarkable changes in the naval world: big-gun warships have been discarded and there have come back into favour, and amphibious capabilities have grown in importance. But the most important single factor has been technology - missile development, electronics, communications, computers, metallurgy - all these things have had far-reaching effects.

Sea power remains as vital to trading nations as it ever was. With two-thirds of the Earth's surface covered by water, the need has remained for a naval capacity both to defend oneself and maintain trade routes, as well as sustain prolonged overseas action. What has altered is the form that such a navy should take.

This book traces these developments, in their evolutionary forms, with reference to all the nations that have contributed significantly to it. The author traces the influence of doctrine and of combat experience during the last five decades to show how a process has been underway that is often fuelled by responses to the perceived threats posed by the prospective opponent rather than by a rational assessment of naval needs. Here is a thoroughly absorbing and

thoughtful analysis, enhanced by the resurrection of historical theories often derided in the nuclear age.

Professional naval officers, defence analysts, and informed civilians will all benefit from this clear explanation of post-war naval evolution. They will then be better placed to observe, and participate in, the debate on the future use of naval power.

The Future British Surface Fleet Options for Medium-Sized Navies

By D.K. Brown
Published by Conway Maritime Press

This 192 page long book offers a vision of the Royal Navy in the later years of the 1990s and early 20th century.

The author has

BOOK REVIEWS continued

spent most of his career in the design of warships, retiring as the Deputy Chief Naval Architect. Accordingly the new book is not the official forecast or a policy statement, but the recommendations of an eminent British naval architect.

It covers not merely ship design, but the whole field of naval policy, from strategic considerations and fleet mix to financial constraints and construction facilities.

Taking into account both the lessons of the Falklands War and the implications of new technological advances, D K Brown pays particular attention to the pivotal role of the modern frigate and to the advantages and disadvantages of Jetfoil, air cushion and SWATH craft. His recommendations are tailored to the changing world political situation, and have important implications for all future medium sized navies.

The Hybrid Warship The Amalgamation of Big Guns and Aircraft

By R.D. LAYMAN & STEPHEN McLAUGHLIN
Published by Conway Maritime Press of London
Distributed in Australia by Princeton Books
PO Box 24, Cheltenham, Victoria 3192
RRP \$99.95.

A "hybrid" warship is one that combines the characteristic features of one type of warship - while also being designed or extensively modified to perform the function of an aircraft carrier.

This book gives an incredible insight into the hybrid warship and is supported by 55 black and white photographs and some 100 line drawings which give the reader an insight into some of the incredible designs which were proposed.

There were many proposals between the two world wars for merging big guns and aircraft into one hull, thereby creating a ship that could do more than either a pure gunnery ship or a pure aircraft carrier alone.

The Royal Navy was the first to actually complete a hybrid with the converted battlecruiser HMS Furious which boasted a flight deck forward and an 18-inch gun aft. Joining the Battle Fleet at Scapa Flow in July, 1917 Furious began conversion to a full aircraft carrier in 1922.

Next was the 12,000 ton cruiser HMS VINDICTIVE (ex-Cavendish) which was launched in January, 1918 and completed in October, joining the Grand Fleet at Rosyth. VINDICTIVE boasted 4 x 7.5 inch guns and a 64 metre flight deck extending from forward of the superstructure and terminating well short of the stern to give a

clear area of fire. Proving an almost complete aviation failure, VINDICTIVE was converted back to a cruiser in 1923-25.

Between the wars Britain's NELSON and RODNEY were the subject of several Bureau of Construction and Repair sketches and unfounded rumours in the 1920s about a flight deck aft because of their main armament being forward of the superstructure.

When the coming of World War II, there was little time for experimentation and construction efforts were concentrated on vessels of proven worth. Only Japan actually created such vessels with the battleship/aircraft carrier conversions of HYUGA and ISE in 1943 being the most prominent.

Early in World War II one British scheme depicted a ship with the forward section of a LION-class battleship joined to the stern and superstructure of an IMPLACABLE-class aircraft carrier. This 44,750 ton ship would have carried 6 x 16 inch guns forward of the flight deck, 8 x 4.5 inch twin dual purpose gun turrets to port and starboard of the flight deck and have been capable of carrying 12 fighters and two torpedo bombers/reconnaissance aircraft.

The United States Navy's IOWA-class battleships were under consideration for several hybrid schemes, one being the conversion to commando/YSTOL battleships.

There have been a number of modern hybrid warships, the converted Royal Navy cruisers TIGER and BLAKE, as well as the Soviet LENINGRAD and MOSKVA springing to mind.

The most recent class of ships to come under consideration for conversion to being air-capable was the United States Navy SPRUANCE-class destroyers being able to carry up to eight helicopters.

Although many of the quality drawings show what might have eventuated, this book is certain to draw a great deal of discussion amongst naval and warship enthusiasts. A most interesting book. - Vic Jeffery.

Allied Coastal Forces of World War II Volume I Fairmile designs & US submarine chasers

By JOHN LAMBERT and AL ROSS
Published by Conway Maritime Press of London
Distributed in Australia by Princeton Books
PO Box 24, Cheltenham, Victoria 3192
RRP: \$140.00

The first volume of Allied Coastal Forces of World War II gives a highly detailed account of the Fairmile boats - the A & B class MLs, the C class MGBs and the D class MTBs & MGBs along with the Fairmile F type MGBs, the Fairmile H type LCI (s) & LCS (L)(2) and

the US Navy SC 497 class 110 ft submarine chaser.

This 256 page volume gives details of all the boats and their armaments, also explaining the organisation of their production, and sets out their service and achievements.

Divided into five sections of more than 30 chapters this work is superbly illustrated with some 220 black & white photographs and hundreds of highly detailed line drawings.

The next volume of this Allied Coastal Forces trilogy will cover the Vosper 70ft MTBs with a third and final volume covering the British Power Boat 70ft MTBs/MGBs.

The 72ft Harbour Defence Motor Launch has been included in this book even though it was conceived before the Fairmile organisation was properly in being, because it nevertheless was an important naval launch type. The HDML was constructed using normal shipbuilding practice rather than from pre-fabricated kits in the manner of the other Fairmile Motor Launch types.

Designed in 1939 for the Admiralty to protect estuaries and harbours against infiltration by enemy submarines, the HDML was armed with depth charges, asdic (sonar) and a small gun, either a 2- or 3-pounder carried forward of the bridge. A single Oerlikon was carried aft. Their complement was two officers, two senior sailors and 8-10 ratings.

A total of 486 units was ordered during the War with the first three of 28 RAN units built in the UK, with HDML 1074 being commissioned on 7 October, 1942.

Today only the unarmed Seaward Defence Boat 1325 (formerly HDML 1325) remains under the Royal Australian Navy's control and is laid-up at present at HMAS Stirling in Western Australia pending it being transported to Spectacle Island in Sydney for restoration and eventual display.

Every possible aspect of British Coastal Forces is covered in this most comprehensive volume, be it radar, camouflage, anti-submarine weapons, engines and engineering, habitability and weapons.

An excellent series of 12 Appendices cover a Schedule of British builders; Fairmile production analysis 1939-45; Yard analysis; Fairmile consumption of major materials; Provisions to be supplied to Fairmile Motor Launches on Commissioning; Fairmile designed class-performance data; Service summaries for the Norwegian manned MTB.618; and the Indian manned HMIML 440.

Unquestionably this is a superb reference book and answers virtually every conceivable question that may be raised on these often forgotten diminutive maids-of-all-work which saw active service in most theatres of war. My only regret is that the price will place the book out of reach of many potential readers. Recommended reading. - Vic Jeffery.

SYDNEY SCENE



HMAS BRISBANE being manoeuvred into Sydney Cove for Navy Week celebrations, August 1991 (B. Morrison)



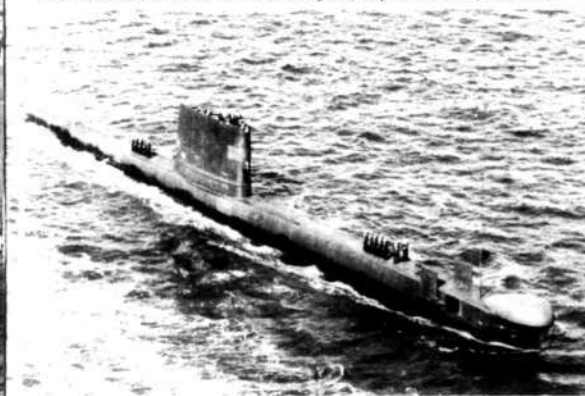
Navy Week Fleet Entry 4 August 1991 (B. Morrison)



Chilean naval training ship ESMERALDA, 17 July 1991 (B. Morrison)



French corvette COMMANDANT BIROT arriving in Sydney 24 June 1991 (B. Morrison)



HMAS OVENS, a member of the Fleet Entry (B. Morrison)



HMAS WALLAROO, June 1991 (B. Morrison)



Replica of HMS Bounty (B. Morrison)



French frigate BALNY departs harbour after a five day visit (B. Morrison)

MV Nafanua (PPB 04) – Western Samoa

by LCDR CHRIS CHURCHER RAN

MV NAFANUA was handed over to the Western Samoa Government in Fremantle on 19 March 1988. After a period of training, the ship sailed for Western Samoa arriving in Apia on 26 May 1988.

NAFANUA is operated by the Maritime Wing of the Western Samoa Police and Prisons Service. The Maritime Wing currently has 15 personnel attached to it, all of whom form the crew of the Patrol Boat. There are plans in place to increase the size of the Wing to 20 which will allow a small support element to work in the wharf facility.

NAFANUA is operated as a civilian registered vessel. This required the ship to be maintained in survey to the requirements of the Western Samoa Ministry of Transport. The task of maintaining the vessel in survey is made easier because of the commercially available equipment that has been used in the ship.

There are three Advisers attached to Western Samoa. LCDR Chris Churcher who is the Maritime Surveillance Adviser is responsible for advising on the operation of the Patrol Boat and the operation of the National Surveillance Centre. CPOETC4 Jerry Thurbon is the Electrical Adviser and CPOMEA Peter Ward (RNZN) is the Marine Engineering Adviser.

NAFANUA has primarily been employed on surveillance tasks within the 200 nautical mile Exclusive Economic Zone (EEZ). This relatively small area of approximately 40,000 square miles allows the ship to conduct a lot of short patrols rather than fewer lengthy patrols. During her two year career NAFANUA has apprehended three vessels for alleged fishing within the EEZ. The ship operates from a number of places around the coasts of both of the main islands, Upolu and Savaii. Other operations include charter work for the Tokelau Affairs Office, towing jobs and laying aggregating devices for the Fisheries Department.

At the beginning of February 1990 Tropical Cyclone Ofa hit the Samoan Islands. NAFANUA was manned continuously for 48 hours during the height of the Cyclone remaining within the harbour area. The ships had been unable to clear the harbour for the lack of accurate weather information. After the cyclone had passed the NAFANUA was the only vessel left in Western Samoa that was capable of inter-island work. The ship was used extensively in ferrying people between the islands of Upolu and Savaii. During these ferry operations the ship grounded and damaged both

propellers. Once the emergency requirements were over the ship was shipped in Pago Pago, American Samoa.

On the return passage after the repairs the Western Samoa Shipping Corporation Vessel 'Tausala Salafi' was found adrift off the eastern end of Upolu. The barge had been adrift for about three weeks since the Cyclone. The barge has subsequently been returned to service.

Unfortunately the ship grounded in Apia Harbour about one month later needing the ship to return to Pago Pago for more repairs. By mid-May 1990 the ship was back in service. Since that time the ship has been employed on fisheries surveillance tasks, Search and Rescue operations and a number of short duration charter operations. These include the laying of a Wave/swell measuring buoy for the United Nations Development Program. In December 1990 the ship undertook her first visit outside of the Samoas when the Western Samoa Police Band was transported to Tonga for the Tongan King's Silver Jubilee.

The ship has functioned well since being in Western Samoa although the Cyclone affected all aspects of the Samoan economy putting limitations on the Patrol Boat over the last financial year. The effects of the Cyclone are still being felt in the economy and may remain for some years.

"THE NAVY"

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Navy League/NRC News

HAWAII 1990

Forty-three NRC personnel including officers, instructors and cadets (male and female) departed Brisbane on 18th September arriving back home on the 30th. The following account of our overseas training venture has been written by one of our female cadets 16 years old LS Lesley McCauley.



After a few hours stopover in Sydney, which included a visit to HMAS Watson, we arrived in Honolulu at 0530, where shortly afterwards the Executive Director of the local US Navy League and three US Navy personnel complete with buses arrived and took us quite some distance from downtown Honolulu to the Barbers Point Naval Air Station where we were to be accommodated during our stay.

This major naval air station supports 29 tenant commands and aircraft vary from P-3s to helos. The base is home to some 14,700 military personnel, their dependents and civilian employees. During our stay we inspected several operational squadrons, "climbing through" their planes, Control Tower and Operations plus some of their

maintenance facilities.

On the base we had all the comforts and services of a local community such as medical/dental facility, a major department store (The Navy Exchange), a Commissary, a McDonald's and a Pizza Hut, and numerous recreational facilities such as Gym/Fitness Centre, two on-base swimming pools, beach and beach cottages.

Our first outing was a day trip to the Arizona Memorial and Visitor Centre and Bowfin Park. The Arizona Memorial complex comprises the structure spanning the sunken battleship USS Arizona and the Visitor Centre which includes a museum and picture theatre which shows a film of the Japanese bombing of Pearl Harbour in 1941.

We then visited the Bowfin Memorial

Park, also within the Pearl Harbour Naval Base. This area is maintained as a memorial to the 52 US submarines and 3,505 submariners who were "lost" during World War II. We saw submarine equipment, photographs and memorabilia and walked through an historic World War II submarine.

Our unit continued its training with tours around the Cruiser/Destroyer base at Pearl Harbour, ship visits to USS Coronado (AGF 11 the 7th Fleet Flagship), a ship of the Japanese Training Squadron (visitors at the same time), witnessed US sailors undergoing fire-fighting training, etc., visited their stores and maintenance areas and lunched with them in their messes.

During our stay we also made visits, courtesy of the US Navy buses, to the



TS GAYUNDAH ship's company at the Barbers Point Naval Air Station

NAVY LEAGUE NRC
NEWS continued

Submarines Base (restricted photography area), Marine Corps Base, Coast Guard Air Station and the Coast Guard Sea Unit at Sand Island where we were all taken for an hour at sea in one of their patrol boats. Overall, we saw a lot of the US military's Hawaiian facilities including several service museums and memorials.

Even during free time our hosts kept us on the move around the island, visiting Waikiki Beach, Sunset Beach on the north side of the island, the Hard Rock Cafe and best of all, we went shopping.

We visited the Barbers Point US Sea Cadet Unit during their evening training parade and they hosted us to a most excellent and entertaining all day Saturday barbeque at the base's beach. Overall our trip to Hawaii was very enjoyable, great fun and most of all it was a terrific training experience.

On behalf of the cadets of T/S Gayundah I would like to thank:

1. The CO and staff of Barbers Point Naval Air Station for having us and providing the accommodations and transport;
2. The Directors of the Pearl harbour



Mixed choir singing Advance Australia Fair

Group of US Navy League for arranging the visit;

3. Our parents and the Unit's Parents Committee for financing the trip; and,

4. Our officers and instructors for organising such a fantastic ACT.

For your further information, a

complement of our cadets is presently in Singapore for the June school holidays, being hosted on this occasion by the Singapore National Cadet Corps (Sea).

J. STANTON
Lieutenant Commander NRC
Commanding Officer

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