THE NAVY

The Magazine of
THE
NAVY LEAGUE
OF AUSTRALIA

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THE NAVY

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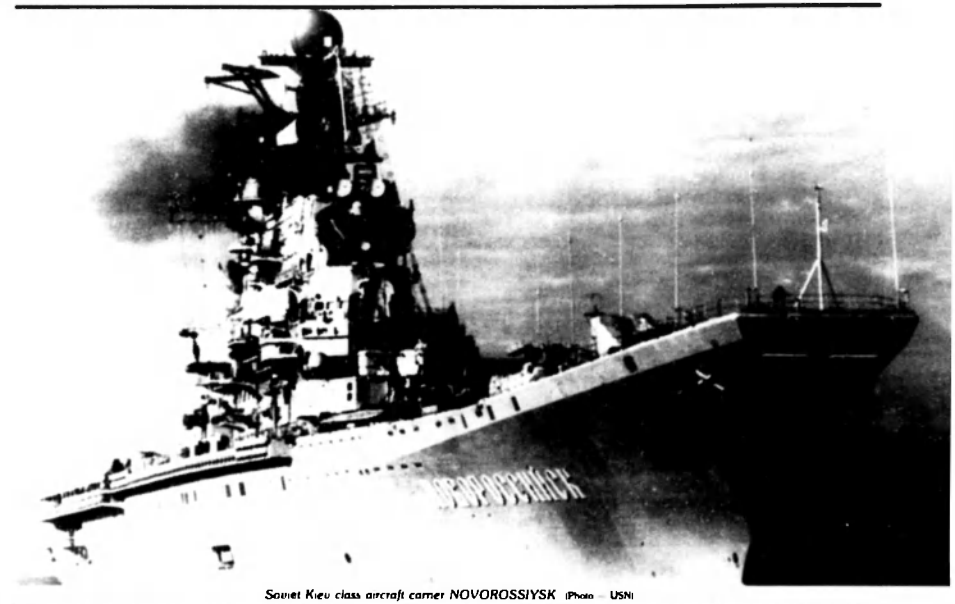

Soviet Kiev class aircraft carrier NOVOROSSIYSK (Photo – USN)

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Our Cover Photograph

HMAS DARWIN arriving in Darwin for the first time, 25th October, 1985.
(Photo – POPH Ron Berkhout)

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viewpoint

The Defence of Australia

THIS issue of THE NAVY includes a paper prepared by Vice Admiral Sir Richard Peek who retired from the Royal Australian Navy as Chief of Naval Staff in 1973 after a career in which he held a variety of senior appointments including Command of the Australian Fleet — when it really was a fleet.

Admiral Peek, now a successful pastoralist, has continued to take a keen interest in defence matters and has expressed his views on the current defence scene in a refreshingly uncomplicated way which anyone can understand.

Some of his views will be controversial, particularly those relating to the acquisition of the FA 18 aircraft, others including the training of guerilla-type land forces are likely to find wide acceptance in the general community. The questions the Admiral poses at the end of his paper are pertinent but one suspects they will be difficult to answer.

The point that Admiral Peek makes is that in the long run Australia's maritime capabilities — and this includes commercial activities and the ability to protect our trade — are all important and will largely determine the country's future.

DEADLINE
The deadline for the April, 1986 issue of The Navy is 1st FEBRUARY, 1986

For years lip-service has been paid to Australia's maritime vulnerability but precious little has been done to correct the glaring deficiencies. We are pleased to publish Admiral Peek's paper.

RAN's 75th Anniversary

TOGETHER with its supporters the RAN plans to celebrate its 75th birthday during 1986. The history of naval forces in Australia of course goes back much further than 10th July, 1911, when the prefix "Royal" was approved and a diverse collection of vessels and facilities, some inherited from the Colonial navies, given its present proud designation.

The fortunes of the RAN and of the naval forces which under various titles preceded it have been greatly influenced by public perceptions of danger at the time, inevitably resulting in periods of neglect followed by frantic and expensive efforts to make good deficiencies allowed to develop. The same could be said of the Armed Forces generally and the custom has not changed much over the years.

This is not a sensible way to ensure national security — it was not in the past as we learned at great cost in lives and material in war nor is it now. One wonders about the kind of fright Australians will require to shake the prevailing complacency and attract attention to their Armed Forces.

In the meantime the Navy League wishes the RAN "*Many Happy Returns*" and hopes smoother seas lie ahead.

GEOFFREY EVANS
Federal President
The Navy League of Australia

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The Defence of Australia

FOR the purpose of this paper it is assumed the people and government of Australia intend that Australia should be defended against external and internal threats to our sovereignty, our way of life, institutions and standard of living. It is also assumed that Australian forces will not be deployed on foreign soil except as part of a United Nations peace-keeping force.

This intention requires Australia to be defended against

- Nuclear threats or nuclear attack
- Internal disorder
- Bombing with conventional weapons
- Threats to, or attacks on our trade
- Mass illegal immigration
- Armed incursions
- Invasion

but only if any or all of these threats exist now or are likely to arise in the foreseeable future.

Most of these threats are conditioned by our geographical position with, apart from the proximity of Cape York to Papua New Guinea, hundreds of miles separating the Australian mainland from the nearest foreign land — and 1500 miles to our major centres of population stretching from Brisbane to Perth.

In the comments which follow I discuss the potential threats listed, without elaboration, to examine whether or not they are genuine threats.

By Vice Admiral
Sir RICHARD PEEK,
KBE., CB, DSC., RAN (Rtd)

Nuclear threats or nuclear attack

Australia is vulnerable to this threat because of the concentration of our population in a small number of major cities and possibly because of the presence of a few Allied defence installations. We can only be so threatened by a country possessing nuclear missiles. Delivery of nuclear weapons by aircraft is not a cost-effective option. The countries currently capable of such missile delivery are the USA, USSR, China, and perhaps the United Kingdom and France with submarine-launched missiles. There seems little likelihood of any other country joining this group.

Even if the "star wars" programmes of the USA and the USSR prove to be effective the cost of such defence systems is clearly beyond Australia's capability.

It follows that the only available way to try to protect ourselves against this threat is to rely on the deterrent power of one of these five countries. The presence on our soil of defence installations belonging to our protecting ally is the insurance premium we have to pay for such protection as deterrence provides.

Internal disorder

Internal disorder appears to be increasing throughout the world and it must be considered a potential threat. It is noted that most Western countries have accepted the need for military forces to assist the police. There is always the risk the Military might come to regard itself as an alternative government.

Bombing with conventional weapons

All recent experience including World War II, Korea, Vietnam, Afghanistan and Iran/Iraq has shown that conventional aerial weapons used against land targets, whether civilian, military or industrial, are ineffective in determining the outcome of the war. The use of missiles to deliver conventional weapons against land targets is equally ineffective and very costly.

In addition, only sparsely populated areas of Australia, a not-attractive target, are within range of foreign land-based aircraft. It is also noted that nowhere over Australia can foreign based and controlled air-superiority fighters be deployed.

If the highly unlikely threat of attack by conventionally armed aircraft, including fighters, is considered to exist, it can come only from seaborne aircraft platforms. The only countries possessing such ships with the sophistication to be considered seriously are the USA and the USSR.

It is noted that our government seems to have decided that seaborne aircraft platforms are vulnerable to land-based maritime aircraft. Theory rather than the actual loss of any carriers in combat situations (e.g. Korea, Vietnam) appears to have led to this decision.

Threats to, or attacks on trade

Australia relies heavily on seaborne trade for both imports and exports to sustain the economy and standard of living. We are therefore vulnerable to threats and to actual attacks on the shipping carrying this trade. Due largely to the industrial strife that has plagued our merchant shipping industry over a period of many years, we have literally priced ourselves out of the market and most of our trade is carried in foreign shipping.

It is not hard to imagine a situation where a country or countries wishing to impose their will on Australia could try to do so by threats to, or action against, our overseas trade. The reaction of overseas shipowners in such a situation is debatable.

Action could take place in areas remote from Australia, e.g. the Persian Gulf, as well as by clandestine mining of the approaches to our ports and submarine attacks in focal areas.

Mass illegal immigration

This may well be the greatest long-term threat to Australian sovereignty and one that is unlikely to be solved by military means.

Armed incursions

It would be possible for any one of several countries to land minor military forces on our coast, particularly in the northern parts of the country. A force of Company-size with hand held weapons could perhaps be landed covertly; such a force without logistic support could be dealt with by properly trained, led and equipped Reserve Army units in the area of the landing.

A larger force of say battalion strength with support arms would require so much shipping both for the initial landing and re-supply, that its transit to our coast would be detected hundreds of miles out to sea. Once detached it would be vulnerable to our maritime forces.

Given adequate intelligence and adequate maritime forces armed incursions other than small covert landings do not seem to pose a threat.

It may be argued that there is a potential threat from armed incursions or even invasion troops carried by enemy aircraft. To land even a battalion with support arms and initial supplies would require a large number of aircraft and these in turn would require a major aerodrome on which to land. Such aerodromes are not numerous and surely could be defended by passive means, e.g. trucks across the runways, or by the Reserve units postulated above.

Invasion

The potential to mount an invasion of Australia, if it exists at all, lies only with the superpowers and even they would first have to establish a bridgehead close to Australia. Suggestions that a superpower could launch an invasion by using another nation as a surrogate do not warrant analysis.

The invasions during World War II demonstrated the enormous resources required even when the Allies had almost complete control of the maritime environment.

Adequate Australian maritime forces could defeat an invasion force before it landed. If an invasion force was ever established ashore (and this would mean the invader controlled the maritime environment) the Australian population is not large enought to repel it even if the whole country was mobilised. Our only means of defence would be the use of guerilla forces — which have proved so successful in recent years in a number of countries — the core of such forces being the Reserve military forces.

Deterrence

Deterrence, by military force in being, is often argued as a means of preventing hostile activities against Australia. Assuming we are not prepared to join the nuclear missile club, acknowledging the demonstrated ineffectiveness of conventional bombs against land targets and that we have insufficient manpower and resources to threaten to invade an adversary nation, our only credible deterrent is a strong maritime force.

The question also arrises as to how to defend our island territories, stretching from Norfolk to Macquarie to Heard to the Cocos Islands, should a threat to them arise. It seems clear they could only be defended by naval forces helped in some cases by other maritime elements.

There are those who believe that in addition to defending Australia and its Territories, we have a wider responsibility to assist the free world to defend common standards. Apart from this moral responsibility there is also the insurance aspect to consider. If we wish to accept these responsibilities and do not wish to base military forces on foreign soil, the only way we can pay our premium is by possessing and using naval forces.

It seems to follow from these broad comments that our defence strategy should be based overwhelmingly on maritime forces. The present concept of a core force with the greater portion of defence spending on other than maritime forces, with a little bit of everything for all arms of the Defence Force, does not seem logical, wastes money and is certainly not effective.

Without trying to enumerate the type of maritime equipment required it is clear that any threat to Australia must come from the oceans around us and the air above them. Given the correct decisions any likely threat could be countered almost completely by maritime forces.

The same broad comments also indicate the need for a critical look at the present structure and infrastructure of the Defence Force and the defence organisation generally.

- Why is it that the huge and growing defence organisation in Canberra cannot produce logical advice to the Government?
- Why has there been such and explosion of people, uniformed and civilian, since the abolition of the three Service Ministries?
- Are there any valid arguments in favour of a divisional structure for the Army, and for tanks, artillery, ground-to-air missiles and the like?
- Is there really a requirement for huge areas of pastoral land for training purposes when any landing must be on the seaboard where the terrain is completely different?
- Why does Australia need such large training areas when European countries, actually exposed to the threat of land warfare, do not have them?
- Would we not be better served by having well trained, equipped and led local Reserve forces?
- Why is there such emphasis on air-superiority fighters and all the consequential infrastructure when no air-superiority threat can exist?
- Why are not all our offensive aircraft armed with air-to-sea and sub-surface weapons and the crews trained in their use?

and finally,

- Do we wish to accept any responsibility to the free world by providing naval forces for our common defence?

SOVIET NAVAL ATTACK GROUP

HMAS CANBERRA shadowing FRUNZE

The most powerful Soviet surface attack group to have yet entered Pacific waters was recently shadowed by the Royal Australian Navy guided missile frigate HMAS CANBERRA south of Vietnam in the South China Sea.

Leading the Soviet task group was the recently commissioned 25,000 tonne nuclear powered guided missile cruiser FRUNZE, the most modern of two Kirov-class cruisers built by the Russians, and the first to be deployed to the Pacific.

The Kirov-class are the largest warships, excluding aircraft carriers, to be built anywhere since World War Two. On the FRUNZE, besides its large and varied weapons fit which includes surface to surface, surface to air, and anti-submarine missiles, torpedoes and 100mm gun mounts, is a vast array of electronic sensors and equipment.

In company with the FRUNZE was the brand new Sovremennyy-class guided missile destroyer OSMOTRITEL'NYI of 7,800 tonnes, and an older Kashin class 4,600 tonne guided missile destroyer STROGII. A merchant tanker, the PAMYAT LENINA accompanied the task group from the Indian Ocean into the Malacca Strait.

HMAS CANBERRA, was participating in a three ship RAN task group deployment to South East Asia when she intercepted the Soviet battle group. The Australian frigate made the intercept north west of the Malacca Strait and then shadowed the Russian ships at close range.

HMAS CANBERRA was something of a David compared with the FRUNZE Goliath. The FRUNZE carries a total of about 200 missiles and a crew in excess of 900 while the RAN frigate displaces 3,600 tonnes, has a crew of about 190, and carries two guided missile systems and a much smaller calibre gun.

Opportunities for RAN units to closely observe major Soviet naval task groups are unusual. However, the guided missile frigate, with long endurance and a Squirrel helicopter is well suited for the task.

On completion of her surveillance task, HMAS CANBERRA left the Soviet Task Group and proceeded to Hong Kong for a routine operational visit.

The RAN frigate, HMAS CANBERRA (rear) shadows the new Russian nuclear powered cruiser "FRUNZE" as it heads through the China Sea to the Pacific Ocean. The 25,000 tonne FRUNZE is armed with about 200 missiles plus 100mm guns and torpedoes.

Patrol Boat Order to be Increased

AITAPE, one of the PNG Attack class patrol boats to be replaced by the Pacific Patrol Boat.

An order for four additional Pacific Patrol Boats was announced on 31 October by the Minister for Defence. He said *"Australian Shipbuilding Industries (ASI) of Jervoise Bay, WA now has a contract for seven boats valued at $19.2m in June 1985 prices."*

The decision to increase the number of boats to be built followed formal confirmation from Papua New Guinea that it wished to take delivery of four of the vessels.

The Papua New Guinea Prime Minister, Mr Somare, foreshadowed this decision after discussions with the Australian Prime Minister, Mr Hawke, in Port Moresby on 16 September.

The other three boats are intended for Western Samoa, Vanuatu and the Solomon Islands.

The aim of the project was to assist Pacific countries establish or maintain effective national maritime surveillance capabilities in their large maritime resource zones.

"The ASI 315 is a multi-purpose vessel designed to undertake a number of tasks in addition to its primary fisheries surveillance role, including disaster relief, search and rescue, medical evacuation and personnel transport tasks.

While the new Patrol Boats are not intended as replacements for the Attack Class vessels presently in service with the PNGDF, they provide improved capabilities compared with the older vessels including significantly greater range and endurance, better sea-keeping capabilities, more internal space and a water making capability.

The vessels to be provided to Papua New Guinea would be equipped with 20mm guns and 50 calibre machine guns under the Defence Co-operation Programme to meet PNG's special needs.

Provision has also been made in the contract with ASI to increase the number of vessels should other South Pacific countries wish to join the project later.

The total project cost for the seven vessels is $32.2m in June 1985 prices including RAN training in Australia, RAN advisory personnel posted to participating countries and Departmental management costs.

The Pacific Patrol Boats will be 31.5 metres long and displace 165 tonnes. They are a multi-purpose boat with a long range patrolling capability to support their primary role of fisheries surveillance.

They also have capabilities for disaster relief, search and rescue, medevac and personnel transport. The Pacific Patrol Boats will have a range of 2,500 to 3,000 nautical miles — more than 1,000 nm more than the Attack class.

It's more spacious than the Attack, being 2 metres wider and has overall a better sea-keeping capability. It will have a sturdy steel hull, or an average thickness of 5mm which is thicker than Attack class hulls.

The Pacific Patrol Boat also has a water making capability (3,000 litres a day) where the Attack class has none. It is designed to take 20mm cannon and 50 calibre machine guns, and will have a specially designed magazine to store ammunition for these weapons.

EMPLOYMENT STATISTICS AUGUST 1985

The total strength of the Australian Defence Force (excluding Reservists) was 70,748 at the end of August 1985, compared with 70,867 at the end of July 1985, the Minister for Defence, Mr Kim Beazley, has announced.

The strength of the Individual Services were: Navy 15,787; Army 32,225; Air Force 22,736.

Mr Beazley said that enlistments for the month totalled 473 comprising 347 male and 126 female enlistments.

RESERVE FORCES

At the end of August 1985, Reserve Forces with training obligations totalled 26,216.

PACIFIC PATROL BOAT CONTRACT SIGNED

The Minister for Defence, Mr Beazley, has announced the signing of a contract for the construction of a new class of patrol boats which Australia will provide to South Pacific nations as part of the Defence Co-operation Programme.

The Department of Defence and Australian Shipbuilding Industries of Jervoise Bay in Western Australia have signed the $8.4m (in November 1984 prices) contract for three patrol boats, with an option for further boats.

Mr Beazley said the ASI vessel, to be known as "Pacific Patrol Boat", would assist the island States to establish or maintain effective national maritime surveillance and enforcement capabilities.

"The boats are intended for Western Samoa, Vanuatu and Solomon Islands," Mr Beazley said.

"This project will make a significant contribution to development in the region by giving the island States the ability to monitor activities in their extensive maritime resource zones."

FIVE POWER DEFENCE EXERCISE

RAAF aircraft and RAN ships participated in a major air defence exercise held in the Malaysia/Singapore area during November 5/8 under the terms of the Five Power Defence Arrangements.

Other units from Malaysia, Singapore and New Zealand which took part in the exercise were early warning radar stations, fighter aircraft, attack aircraft, surface to air missiles, helicopters and anti-aircraft artillery together with ships of the Royal Malaysian Navy.

A Royal Australian Navy task group, comprising HMA Ships Stalwart, Canberra and Perth, participated as early warning pickets.

A detachment of eight Royal New Zealand Air Force A4K Skyhawks operating from Air Base Butterworth acted as enemy forces. The defending fighter force comprised F5E Tigers of the Royal Malaysian Air Force and the Republic of Singapore Air Force together with Mirages of the RAAF.

STUDY OF BASING OF AUSTRALIAN FLEET

The Defence Minister, Kim Beazley, confirmed on 3 October that the New South Wales Government would be approached by the Federal Government regarding co-operation in a study of a proposal to move some Australian naval fleet facilities, excluding Garden Island Dockyard, from Sydney.

"The fleet has had an historic association with Sydney, with origins going back to its first basing in Port Jackson in 1788. Many of the Harbour's historic landmarks derive from naval activities," Mr Beazley said. "However, the future growth of Sydney is expected to impose increasing constraints on the Navy's operations. The bases for its Fleet, at Garden Island, Submarines at HMAS Platypus in Neutral Bay, and Mine Countermeasures Force and Patrol Boats at HMAS Waterhen in Balls Head Bay, are now confined to small areas of the foreshores and are hemmed in by urban development.

"The Jervis Bay area was originally intended as the main Fleet Base and extensive areas of land have long been reserved there for defence purposes. As proposals are now being developed by the Navy for further investment in some of its Sydney bases to enable them to perform their functions properly it is timely to review their long term future.

"Moving the bases out of Sydney might be viewed as a response to changes over the last 200 years — in the character of the Fleet as well as Sydney itself.

"With gradual development of the Navy's facilities in Sydney and their supporting infrastructure, it has become more and more difficult for Governments to consider how the facilities might be moved from Sydney. Both the NSW and the Federal Governments are no longer prepared to ignore the problem.

"The study will focus on the scope for establishing a base for the fleet, submarines, mine countermeasures vessels and patrol boats at Jervis Bay.

"It will also examine options for increasing Navy's presence in WA, at HMAS Stirling.

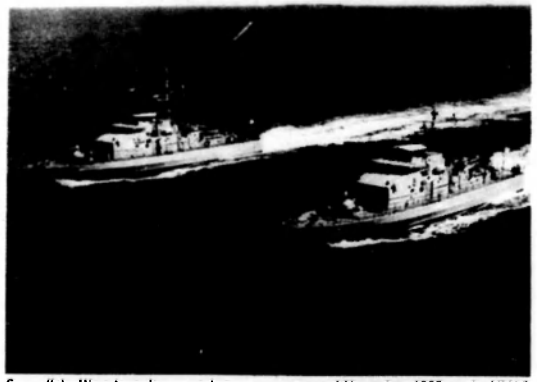
"Other issues to be canvassed include the environmental, financial and social impacts of the proposal on the local community.

"There is also the question of disruption to the lives of service personnel. About 11,000 military people and dependents — the equivalent to about a quarter of the total population of the Jervis Bay region — are directly associated with the bases in Sydney.

"If, after the study, the Government decides to move the bases, this could occur only progressively because of the heavy investment involved, and will need to take account of other Government priorities. We must also consider the capacity of affected regions to adjust to the changes.

"I emphasise that any decisions on a move, in principle and on its major stages, will be preceeded by an environmental impact statement and other processes normally accorded such proposals."

FREMANTLE TWINS



Seen off the West Australian coast during an exercise on 4 November, 1985 are the HMAS Stirling-based Fremantle class patrol boats HMAS BUNBURY (217) and HMAS GERALDTON (213).

Photo: LSPH E. Pitman, RAN

Australia gains 150 extra people through FFG project

FFGs underway.

Four new ships, 50 new wives and 100 new babies. That is the net gain for Australia in the $1,000m guided missile frigate project now nearing its end with the arrival from the United States of HMAS Darwin.

Since the first crew travelled to Seattle to commission HMAS ADELAIDE, in 1980, a total of almost 800 RAN personnel, many accompanied by wives and families, have set up temporary residence in the United States while their ships have undergone extensive trials and tests of the myriad of high technology equipment used in modern fighting ships.

During this time 50 US brides became new Australians, and 100 birth certificates on young Australians show that they also have the entitlement to US citizenship by virtue of the entry — place of birth: United States of America.

Although HMAS DARWIN, which was commissioned into the RAN in May last year, has just arrived home, the families returned to Australia in August. Since then HMAS DARWIN, in company with the guided missile destroyer HMAS HOBART, and the submarine HMAS ONSLOW, has participated in the 75th Anniversary celebrations of the Canadian Navy, and in a major maritime exercise with Canadian and United States naval units.

NAVY TO REQUEST TENDERS FOR SEAHAWK FLIGHT SIMULATOR

Seahawk helicopter.

Tenders are being called for a combined Flight Simulator and Weapon System Trainer for the RAN's new Seahawk Helicopter.

The new facility would be used to train the crews of the eight Seahawks which will operate from the RAN's guided missile frigates. The facility would provide both pilot and crew training on a single moving platform. A visual system would be incorporated to allow pilots to practice dusk and night landings in high sea states without risk.

The new simulator will enable aircrews to "exercise" with simulated surface ships and submarines and to practice dropping torpedoes and sonobuoys without the expense of taking real ships to sea or expending real weapons and stores. The aircrew will also be able to practice emergency procedures without endangering their aircraft.

The simulator will be manned by civilian engineers, and will require an extension to the existing helicopter simulator complex at Nowra.

It is planned to place a contract by mid-1986, with delivery scheduled for mid to late 1988.

New Sonar Test Tank

A unique advanced underwater acoustic test facility which will help keep Australia abreast of the latest anti-submarine warfare technology was opened in Sydney on 18 October.

The new $750,000 Sonar Testing Facility at Plessey Pacific Pty Ltd's Meadowbank site will enable high standard testing of components of underwater radars.

The new test tank is designed for use in an acoustically noisy environment and yet is capable of accurate and repeatable measurements of underwater sensor products such as the Mulloka surface ship active sonar and the Barra passive sonobuoy — two world class Australian sonar systems.

Plessey Pacific has successfully produced hydrophones for the RAAF's Barra sonobuoy and is now manufacturing the complete Mulloka sonar detection array for the Royal Australian Navy's FFG-7 Frigates.

In addition, the company has established a capability to manufacture transducers and hydrophones for sonar equipment on the Navy's Oberon-class submarines.

The new facility, which is dominated by a huge 8.7 metre high, 7.6 metre diameter test tank containing 398,000 litres of fresh water, also includes an electroacoustics laboratory and ancillary equipment.

To extract acoustic information from the sea requires sophisticated sensor systems which can recognise the "signature" of the selected source from the natural background noises and quickly fix its location.

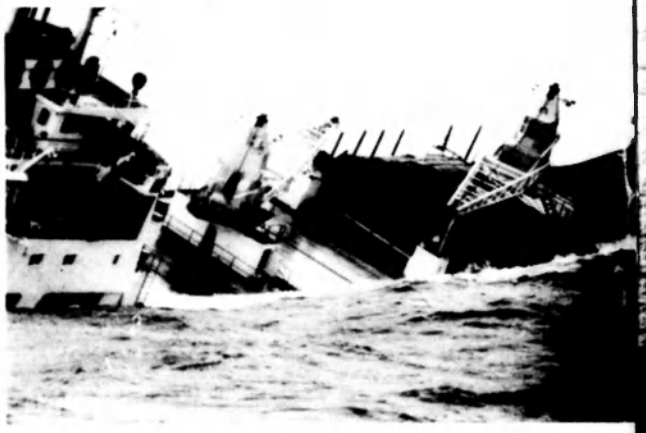
The sonars search for a wide variety of frequencies, from high frequencies associated with high speed weapons to sub-audible frequencies generated by machinery vibrations.

The active sonar generates an acoustic signal and receives the reflections from surrounding objects. The passive sonobuoy listens to all surrounding noise generators.

Visitor to Sydney, USS BROOKE, October, 1985.

PERTH RESCUES CREW OF SINKING SHIP

HMAS PERTH went to the rescue of the crew of the Singaporean MV HOELIEN on 13 October. PERTH was engaged in the Air Defence phase of Exercise Coral Sea, off Newcastle, when the HOELIEN was first sighted. The 4000 ton HOELIEN was steering erratically and commencing to list when encountered. Radio contact was made with the vessel's master who reported that his cargo had shifted in rough weather, causing his problems, and requested that PERTH stand by him.



Weather conditions were bad with a strong southerly wind and high seas making access to the port of Newcastle impossible. The master of HOELIEN was advised by Sydney Marine that the port of Newcastle was closed and to make for Sydney. He was unable to comply and attempted to reach shallower water off Newcastle to anchor. PERTH was released from the exercise to standby HOELIEN during the passage, which was a relief after the tedium of Air Defence with the RAAF.

At 1440 more of the HOELIEN's deck cargo shifted and the ship started to list further. When this occurred the master of the HOELIEN called a MAYDAY and said he intended to abandon ship. Commander Sloper manoeuvred PERTH close to the stricken vessel to provide a lee, and a liferaft was drifted down to the HOELIEN for the crew. With the assistance of PERTH's gemini crew (LSUC Bowes and LSQMG Watson) the 24 people aboard HOELIEN were successfully transferred to the liferaft and then to the Newcastle police launch Doyle which took them ashore. During the rescue HMAS ADELAIDE and several RAAF SAR helicopters stood by but were not required.

Once the HOELIEN's crew were safe PERTH's stalwart boarding party of LSRP Reed, LSRP O'Connor, ABQMG Kotaras, LSFC Connew, ABRP Gray, ABUC O'Connor, LSQMG Woods and LSQMG Hampton were put onboard the derelict vessel and a tow was passed to pull HOELIEN clear of the ships anchored in Newcastle Roadstead. Despite the rough conditions and proximity to the anchored merchant ships the evolution was successful and PERTH began towing HOELIEN clear at 1700.

Unfortunately, the list and instability of HOELIEN indicated that she was still in danger of sinking and PERTH could only make 2 knots. PERTH's boarding party were recovered for their own safety, and the HOELIEN was successfully towed south overnight.

Early the next morning the tug WONGA joined and PERTH's intrepid boarding party made another visit to the now dangerously listing HOELIEN to secure the WONGA's tow and slip PERTH's tow. This hazardous evolution was completed at 0739, the boarding party was recovered and WONGA commenced to tow HOELIEN stern first to Sydney.

WONGA's towing method was not as successful as PERTH's and HOELIEN took a lot of water, eventually rolling on her starboard beam and sinking stern first in 80 fathoms of water 30 miles northeast of Sydney.

Compiled by NAVAL ROUNDUP "GAYUNDAH"

HELICOPTER TRAINER DEAL

The Minister for Defence, Kim Beazley, has welcomed the awarding of a A$6 million contract to a Melbourne-based aerospace industry firm to design and build two helicopter trainers for the United States Navy.

The company – Commonwealth Aircraft Corporation – was awarded the contract as part of a long term industry participation programme with Australian aerospace companies following the purchase this year of eight Sikorsky Seahawk helicopters by the RAN. Maintenance trainers are used to familiarise flight and ground personnel with aircraft systems.

Under the agreement, CAC will design and build a composite maintenance trainer and an automatic flight control system trainer for the MH-53E Sea Dragon minesweeping helicopter.

The deal demonstrates how designated work and offsets can achieve very substantial results for Australian industry when primary items of defence equipment are purchased overseas.

The Sikorsky Australian industry programme brings employment and skills in significant new technologies for Australia. Recent announcements include agreements for helicopter intermediate and tail rotor transmissions, and magnesium, steel and aluminium helicopter castings. Planned orders include structural parts of composite materials from the Government Aircraft Factories in Melbourne.

NEW DEGAUSSING RANGE

Approval has been given for the upgrading of the RAN's degaussing range used to monitor the magnetic "signature" of mine warfare vessels. The range is situated near Shark Island in Sydney Harbour.

The equipment is designed specially for ships used for hunting or sweeping sea mines. To reduce the risk to these ships from magnetic mines it is essential to monitor the magnetic field they create and ensure that it remains as low as possible.

Near range equipment, using the latest sensor technology capable of measuring very low magnetic signatures, will be laid on the harbour bed.

It will be used to test the new Australian-designed inshore minehunters. Two of these ships, which have fibreglass hulls to reduce their magnetic field, are being built at Tomago, near Newcastle, for the RAN.

The range will be installed by Amalgamated Wireless (Australasia) in early 1987 in time for the trials of the first of the RAN's new inshore minehunters, HMAS RUSHCUTTER.

Left: —
HMAS SUPPLY returns to Sydney for the last time 11 November, 1985

Above —
HMAS DARWIN, arriving Sydney for the first time, passes HMAS YARRA, arriving Sydney on the last occasion prior to paying off on 22nd November
(Photo — LSPH Gary Whitney)

Right: —
HMAS ASSAIL sails from Sydney for the last time, 1st October, 1985

The Partizan Navy

by MICHAEL BURGESS

"Tito's Navy" was a remarkable force considering the vessels at its disposal and the conditions under which it had to function.

Begun in December 1942 with the fishing vessels PARTIZAN and PIONIR, it grew rapidly until by mid 1944 it mustered enough vessels to rate classification into the following categories: NB (armed ships), PC (patrol boats), MC (motor boats), B (launches) and BB (hospital ships). In all some 90 vessels served as warships while a further 200 were used as transports. The largest were of about 200 tons.

Mostly armed initially with captured Italian weapons they were later equipped with British and American arms. Most had gun platforms and command posts protected by sandbags and improvised steel sheets.

When Italy fell, Germany tried to take command of the Adriatic and equipped and armed six vessels of around 200 tons for that purpose. However, "Tito's Navy" proved the more effective and actually captured one of the six and recommissioned it to become the largest Partisan vessel in service. Later in the war other vessels were transferred from the Allies and a number defected from the Croatian Navy, mostly equipped with ex-Royal Yugoslav naval vessels.

Pictured are three patrol craft from "Tito's Navy".

NAVY & INDUSTRY

EVEN MORE TO COME

by A. W. ORAZEBROOK

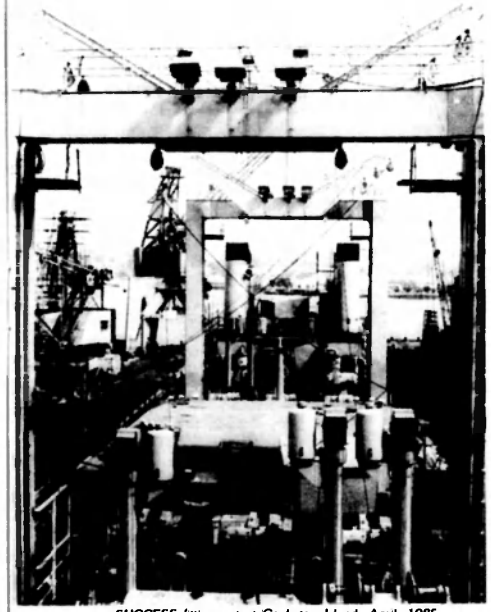
THE completion of HMAS DARWIN, the fourth and last FFG7 Class ship to be built in the United States for the RAN, marks a milestone in the history of the RAN.

All ships and craft now building, ordered, planned or proposed officially for the RAN are to be locally built.

This very important fact, which has passed largely unnoticed in the general media, has a number of key and very beneficial implications for Navy and Australia as a whole.

Local construction has these major benefits:

- The more of our ships and aircraft that are built in Australia, the greater is our independence of action. Foreign powers will be less able to influence our freedom to act as we consider necessary to defend the country.
- The greater the involvement of Australian industry in naval ship building, the greater is the Navy's security of supply or spare parts.
- Building ships locally is an essential pre-requisite for the skills and equipment required for the repair of battle or other damage to Navy's ships.
- Building and fitting out ships in Australia has major technology and investment "spin off" benefits for Australian industry as a whole.
- Building ships locally improves employment and saves foreign exchange.



SUCCESS fitting out at Cockatoo Island, April, 1985
(Photo: ABPH Kevin Appl)

USN and RAN FFGs under construction, including SYDNEY (03) (centre), and DARWIN (right).

- The Australian economy retains a much higher percentage of the cost of locally built ships than can be retained for overseas built ships.
- Provided sufficient ships are built, it is cheaper to build ships at home than overseas.

The first two points are self evident. Equipment that requires spare parts from overseas may have to remain unserviceable whilst Navy waits for spares to arrive. These spare parts may be delayed for several reasons, including:

- The supplying country may disagree politically with Australia's actions and restrict the supply of spare parts to force us to desist or give in. This was tried by Sweden during the Vietnam War.
- The supplying country may need the parts for their own Navy. It is not widely known that the Falklands War forced Britain to restrict supply of spare parts for Oberon submarines belonging to overseas navies.
- Overseas sourcing of spare parts imposes a continuing drain on Australia's foreign exchange.

Turning to the third main point in favour of local building of ships for Navy, it is the accepted view of naval architects and other shipbuilding professionals that shipbuilding expertise is vital to undertake effective repairs of ships suffering from battle damage.

Before considering the remaining points, it is appropriate to summarise recent current and proposed naval shipbuilding projects. To provide a comparison, two aircraft projects, one for Navy and one for the RAAF, have been included.

PROJECT	APPROX STARTING DATE	PROJECT COST (A$ million)	LOCAL CONTENT (%)
Locally built			
Fremantles	1977	140	75
Success (AOR)	1979	204	77
New submarines	1985	2600	60
Pacific patrol boat	1985	40	70min.
FFGs 05 & 06 at Willdock	1983	810	50
New surface combatant (6 ships)	1989	4000	70
Minehunter prototypes	1980	88	60-65
Overseas built			
SH70 helicopters	1985	244	33
FA18	1981	3396	20 without offsets 29 with offsets

It must be noted that the purpose of this table is to compare local contents. Comparisons between project costs for projects implemented over differing time spans is misleading because of the effect of inflation. For example, the underway replenishment ship (AOR) project, due to complete in 1986, appeared less expensive that it really is

Fremantles under construction at North Queensland Engineers & Agents, March, 1980 (Photo — LEUT Joe Strachan)

compared with the new submarine project for which the heavy expenditure will not start until the late 1980s.

It is clear that overseas construction of naval ships and aircraft achieves a much higher dollar benefit to the Australian economy than does overseas construction. This assumes application of the local content assessment system imposed by the Departments of Treasury and Finance.

This, the current official Government, system is the subject of much debate. The current system's failure to recognise the economic reality of the "clawback" aspects — for example the tax paid to the Australian Government by employees of local shipbuilders — is under vigorous attack by leading economists from outside the Commonwealth Government.

"Clawback" is a very significant aspect. In the case of the new construction submarines, if the Clawback is taken into account, building the new submarines in Australia actually saves Australia hundreds of millions of dollars when compared with overseas construction.

On the other hand, the official Government method of calculating costs and benefits — ignoring the clawback benefits — shows that building the submarines overseas will cost Australia more than building them locally. The premium is not large — well within the limits set by Government policy as acceptable — but there is a premium.

The Defence Department's position on the clawback facts is realistic. Unless and until clawback benefits are credited to the Defence vote, these facts cannot be taken into account. An already chronically short Defence budget cannot afford to consider benefits for which the Defence Budget is not credited.

Nevertheless, our table demonstrates clearly that there are huge dollar benefits to Australian industry from defence equipment built overseas.

OFFSETS are arrangements whereby Australian industry makes parts for aircraft or ships, and sends them to the overseas building country for incorporate into the ships or aircraft. In some cases, for example the FA18, Australian made parts are being incorporated not only into our own FA18s but also into FA18s being built for the United States Navy.

The development of offset arrangements are one of the ways in which the Defence Department has improved its defence equipment acquisition expertise in recent years.

These improvements are another and very important aspect of local construction of ships for Navy.

During the ten year gap in Australian naval shipbuilding, both Defence and industry lost expertise badly. This applied much less in trade skills than in management skills and industrial relations.

The areas particularly badly affected were contract negotiation and preparation, project management and so on. These problems arose at least as much in the Defence Department as in industry.

As the successful Fremantle Class patrol boat project demonstrates, a great deal has been achieved in overcoming these problems.

Since the serious contract problems of the underway replenishment ship project were overcome, that much maligned project has proceeded very well.

It is these major improvements which have given rise to the much increased confidence, both in Navy and in free enterprise industry generally, that the "all Australian Build" new construction submarine project is not only viable but has excellent prospects of achieving a resounding success.

The one remaining area of reservation is industrial relations in general and Williamstown Dockyard's Australian Frigate Programme in particular.

Over Willdock, the grounds for concern are both industrial relations and the fact that, in spite of strong expert recommendations to the contrary, Willdock is still run on public service lines. Public service systems, the criticism runs, are designed for running non-profit making non-productive (in the material sense) departments. Public service systems are not optimised for maximising industrial productivity. Therefore, even the modified public service administrative systems still being applied at Willdock have little chance of success on the Australian Frigate Programme.

However, at this very early stage, the Australian Frigate Programme is going well and trade unions are adhering to their agreements.

THIS whole question of industrial relations is one of concern but it is one with major political involvement and thus outside the Navy League's normal areas of comment. Nevertheless, it must be observed that industrial relations records of different parts of Australia are one of the major debating points over the location of the assembly point for the new submarines.

For surface ships, the Australian Fngate Programme is a major testing point for Willdock. If Willdock performs on quality, cost and delivery of the new frigates, they will have excellent prospects for assembling the new surface combatants. If Willdock fails to perform, the new surface combatants will be built elsewhere.

Whether Willdock itself fails or succeeds, local construction offers Australian industry (and thus the Australian economy) far more than the other two services. Naval construction offers the Australian economy not only the billions of dollars of business but also the multiplier effects of the clawback benefits and major technology gains.

Aircraft construction does not, cannot and will not offer the Australian economy benefits on anything approaching the scale of those that are being obtained from naval shipbuilding.

This is not because defence aircraft projects are cheaper of less technological than naval shipbuilding projects. In so far as they are comparable, defence aircraft projects are as complex and expensive as naval shipbuilding projects.

The fact is that Australian Defence Force aircraft requirements of individual types of aircraft are too small to achieve a viable economy of scale for local construction.

This does not apply to naval shipbuilding, where the graph of unit costs levels off at a much earlier stage than with aircraft. For new escorts for example, this point is reached at five ships.

Compared with this, local construction of aircraft was not adjudged viable for Navy's FFG Helicopter project (eight aircraft), the second P3C order (ten aircraft) or the FA18 (seventy five aircraft) although at that stage there is a very considerable level of local assembly work.

SUCCESS, April, 1985 (Photo — ABPH Kevin Appl)

THE CHERBOURG BOATS

by
Maj (Res) LOUIS WILLIAMS

IN the early years, the Israel Navy came as late third in the order of priorities for procurement — after the Air Force and the ground forces. During its first two decades, the Navy operated with converted immigrant ships and a handful of World War II surplus vessels.

The tasks were immense for a small force. The available ships were few and demanded large crews, so that the Navy was hard put to be everywhere it needed to be, with the small manpower at its disposal. It took some years for the Navy to convince the General Staff that the protection of the coastline, in co-ordination with the Air Force, was not its only task. Israel's neighbours would obviously acquire Soviet-made missile boats and the other trappings of modern navies. The answer had to lie in small boats with massive fire power, capable of coping with any kind of threat or mission — and fast enough to be deployed over large areas of sea or concentrated into a powerful striking force at short notice. The conception of the multi-purpose missile boat — as opposed to the single-purpose Soviet craft — took shape in the minds of Israel's naval planners.

In the early 1960s, the IDF General Staff was ready to humour the Navy, which hoped to be able to purchase a platform for weapon systems to be designed in Israel (the mainstay of which would be the Gabriel missile) and supported by systems existing in the world market. But the conception of a boat such as the Israel Navy needed did not exist anywhere in the world. A survey of available knowhow that could be adapted to the Israeli conception led to one conclusion — West Germany. The first contacts with the Ministry of Defense of the Federal Republic were made in March, 1963, but the problems seemed insurmountable: secrecy, initial doubts about the feasibility, non-existent technology, and budgetary concerns. The solutions were found, the Germans had become wildly enthusiastic, and the production was about to begin when, in early 1965, the Federal Republic found itself in a diplomatic crisis with the Arab world. Arm sales to Israel were discontinued, and the production plans for the ships were frozen.

At the insistence of the Israel Navy, Germany accepted the proposition that the jointly-developed plans must be made available to another producer. Given the friendly climate of relations between Israel and France, Rear Admiral Mordechai (Moka) Limon, special envoy of the Ministry of Defense to Europe, was asked to investigate the possibility of building the boats in France. Moka approached the French Ministry of Defense, received a positive answer, and was put in contact with the French Navy, which recommended a Cherbourg shipyard as the best suited to perform the job. The owner had no previous experience in building vessels of the required type, but was extremely willing to learn and to master the new technologies — a willingness that would in later years put France in the forefront of manufacturers of missile ships, and indeed encourage the country to develop its own sea-to-sea missile, the Exocet. A contract was signed in May, 1965, for the delivery of six boats, with an option for an additional six. This in itself was a considerable act of faith in an as yet untried concept.

THE EMBARGO

In June 1967, the government of General Charles de Gaulle imposed an embargo on the delivery of arms to Israel, as a result of the General's conviction that she should not have fought the Six Day War against his advice. However, the embargo did not extend to spare parts, nor did it include the boats which were, after all, only being constructed in France from plans that originated elsewhere, and were to be supplied without any armament. The first five boats were supplied, and reached Israel without incident. Then, following a raid by Israeli paratroopers on Beirut Airport on December 28, 1968 (no casualties — only a few planes destroyed), de Gaulle declared a total embargo on all arms to Israel. The sixth boat was in Gibraltar en route to Israel. The seventh was in the French naval base in Cherbourg undergoing sea trials, and due to sail for Israel the following month.

Moka learned from a friend close to de Gaulle of the President's decision before the appropriate orders were issued to the French customs authorities. It was arranged that the order to the customs in Cherbourg would not arrive for 48 hours. Moka immediately called Israeli Lt Commander Tobak in Cherbourg and made him understand that the seventh boat had to sail immediately.

The following is the account of Commodore (Res) Hadar Kimchy who, in the dramatic months that followed, was the Commander of the missile boat squadron, including the vessels being constructed in Cherbourg:

A HASTY DEPARTURE

It was a Saturday. We had the one boat undergoing sea trails. The possibility of extension of the embargo had always hovered in the background, and we knew that we could encounter difficulties in taking the boat out. So we had kept her fueled up and with an adequate crew at all times. The moment we got the message that the embargo was to include the boats, we asked Cherbourg customs to come down to the yard and sign the necessary manifest on the grounds that "the weather was fair out at sea" (a rare occurrence in winter) and we intended to take the boat out.

A customs officer came aboard to fill in the required forms. It was a pure formality because this craft, like her sisters, was in a kind of administrative limbo. New ships, when launched, become subject to seaworthiness

Greyhounds of the Sea

regulations, insurance certification, and so on, all of which are the legitimate concern of port authorities. No civilian ship may put out to sea without satisfying the harbourmaster that both vessel and crew are insured. But warships need neither insurance nor seaworthiness papers.

All we needed as clearance was for the customs to record that the important component — for example, the engines from Germany — were "imported for re-export" so that the pending files could be exempted from duties. The official, motivated, as are all customs officers, by the desire to help his country's exports, promptly recorded all necessary details, and we were free to go. By the time that information of the embargo finally reached Cherbourg from Paris (after the weekend), we were already out at sea.

On previous occasions, we had consulted French naval meteorological services in Cherbourg, particularly since the Bay of Biscay crossing could be treacherous, and had taken ceremonious leave of the local naval commandant. We were, after all, guests in the naval anchorage, where we enjoyed logistic services that included space for our essential stores, the use of the naval barracks and canteens, and so on, but this time we couldn't take that risk.

At Gibraltar, I arranged with the Royal Navy to refuel not just the one boat that had arrived one week before, but both — and then I flew back to Cherbourg, confident that the sixth and seventh members of our precious flotilla were well on their way home.

A hot reception awaited me at Cherbourg. I was summoned to the office of the naval commandant and, in the presence of all his staff officers, was treated to a tirade of fluent French, the gist of which was that we had behaved in ungentlemanly fashion. True, there was nothing illegal in what we had done, but we must not assume that he did not fully understand that our hasty and unceremonious departure had been prompted by prior knowledge of the embargo decision. I asked him if we could discuss the matter in private. When his officers had departed, I asked him what he would have done in my place. He replied that, had he been out of uniform, he would gladly have told me how much he would have enjoyed being in my place, however.

After a short pause, he went on to declare that the French Navy did not want to be involved in affairs of this kind, and that he was not prepared to accept any kind of responsibility for our behaviour. Therefore, we were requested to remove ourselves, lock, stock, and barrel from the naval anchorage within 24 hours.

We had no boats in the water and no crews in the barracks, so all we had to do was shift a few spare parts and other stores over to the shipyard adjacent to the civilian port. The naval boycott was not to be total. As the months went by, they generously lent the shipyard the rafts that were essential mooring for our ships (because of the heavy Atlantic tides, we could not tie up directly to the quayside). In fact, the move would prove to be a blessing in disguise, since we could come in and out of the civilian port at will, without having to cross any naval boom at the entrance.

That had been the Christmas week of 1968, and we entered the new year wiser in two respects: firstly, the civilian location allowed more freedom of movement, and secondly, law and bureaucracy work in strange ways. Embargo meant that no customs officer would sign release papers, but there was nothing to stop any work from being done for us. There was nothing even to stop a ship putting out to sea, and leaving territorial waters, as long as no documentation was being requested. Aircraft sitting on an airfield inside the country were a different proposition, but we were not subject to any specific authority as long as we did not request formal permission to leave French waters for good.

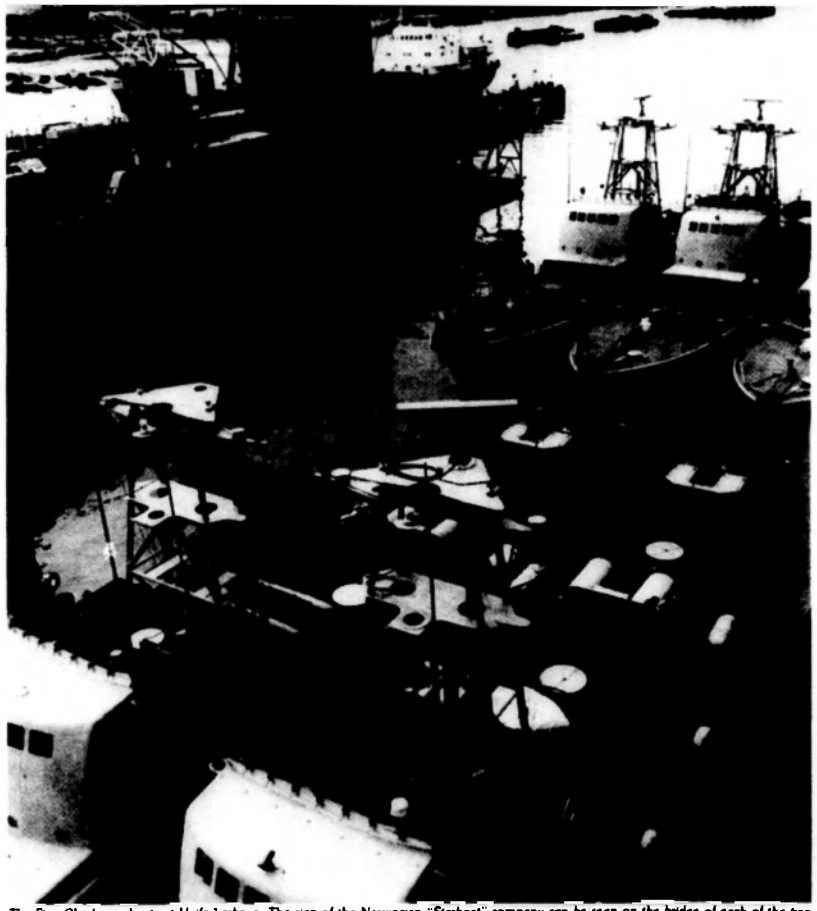
Over the coming months, the work in the shipyard proceeded on schedule; one after the other, our boats were launched and underwent sea trials with our crews on board — but there was no sign of the embargo being lifted, and we needed the vessels badly. Then, in late 1969, with the pressures building at home and in France, things began to happen in parallel.

THE NORWEGIAN BUYER

The shipyard was in trouble financially. Over 1200 families in Cherbourg were dependent on the yard for their livelihood, and the owner could not be paid in full unless the boats were delivered. It was a Gaullist town with a strong lobby in Paris, and nobody wanted to see the yard close down. On the other hand, it was only a matter of time until officialdom woke up and took notice of the anomaly of our presence. And that might lead to unpleasant developments in the "sleeping embargo".

But salvation was at hand for both Paris and Cherbourg. A prospective buyer turned up at the yard with an attractive offer to make. The buyer, a Norwegian representing a company in the oil exploration business, needed fast boats to service its rigs.

Of course, the company would prefer something a little more heavy-duty — and it didn't really need 13,000 horsepower in a 250-ton hull. However, the buyer was in a hurry, and nobody else had anything suitable to offer. So if the shipyard was prepared to make the sale within four weeks, he would be happy to take the five greyhounds of the sea off their hands. After all, everybody knew that in the oil business whoever gets there first with producing wells stands to make the profits.



The Five Cherbourg boats at Haifa harbour. The sign of the Norwegian "Starboat" company can be seen on the bridge of each of the two foregound vessels, although they were by then a long way from the North Sea.

The owner of the yard was ready to clutch at any straw, and the government, so I assume from what I could read between the lines, was willing to kill two birds with one stone: firstly, the deal would solve the Cherbourg problem and, secondly, this would remove one obstacle from the path to improvement in the somewhat strained Franco-Israel relations.

There was one problem: Israel had to agree to waive her rights to the boats — but she couldn't have them anyway, so it was worth a try. The approach was made, not in writing but by telephone, to Moka Limon. Moka took his time over replying. One week later, he came back with a reluctant "yes". Of course Israel would prefer to have the boats, but in the present stalemate we might at least cut our losses with a sale to a respectable customer — and this Norwegian buyer did seem serious and solid.

THE OVERLOOKED DETAILS

There were some overlooked details. Had the eager sellers looked closely at the buyer's letterhead, they might have noticed that the Norwegian address was a post box serving a company registered in Panama. The Norwegian, whom Admiral Limon had known for quite a while, was convinced, at a secret meeting at Oslo Airport, to lend the name of his company, Starboat, He sincerely believed in Israel, and was deeply affected by the injustice done to Israel by the French embargo, with its dangerous implications for Israel security.

It hadn't been quite that simple. For months, all the alternatives had been considered and checked out. The OC Navy had looked at the possibility of getting American-built boats, but they were geared for much larger craft. Meanwhile, our boats had been launched at regular intervals and we had been finding faults persistently during the sea trials in order to postpone the formal acceptance — at which point we could hardly have justified maintaining crews in Cherbourg. The yard was not receiving payment for the finished boats, so the nervousness there was adding to the right psychological frame of mind for the deal. At home, pressure was being brought to bear on the General Staff to accept the view that, one way or another, the Navy had to have its boats.

We had thought, at one stage, of simply taking the boats and running, but Defense Minister Moshe Dayan vetoed that suggestion. In spite of the total embargo, spare parts for the IDF were being shipped out of France by diverse ways and means. Therefore Dayan and Prime Minister Golda Meir decided that there

was too much at stake for them to allow the illicit escape of the five boats. It became obvious that if the boats were to be taken out of France, a legally foolproof plan would have to be drawn up. It was Moka who prepared the elaborate paper work. Over the following weeks, our friendly Norwegian's frequent business trips from Oslo to London were slightly rearranged to bring him quietly in and out of Paris to finalise details. Then the deal was offered — and snapped up.

The joy of the shipyard owner was not yet complete. The buyer wanted fast delivery, otherwise the sale might fall through. There were seatrials to be completed and somebody had to make the actual delivery. Where on earth could crews be found at such short notice — unless of course the Israelis were prepared to do a favor to their friends, after all, we had come a long way together. Moka was most helpful and understanding, of course we could help out — but you do realise that it would have to be in civilian clothes and not in Israel Navy uniforms.

THE RACE AGAINST TIME

This was where our problems began. We were in a battle against time. We had to complete seatrials and assemble everything we needed for the final stage quickly and quietly, and be out of Cherbourg before anybody began to put two and two together.

The shipyard owner, who I think did understand but preferred to say nothing, knew we were in a hurry. However, the fifth and last boat was only due to be launched on December 14, and it normally took at least a month to complete seatrials — so the date should be mid-January. But that didn't suit us at all. The period leading up to Christmas is not exactly a time when bureaucrats want to make close studies of stacks of paperwork. As they come back to work, with clear heads, after New Year's Day, it might be a completely different story. So our deadline was set for the early evening of Christmas Eve — on the assumption that this was the least likely day of the entire year for anyone to be paying attention to us. And there was a lot to be done by then.

First of all, we had to ensure that the boats remained in the water, it would have been only natural to store them high and dry on land during the winter storms. That was easily overcome by continually finding minor faults that needed adjustment at sea. We had been assigned an amicable old yacht captain to keep an eye on us. But he felt queasy in high seas and, in any case, only appeared on the quayside at 9.00 am. The naval day starts much earlier than that, so he would turn up at the port only to find that the boat due to go out that day had already slipped its moorings at 8.00 am. At first, he would sit on the quay until we returned at 12.00 or 1.00 pm. But as weeks and months went by, and we always returned, he contently retired to a waterfront bistro to linger over a drink until the boat came in.

We became really nervous just before the fifth boat was launched. The French Navy launched their first nuclear submarine — in the navy yard at Cherbourg — and the ceremony, with all the visiting dignitaries, took place right across the water from our four craft. We were sure that, with the Minister of Defense and the press there in force, somebody would show interest in the obviously military-style boats moored in the

civilian port. But the dust settled and nothing happened. However, the shipyard decided to delay launching because of a problem with the fourth engine on boat number five. Once a month, on the 14th or 15th, the tides at Cherbourg reach a height of six metres, and this was the only time when the slipway was sufficiently covered with water to allow launching. If we missed December 14, then there was no way to get the boat into the water before January 14. It took all our powers of persuasion to convince the yard that we could run in the engine and solve the problems in the water. The truth was that it would be far easier on the yard's test bench — but we couldn't allow that. The boat was duly launched and our engineers went to work against the clock to have the obstinate engine — and everything else — ready for the 24th.

FILLING UP

There were logistic problems to solve, and the most critical of all was fuel. We calculated that we would need full tanks on departure and two refuelings at sea. Obviously, we could not fill the tanks of five boats that were only engaged in short seatrials without arousing suspicion. The technique was simple: the faults that needed correcting each day always happened to be in the boat that was moored closest to the raft that was lashed to the quayside.

To get the boat out, all the others had to slip their ropes and manoeuvre out of the way, with their engines running. Each day we would order a tanker to top up the few tons of fuel oil expended — and each time we would take a few more tons that we had actually used. The level in the fuel tanks was steadily rising when Christmas came to lend a hand. The regular driver of the tanker asked a favour of us: the holiday was coming up fast, and he would appreciate some free time — so would we mind particularly if he brought bigger loads twice or three times a day? That way, he could have Christmas off. Our quartermaster officer, who handled the orders and payments, was delighted to oblige.

The refuelings at sea were not so simple to arrange. First of all, the help of the Israeli merchant marine had to be enlisted, without letting too many people in on the secret. We would need two merchant ships, each with skilled naval refueling crews on board, and the ships had to be fitted up with the necessary equipment — pumps, hoses, and fuel tanks — and the whole operation had to be drilled at sea. The whole exercise was explained away as a secret naval investigation of the possibility for extending the range of operations. One ship chosen was a phosphate carrier that regularly visited French shores. A month before the deadline, it was fitted up with the necessary equipment at Haifa. The refueling techniques were carefully rehearsed, including the problematics of rough seas in the Bay of Biscay. Then it sailed to Ashdod and was loaded with phosphates and clean diesel oil — our boats needed a purer variety than that usually burnt by merchantmen — and ordered to sea at deadline minus 14 days, with instructions to linger at Gibraltar until needed.

The second vessel, the Dan, was a Mediterranean Line passenger ship that usually spent the winter months in port. The Navy's first problem was to find the necessary fuel tanks and install them. As luck would have it, a local fuel company was busily installing a new depot outside Tel Aviv, and had some eminently suitable tanks at hand. The company executives, who could not be told what it was all about, were very annoyed to receive a Defense Ministry requisition, and the size of their bill reflected that annoyance.

IRATE NEIGHBOURS

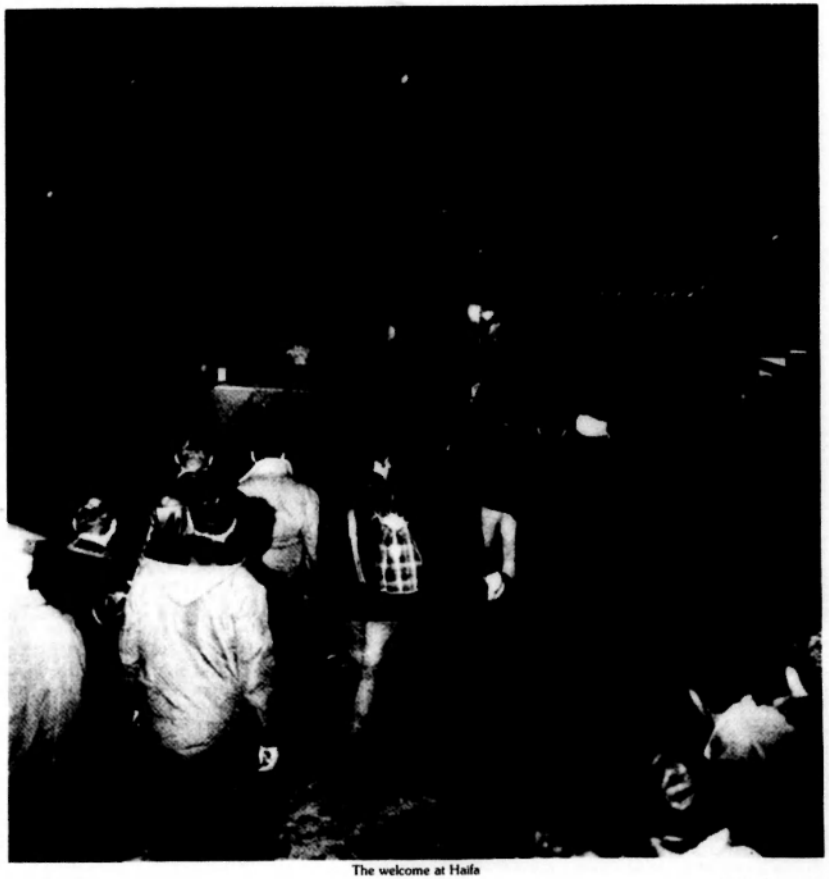
The next problem to overcome was a tricky one indeed. The civil harbour in Cherbourg faced a row of homes on the waterfront. The local families were sensitive to the noises generated in the port. Late in November, we had started a generator at night, and the police had promptly arrived to announce that the neighbours were complaining. But electric power would be essential to pre-heat engines for at least two hours before we put to sea. There was only one thing to do. The next night we summoned the police and took them on board a freezing boat to see our boys huddled in blankets and turning blue. The police, promptly called in the electrical engineer to see whether he could get a landline for the power that we said we needed for heating the men and the boats. It could not be done, but the police did recognise our need — so they undertook to explain to the irate neighbours that we must have the use of one of our generators at night. The complaints died away as the residents of Cherbourg grew accustomed to the noise. Meanwhile, we hoped that force of habit, plus Christmas festivities, would prevent them from complaining to the police on the big night when we had twenty engines to warm up.

FINDING FOOD

We were going to need food for five crews for a week or ten days, and we could hardly buy that kind of quantity in one store at one time. A survey was made, and a list drawn up, of all the supermarkets in the Cherbourg area. We had seven Israeli families who had taken apartments and houses in the town. Each family was given a list of the supermarkets, and the order in which they were to be visited. Then, for seven days the seven families each bought what would seem to be a normal amount of provisions for family over the holiday week. The resulting 49 purchases were delivered to the quartermaster officer, who divided them up into more or less equal shares for each of the boats.

GETTING CREWMEN IN

The seatrials had been carried out with skeleton crews. We needed more seamen, but the French police seemed to be paying particular attention to Israelis registering in French hotels. It was decided that we could cope with 20 men per boat instead of the full complement of 40 — but we still had to get them in. Over the 72 hours before Christmas, in small groups, Missile boat crewmen from Israeli navy bases were put aboard every available flight to London that was stopping over in Paris. It was permissible to disembark for 24 hours at a stopover. From Paris, the men were dispatched, two up front and two at the back of every train to Cherbourg. They were given precise instructions: Cherbourg is the last station — so don't ask any question of fellow passengers, no Hebrew language newspapers or books, and don't talk if you don't have to! Carrying suitable identification, they were picked up from the arrivals platform and were taken to Israeli homes in the town. For the last three days, every available square inch of floor space in our seven families' homes was taken



The welcome at Haifa

up by mattresses and sleeping bags. The boys were given a list of restaurants where they could eat, according to a strict rota to ensure that never more that two Israelis sat together in any public place.

One remaining detail had to be arranged. An experienced Zim Israel Shipping Lines captain, who did know what was going on, was dispatched from Israel to Antwerp, carrying written orders that allowed him to take command of any Zim ship. There he commandeered the MS Tibenas and put to sea. He was to heave to off the coast of southern England and wait to give assistance if we needed it. If anything went wrong, he was to tow the boat in trouble into an English port as preferable to returning to France.

DID HE KNOW?

The owner of the shipyard knew, more or less, that we were ready for sea although he had obviously kept to himself any of the thoughts that he had put together about the Norwegian deal and our insistence on having the fifth boat in the water. He was quite a character. He had been a pilot in World War I, and had set up a plant to make planes after the war. One day, a strike had occurred in the plant, so he closed it down. His wife had some land in Cherbourg, and there he had set up his shipyard to build yachts. It had developed into something much bigger by the time the Israel Navy had arrived, direct from our German interlude. The whole area of our boats and the advanced technology they involved had caught his imagination and appealed to his sporting instincts. And it was perhaps those instincts that made him keep his own counsel through those long weeks.

OUR SAILING BOAT

On Wednesday the 24th, we sat down for lunch – Moka Limon, three boat commanders, myself, and another officer — in the Cafe de Paris, a famous Cherbourg restaurant. We had taken a small room in which to celebrate our imminent departure — and in walked the old man. It must have been obvious at once, all these officers had rarely been together in Cherbourg. He came straight over to us and said: "So we can celebrate? If you are all here, you must know what you are doing!" He joined us at the table. We kept up the pretense as long as we could: our job was to deliver the boats to Norway; the weather was stormy — no time for sailing, and it was Christmas. In the course of the conversation, somebody asked him about the customary present given by a shipyard to a customer when a new ship left: "And what will you give us when the time comes?" When we first arrived in Cherbourg, the yard had loaned us an as yet nameless sailing boat to use whenever we wanted. We had promptly named it after the shipyard owner's daughter. He announced that he was going to Paris, and ... "might not be around when you leave". Having said that, he phoned his foreman in charge of yacht production, and told him to load our sailing boat onto a cradle and place it onto one of the boats. I intervened and said that we would worry about shipping it later — not to bother loading it aboard now.

THE GETAWAY

We were as ready as we would ever be — and then the weather struck with full Atlantic fury. Zero hour was set for 8 pm on Christmas Eve, an hour when we could confidently expect the respectable burghers of Cherbourg to be sitting at their heavily-laden Christmas tables, eating to their hearts' content and drinking heady French wines. At eight o'clock, there was a gale blowing with Force 9 winds reported in the Bay of Biscay. There was no way we could put to sea in that, nor any sign of it abating in the hours to come. And we could hardly ask the French Navy for their weather forecasts. I ordered our departure delayed to 10 pm, and set a number of seamen at radio sets to listen to the met reports from the BBC, French radio, and so on. But it was all the same: strong westerly winds with a barometric depression moving in from the Atlantic. I postponed to midnight, but there was still no change. We had to be well away in the dark, and if we didn't go that night, how on earth would we be able to conceal all the equipment and the crews?

At 1.00 am on Christmas Day, the BBC, bless their hearts, reported that the depression was turning north for Ireland, Scotland, and Scandinavia, and the winds were now northwesterly. This meant that the seas would still be high, but the winds would flatten the waves. This was it — at 2 am we would go.

All five generators had been running all evening — and no one had complained. Now there only remained one minor detail to take care of. All seven families in Cherbourg were running their own cars. They were asked to bring them down to the quayside and park them "inadvertently" across the entrance. Then, if the police got wind of twenty marine engines starting up, they would gain precious minutes. As it turned out, the police never appeared. The engines turned over and gained power, the last mooring ropes were slipped off — and we were on our way home.

ON THE HIGH SEAS

Christmas Day in Europe is a quiet day — no newspapers, nothing to disturb the family atmosphere. If anybody missed us, we didn't know about it until we reached our first refueling rendezvous off southern Spain. There we heard a brief BBC report that we had left Cherbourg — nothing more. We did have visitors. A local customs man came out on a fishing boat from a nearby Spanish harbour, circled a couple of times to see what was going on, and headed back to port. Either he said nothing, or the Spaniards weren't interested, for there was absolutely no noise about us out of Spain. A helicopter circled overhead during the refueling, but that turned out to be the local Lloyds man whose duty it was to keep statistics on ship movements — and to him we were obviously only a statistic, or perhaps five of them.

On the afternoon of the third day, we slipped through the Straits of Gibraltar close to the Moroccan coast. The five of us, in line astern, passed scores of ships of every conceivable nationality. Nobody paid any attention. So far, the reports about us said that we were heading for Norway. On the next morning, the news bulletins reported us in the Mediterranean and from here on, everybody was looking for us. Out at sea, we knew very little of the fuss in the press — it was only later that I was handed a bunch of newspaper clippings — but we did have visitors. The first inquisitive soul was a French aircraft which circled and went away. Then a small plane from Malta came head on towards us. As he flew overhead, we heard on the BBC an excited reporter, on live broadcast, crying: "I can see them, they are below me now!"

We met with the MS Dan, for our second refueling, south of Malta in the shadow of the island of Lampedusa. From here on we were in waters where somebody might try to stop us by force, and we were unarmed. I had issued strict orders about emergency procedures. In the Atlantic, the boat commanders were told, if in trouble, to make for Lisbon. Each boat carried a street map of the city and local money, so that if anybody had to be taken to hospital, it could be done with a minimum of questions asked of the locals. Gibraltar was the second possibility. We would not be unwelcome there. In the Mediterranean, we had likewise selected other possibilities. Luckily, there was no need. The only medical problem happened to be on the boat carrying our doctor, and technical problems only occurred where there was a senior engineering officer to help out.

We were under orders from the QC Navy not to resist if challenged by French naval units, but they never came anywhere near us. I was not overly concerned about the Libyans or Egyptians. We were running with the heavy seas behind us and, moreover, they didn't then have anything fast enough to match our speed. The only tangible danger was from a submarine lying in wait at the entrance to the Aegean, and that was highly unlikely. To be on the safe side, I split the force in two with orders to reform south of Cyprus, then take as northerly a course as possible, to keep distance between us and Egypt.

The weather was bad all the way – high seas and rain squalls. Normally we might have cursed our bad luck, but this time the poor visibility and the waves running with us were exactly what we needed, up to the last leg. Then, since we would have entered Haifa at midday if we maintained speed, we were ordered to slow down and only enter port after dark. Now the heavy seas became a nuisance, particularly since two of the boats were only running on three engines. But we held on for six hours. Then, in the late evening of New Year's Eve, we slid stealthily into Haifa Harbour — only to find that the world was waiting for us on the quayside.

POSTSCRIPT

The French government made the best of what was for them a bad job. The boats had been legally purchased – for oil exploration work. By agreement with Paris, they spent their first six months, unarmed, performing as specified in the sale contract. Rear Admiral Limon left France a few days after the five boats arrived safely in Haifa. The French authorities could not pin on him anything that violated French law. However, they asked the Israeli Government to recall him from Paris. A small price to pay for the victories of Damietta and Latakia in the 1973 war. The sailboat given by the shipyard owner of Cherbourg was quietly loaded on board a Zim merchant ship, and arrived in Haifa one month after its bigger sisters.

The Israeli fuel company executives in atonement for their annoyance over the requisition of their fuel tanks, turned up in Haifa port with 120 bottles of champagne for the 120 seamen who had made the Christmas voyage from Cherbourg.

NORTHERN NAVY NEWS

THE ROYAL DARWIN NAVY

For the City of Darwin the month of October was spiced with much naval flavour.

Apart from the arrival for the first time of HMAS DARWIN, the RAN's fourth FFG and its first warship to carry the name, the northern port city also welcomed the general purpose vessel HMAS BASS. The 180 tonne GPV has been alloted as the training vessel for the Darwin Port Division.

by ROSS GILLETT

Photos — POPM Ron Berkhout

En route from Sydney, BASS arrived in Cairns on 18 October under the command of LCDR John Spooner, RANR, Senior CO of HMAS LABUAN of the Brisbane Port Division. At HMAS Cairns LCDR Ian Gibson, RANR, assumed responsibility for the ship and the next leg of the voyage to her new home port.

The Commanding Officer of the Darwin Port Division, LCDR David Jeffrey, RANR, welcoming his new ship, said "The acquisition of BASS to our region will generate much interest in the RANR in the North". "We hope, after a suitable period of working up to be put to work in support of NORFORCE and eventually relieve the burden of the PCFs in such areas as patrolling Ashmore Reef", he added.

Looking to the future, the Darwin Port Division is hoping for a manpower strength of fifty plus.

Although she was built in 1960 Bass according to her new "owners" is in excellent material and mechanical condition. "With tender loving care she will last forever", said LCDR Jeffrey.

"After a maintenance period we intend to begin day running from the Darwin Naval Base, working up to weekends and then three day runs," he said.

Prior to her recent duties in NSW, BASS was formerly the Reserve Training Ship at HMAS Huon in Hobart until relieved by an Attack Class Patrol Boat. In her early years the GPV also served in the survey role. BASS and her sister BANKS were built by Walkers Ltd of Maryborough, Queensland and first commissioned in 1960.

HMAS BASS, arriving Cairns, October, 1985, en-route to Darwin.

The Last Attack Boat Retires

When HMAS ASSAIL paid off from the RAN at HMAS CAIRNS on Friday 18 October, another chapter in the history of the Australia Fleet came to a close.

Her last Commanding Officer, LEUT David White had taken his ship to sea for the final time at 1530 on 18 October, with the Deputy Fleet Commander, CDRE Malcolm Jackson and the CO HMAS CAIRNS, CMDR Jon Delaney embarked.

Several miles off the entrance to Cairns, ASSAIL's crew launched their 107 foot long "paying off" pendant but due to following winds the balloons raised the pendant to a vertical position, and there it remained until berthing at 1640.

Later that afternoon, at the official ceremony, COMAUSMINPAB, CMDR Bob Dagworthy said that "ASSAIL had become the longest serving PNF Attack Class Patrol Boat. She had served around Australia and New Guinea as both a patrol boat and survey vessel working in conjunction with the larger survey ships. In fact ASSAIL was required only recently to fill in for extra duties after the incident at Gabo," he added.

The Australian White Ensign, Australian National Flag and Commissioning Pendant were hauled down for the final time at sunset, 1818. In traditional fashion ASSAIL's crew marched off the Patrol Boat followed immediately by the XO SBLT Daniel Gibbons and lastly, the CO, LEUT David White.

Despite being officially "paid off" ASSAIL soon trembled to the activities of the decommissioning party and then on Sunday 20 October was open for inspection during Navy Week celebrations.

At 0830 on Monday 21 October, ASSAIL, still in perfect working order, proceeded under her own power from HMAS CAIRNS to NQEA where she is now being refitted for further service with the Indonesian Navy as KRI

HMAS ASSAIL, paying off at Cairns, 18th October, 1985

Transferred to the Indonesian Navy

SIGUROT. When she arrives in Indonesia ASSAIL will be used for anti-smuggling and other patrol work including fishery protection.

HMAS ASSAIL – Commissioned into the RAN at HMAS MORETON, BRISBANE, 12 July 1968, in commission 17 years, 3 months, 6 days, steamed 403,000.7 nautical miles. Decommissioned HMAS CAIRNS 18 October 1985.

For the record, the last word from COMAUSMINPAB. "The Attack Class Patrol Boats established the standards and were the forerunners to the RAN's involvement in coastal surveillance operations and minor war vessels since World War II.

"These mighty little cost effective boats have set a great tradition. HMAS ASSAIL's Decommissioning sadly reflects the passing of an exciting era in the RAN's history."

(And for those who argue that ATTACK was the longest serving PNF boat of her class. ATTACK served for 17 years, 3 months and 4 days, that is 2 days less than ASSAIL.)

Navy Week a Great Success

Over 1,000 visitors took the opportunity to visit and inspect both HMAS CAIRNS and the nine ships open for inspection during Navy Week in Far North Queensland.

Supporting the Base and Fleet units were special photographic and recruiting displays from Sydney and Townsville as well as numerous technical and hydrographic exhibits.

Prior to "Open Day", HMAS CAIRNS and six of her attached ships exercised their right to the "Freedom of the City". The parade was led by CMDR Jon Delaney and the salute taken by the Deputy Fleet Commander, CDRE Malcolm Jackson and the Mayor of Cairns. The Naval Support Command Band, led by LEUT "Jock" Heath provided the musical accompaniment in the 35° Celsius conditions.

On Sunday, 20 October, the band headed the impressive "Fun in the Sun" parade through the streets of Cairns and with a guard from HMAS CAIRNS performed Ceremonial Sunset onboard HMAS TOWNSVILLE the next evening.

TARAKAN laid up at North Queensland Engineers & Agents

Cairns Commanding Officer, CMDR Jon Delaney sees the week of activities as an opportunity to promote the RAN in the north. "We have involved the community as much as possible in our activities, including the Lady Nell Seeing Eye Dog School, local Naval Reserve Cadets from TS Endeavour and the citizens of Far North Queensland through the 'Freedom of the City'.

"Our other activities included an inaugural Navy XI versus Mayor's XI cricket match, a Navy Week race meeting and a sailing regatta," he added.

"But I think our most ambitious activity was the Navy Week fashion parade aboard HMAS GLADSTONE. The proceeds from the evening were donated to the 'Lady Nell Seeing Eye Dog School' following an excellent turnout by the local fashion conscious community.

"On Saturday afternoon, HMAS PERTH arrived in Cairns at very short notice, but despite being involved in our Navy Week activities, the base and personnel came to the fore in our Fleet Support role, satisfying the ship's fuel and store requirements.

"At the same time, helicopters from HMAS STALWART and HMAS CANBERRA undertook vertical replenishments of stores and personnel as the Task Group headed north to their South East Asian deployment," he said.

LCH UPDATE

Following the recent decision to lay up three of the LCH's and convert two others to the survey role, NQEA are now preparing an area in front of their Portsmith Division as the new "home" for ex HMA Ships BALIKPAPAN, TARAKAN and WEWAK.

HMAS TARAKAN, the second LCH to arrive was the first to move onto the slipway on 4 October and then on 17 October was "railed" across Cook Street to await her lay-up area.

As part of the preservation work being undertaken by the Refit Project Officer, LEUT Ted Jensen and his team at NQEA, each LCH will be mothballed including the preservation of machinery.

NQEA and the Navy refit team are responsible for the refitting of the RAN's Fremantle Class PCFs, LCHs and HMAS FLINDERS as well as RANR and PNG Attack Class Patrol Boats.

When all work is completed the three LCHs will be at 21 days notice to reinforce HMAS TOBRUK and satisfy specific Army amphibious tasks.

The Far North Queensland Survey Squadron!

That's what they're now calling that odd collection of "built for the purpose" survey vessels and the former LCHs, now converted to the role.

Led, capably, by the 12 year-old hydrographic survey ship HMAS FLINDERS and her embarked survey motor boat BRAMBLE, the Squadron is tasked with the updating of marine charts, many prepared as far back as the 1800s.

Under the command of LCDR Doug "Doc" Holliday, since January 1985, FLINDERS is responsible for the Great Barrier Reef, a task which will see her fully employed for the remainder of her operational career.

The two LCHs, recently allotted to the survey role, HMAS BETANO and HMAS BRUNEI will team up with FLINDERS for the first time on 13 December but for duties primarily in the coastal areas.

BETANO has previously worked in company with FLINDERS surveying around Lizard Island during last July/August.

On the average, FLINDERS steams over 280 nautical miles each 24 hours and puts down approximately 3,000 soundings.

Currently she is surveying the main shipping channel to Hay Point, from Japan, to map out a clear passage which will reduce the miles steamed by more than one hundred.

The ship sailed from Cairns on 31 September bound for Willis Islet, 240 nautical miles east of Cairns. There she erected an ARGO antenna, the first of a pair to allow the fixing of the ship's position during surveys.

ABSR Andy Clements remained on the islet for five weeks to check ARGO, change the tide guage and more often than not, watch the satellite television, one of the few comforts of home.

After sailing to South West Cay in Force 4-5 conditions, FLINDERS headed for Turtle Islet where the other ARGO was established. Unfortunately 15 of the crew were bitten by the ticks which infest the islet.

FLINDERS then sailed onto Diamond Islet and erected a mini-ranger to enable the ship to calibrate. The ship conducted soundings up and down Diamond Passage (the route the coal ships from Japan will utilise) for the following two weeks.

For the remainder of 1985 FLINDERS will undertake her annual sea inspection in late October and sail in early November for Willis and Turtle Islets then onto Marion Reef to erect another ARGO.

All three ARGOs will be recovered by the end of the year, after a short visit to Mackay.

Looking further ahead the crew are expecting work in New Guinea waters for three months in 1986, then a visit to Adelaide to partake in the South Australian 150th Anniversary Celebrations. For the latter, the ship is expected to re-enact Mathew Flinder's voyage and rendezvous with a French naval representative in Encounter Bay, South Australia, as a re-enactment of the meeting between Mathew Flinders and the French hydrographer Baudin.

FLINDERS is currently manned by six officers and 36 men including five officers and eight other ranks as dedicated hydro personnel.

The R. G. Fry Trophy

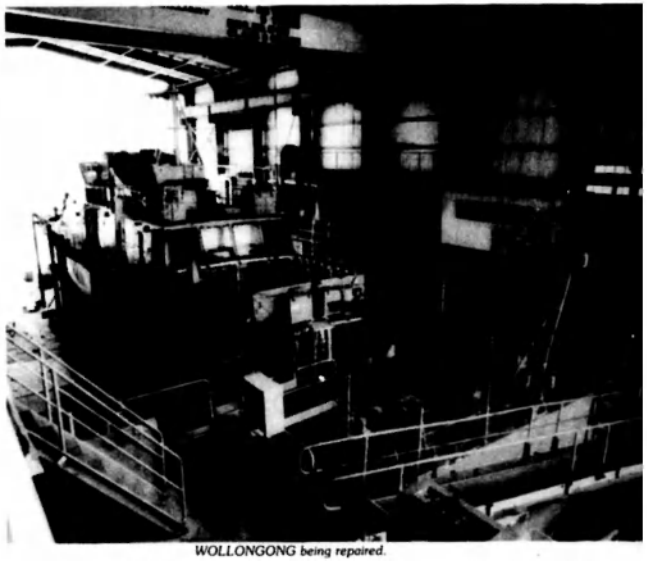
Many in the RAN have most probably never heard of the event but to members of the Cairns Naval Base the chance to win the trophy has been keenly sought since its inauguration back in 1978.

Four teams, each sprouting 13 vibrant men and women from the Naval Base represented Engineering (2 teams), Supply (one) and Seaman (one).

The trophy is run over the length and breadth of the base and above and below the water. Each team was required to complete a series of gruelling events in high temperatures designed to sort out the fit from the unfit.

These included land ski-ing (when four persons walk on two skies and avoid obstacles), swimming (don't worry, there are no sharks or stingers, only crocodiles), wheelbarrow racing, obstacle course (including crawling through 44 gallon drums, scaling ropes and sliding under tarpaulins pegged to the ground), climbing a cargo net, jumping off wharves and last but not least, drinking a 10 oz beer, not an easy task.

The trophy was finally won by the Seaman Department and presented by Mrs Celia Fry.



WOLLONGONG being repaired.

wife of the late Dick Fry, Chairman of Directors, NQEA.

What's up with Wollongong?

As most Patrol Boat crews are acutely aware the RAN has been short of an operational PCF since the unfortunate grounding of one of their number off Gabo Island in May.

For Navy and NQEA personnel alike, the repairs to the damaged WOLLONGONG are being seen as a unique challenge.

Under the charge of LEUT Ted Jensen, Refit Project Officer for NOCQLD, the entire project is being documented to provide data for naval planners and staff courses for many years to come.

WOLLONGONG arrived in Cairns on 5 July, was slipped 16 July and moved into the large hangar of NQEA's Portsmith Division (where all but one of the Fremantles were built) three days later. Since then work has progressed at a steady rate with NQEA producing a "Full Ship Survey" intended to provide a model for future repair tasks of a similar nature.

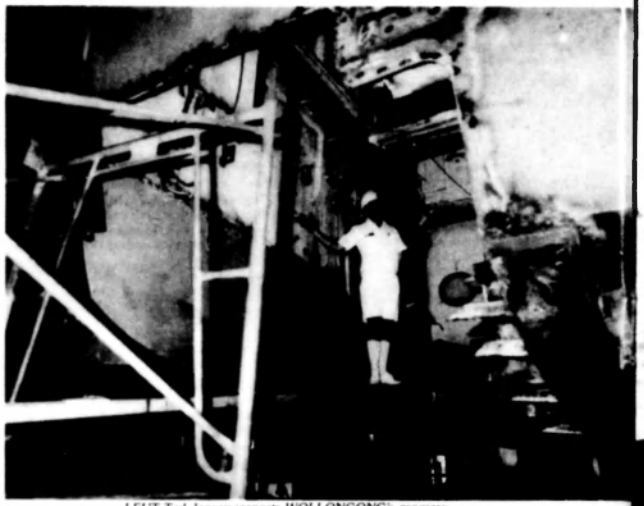
"The main work list and associated surveys represent just about as much as you would ever want to do to a Fremantle Boat," said LEUT Jensen.

"Bigger ships have been repaired for the RAN in the past but I doubt that proportionally speaking, as much work has been carried out to a ship since the Second World War," he added.

One of the first jobs was the removal of over 80 tonnes of concrete, placed in the hull to make her watertight.

"She is now a shell of her former self, as water effected everything from No 2 deck down," said LEUT Jensen.

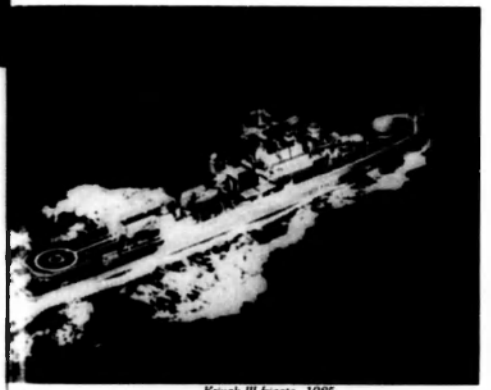
As part of the work, various changes are being implemented to the refitted WOLLONGONG. These include a new sewerage system, a new salt water pump and the deletion of the auxiliary propulsion units (APUs).



LEUT Ted Jensen inspects WOLLONGONG's progress.

HOMEPORT CAM RANH BAY

Aerial port quarter view of a Soviet Krivak II guided missile frigate.



Krivak III frigate, 1985.

Air-to-air view of a USN F14 Tomcat intercepting a Soviet TU-95 Bear-G strategic bomber aircraft.

Missile range ship MARSHAL NEDELIN underway.

Sea Mail

Houseboat Queen Victoria
PO Box 306
Echuca
Victoria 3564

Dear Sir,

I hope that the enclosed prints will be suitable — the originals were not the easiest to copy, some of them being near enough to a hundred years old — and I would not have made the deadline if I had waited to have glossies made (I don't run to a glazer in the darkroom in my boat!)

These photographs are from an album which recently came to light in the Victorian town of Echuca. The album was compiled by a Charles Harding who, late in the last century, worked as a shipwright in Williamstown Dockyard.

In 1886, he joined SOBRAON as carpenter's mate, and has left in the album a description of "a pleasant passage of 114 days" from Sandridge (Port Melbourne) to London, mentioning in passing the two burials at sea, which must have been about par for the course in that era. The album includes photographs of that vessel, both as SOBRAON, and as she was later, Training Ship TINGIRA.

From a period when he was employed in Beechworth, he has two photographs of a Naval Brigade to visit to that town. He afterwards worked for the Melbourne Museum, during which time he made the case for Phar Lap.

The album was in the possession of his granddaughter who is presenting it to the HMAS Cerberus Naval Museum.

The captions are those Mr Harding used in the album.
His reference to gun trucks in the HMVS NELSON gun deck being used at Trafalgar is puzzling. He may have meant that this was the type of truck used at Trafalgar or perhaps this equipment came from other vessels (which had been at Trafalgar) to Nelson, whose fitting out was not completed until 1814.

There was no caption to the photograph of a half dozen of the Cerberus crew with that most important member of the ship's company in galley whites, standing by the after 10 inch guns.

Yours sincerely,
Brian Terry

Aboard CERBERUS in a seaway

Portion of crews of torpedo boats at Depot, Williamstown, 1889

Portion of a starboard gun deck of NELSON

NELSON and CHILDERS at the Dock Pier, Williamstown, 1889

CERBERUS

Sea Mail Continued

6 Seafield Avenue
Kingswood 5062
South Australia
1 October 1985

Dear Sir,

In reading the article "Australia demands the best for her submariners," I feel I must comment, if small nuclear submarines are so great, why are so many countries buying conventional subs.

If we compare the French Rubis class with the Thyssen TR 1700, the advantages of the N-sub is only in its unlimited range and constant high speed.

	Rubis (Nuclear)	TR 1700
Submerged displacement	2700 tonnes	2350 tonnes
Number of T-tubes	4	4
Torpedoes carried	14	22
Speed	25 knots	25 knots
Range	Unlimited	12000 +/10 knots
Crew	66	30-35

While the Rubis class is able to run for long periods at 25 knots, it does so deaf, as effective sound surveillance can only take place at speed less than 10 knots, and weapon release at speeds of less than 8 knots.

N-subs are also noisier at high speeds their sound radiation characteristics are greater, as well as the noise from high running speeds of turbines and gears. (The Rubis class reduces turbine noise by using electric motors.) At low speeds, noise is from cooling equipment and pumps. Sound emissions from a modern conventional sub are almost zero. Though a conventional sub has to snorkel to recharge its batteries, its indiscretion rate is about 10-20%; detection at such times is minimal.

At 63 knots, no western sub could catch a Typhoon, and to locate a sub under-water, and to gain positive identification, the range is such that they have located you. For surface ships, the need to outrun the target is no longer required, as no surface ship today or in the future can outrun a Harpoon missile.

The conventional submarine today is silent, deadly and cost efficient, half that of the Rubis class (not 20% cheaper) or 10% the cost of a Los Angeles class. At the same displacement as the Rubis class, the conventional sub endurance is similar (that is food supply) as well as its performance at attack speeds while carrying a greater weapon load, 36% more.

In buying conventional subs, the RAN can have more subs which are cheaper to procure and maintain.

Yours faithfully,
Andrew Warcup

The Author responds

66 Castle Circuit
Seaforth, NSW 2092
Tel 949 1663
29 October 1985

The Editor,
"The Navy"

Sir,

NUCLEAR SUBS DEBATE

It is good that Mr Warcup has debated the submarine issue. I respond as follows:

His para 1:
If CONVENTIONAL subs are so great, (1) Why does the US Government refuse to build them for Australia, Israel and other Allies? (2) Why did Winkler, the Chief Executive of the German builders of the TR1700 write in "NAVAL FORCES" 6/1983 about the end of the conventional sub era because of the superiority of the N-sub? (3) Why are the Russians replacing their conv. subs with N-subs in the Pacific as they are built? (4) Why do all conventional submarine manufacturers in Europe want the RUBIS nuclear propulsion plant?

His para 2:
The comparison is misleading for three reasons: (1) the small N-sub travels much faster than the admitted 25 knots as its power is 20MW instead of only about 5MW! (2) The conventional sub needs to be refuelled, costing about $9 million in 30 years, while the one tonne of safer and cleaner and cheaper uranium fuel does not require replenishment — no refuelling for 30 years! (3) The small N-sub takes ¼ of the time to travel long distances with almost total discretion, vital for Australia's vast coastline of c. 20,000km and long ocean distances; it is not like the Baltic or North Sea. Such long legwork is best undertaken by N-subs for obvious reasons.

Para 3:
Not valid, as the small N-sub can also travel very slowly!

Para 4:
Partly valid, the small N-sub is NOT as noisy as the earlier models. At low speed its reactor does NOT use its pumps, but relies for cooling on the convection of its sodium coolant (for speeds up to 18 knots). Because of this and great improvements in transmission, the small N-sub can be more silent over the entire range of speeds of the conventional sub. Hundreds of millions of dollars spent in 20 years of research achieved this. Naturally other conventional submarine building companies want this nuclear propulsion unit (reactor, steam turbine, generators, etc.) Of course the N-sub uses electric motors!

Certainly conv. subs are silent at 3-5 knots, but that is only one operational factor in vast oceans and island festoons in which Australians must operate. Slow conv. subs can only behave like intelligent mines, hoping to be near the line of approach of an enemy force. Interception is not possible unless the enemy are travelling towards them. It is not like the Baltic Sea.

Snorkling indiscretions of 10% to 20% of the travelling time are NOT insignificant with advanced radar and satellites. "Minimal" it might be when compared with 40 years ago, but it could spell disaster in the 21st century, 15 years hence. Diesel engines at high speed charging batteries in minimum time make a conventional sub blind and deaf with maintenance and spares a factor. But the steam turbine of the small N-sub just keeps going and going; it was perfected in WWI and is a tried and tested workhorse, easy to maintain.

Para 5:
It is true that Western subs could not catch a Russian TYPHOON sub travelling underwater at 63 knots and that HARPOON missiles are faster than any ship. But our subs might have to travel FAR and QUICKLY to be close enough to detect an enemy target, then to fire the missiles. The Indo-Pacific region is vastly different to the confined waters of the Baltic or North Sea where small numbers of conventional subs would be adequate.

Para 6:
The small N-sub is also silent, deadly and COST EFFICIENT, even were it twice the price of a conventional (instead of ⅔ more) — for it can patrol the same area as FOUR conventional subs. The number of torpedo tubes SHOULD be more with a conv. sub, because it might only have one chance to fire its weapons, hit or miss. Unlike a N-sub, a conventional sub cannot intercept, escape or follow at speed and choose its times of firing and running.

Para 7:
Spare parts and maintenance of a conventional sub's diesel engines would be more difficult than the maintenance of the long-perfected and more silent steam turbine of a small N-sub. Its nuclear reactor is so magnificently engineered that it would be unlikely to need maintenance more than once in 30 years. The nuclear passenger cargo ship "Otto Hahn" ran from Germany to South America trouble free and had one overhaul in 14 years. The recent 32,500 nautical mile round-the-world trip of the small N-sub from Toulon submerged via the Cape to New Caledonia, and later to Tahiti, then by Cape Horn to Toulon averaged 14 knots including the zig-zagging and the two stops. Its only problem was small and easily fixed by the crew. India is to have a nuclear sub; China has at least three nuclear attack subs using HARPOON weapons like the West; they are not stupid people. We are.

Yours faithfully,
John C. Grover

BOOK REVIEWS

MODERN COMBAT SHIPS — 3
"TYPE 42"

by LEO MARRIOTT

Published by Ian Allan Ltd, London, England

Available in Australia through Thomas C. Lothian Pty Ltd of 11 Monro Street, Port Melbourne. Price $23.95

"Type 42" is the class of guided-missile destroyer that has seen extensive world-wide service with the Royal Navy and the Argentine Navy. It has been Britain's front-line destroyer since the mid 1970s, fourteen units being laid-down, plus two for Argentina.

The "TYPE 42" is one of the rare breed of modern warships which can be compared on how it fared in war and peace. The class saw extensive service during the Falklands conflict, two, HMS Sheffield and HMS Coventry becoming war losses.

This book is a most comprehensive insight into the "TYPE 42" and has details of the design, construction, weapons, machinery, sensors and histories of the ships. A total of 101½ pages of full and half page plans and line drawings compliment the most authoritative text. This is further aided by 126 black and white photographs.

One excellent serie of four photographs shows the loss of HMS Coventry during the Falklands conflict. The photos show firstly the ship being hit by several bombs, then quickly settling in the water and starting to list to port, thirdly the crew abandoning ship, and lastly Coventry turned turtle with two Sea King helicopters hovering over the overturned hull.

Photographers support the text as the author moves through the ship. Some of the pics include: The ship's laundry, the main galley, sick bay, machinery control room, well-equipped workshop, the Senior Sailors' dining hall, Captain's day cabin, and two views of the Wardroom.

The chapters included cover the TYPE 42's evolution, construction programme, the ship's machinery and propulsion systems, electronics and sensors, weapons systems. "TYPE 42" destroyers in service, the Argentine ships and technical details.

Third in the series behind (1) "Leander" class frigates and (2) "Invincible" class aircraft carriers. "TYPE 42" is an interesting insight into the modern destroyer. *Recommended reading.*

— VIC JEFFERY

"BRITISH SEA POWER IN THE 1980s"

By Rear Admiral J. R. HILL, RN (Ret'd)

Published by Ian Allan Ltd, London, September 1985

Available in Australia through Thomas C. Lothian Pty Ltd, 11 Monro Street, Port Melbourne, Victoria. Price: $42.50.

In his preface Admiral Hill says "Having now been on the retired list for two years, I am much more free to express opinions on the full range of policy and to put forward, in this book, views on my own on both material and strategic matters".

Admiral Hill certainly has enough ideas to enliven any naval debate. He knows the ships, establishments and men of whom he writes. Although authoritative, the author's style of writing is very human, informative and shows a superb sense of humour. Throughout simple definitions are used for all technical and other terms to avoid confusion to the layman.

This 128 page book features 190 excellent photographs and 10 line drawings to support the thought provoking text which questions the direction of policy which will shape the future of the Royal Navy.

Divided into eleven chapters, this book covers all aspects of the Royal Navy in the 1980s. The chapters are: A Definition and some History, The Task, Submarines, The Surface Fleet, The Air Component, The Royal Marines, The Offshore Tapestry, Fleet Support, The Women's Royal Naval Service, Organisation and Training and how to be a Medium Maritime Power.

This book is certainly not a technical guide to the Ships and Submarines of the Royal Navy, although all classes are covered in detail.

Admiral Hill is quick to kill the argument that a Falklands-type campaign can never occur again. He refers to Kuwait (1962), supporting Mr Nyere's government (1964), Indonesia (1964-66), and Belize (1977).

He also points out the need for continued debate to ensure the maritime health of Great Britain.

Important issues such as the quality versus quantity argument, the fixed wing air component, the advisability of mid-life modernisations, the thought provoking issues go on. Although not cheap this book is good value and highly recommended.

NAVY LEAGUE AND CADET NEWS

WESTERN AUSTRALIAN NAVAL RESERVE CADETS
GERALDTON REGATTA 1985

This year's Geraldton Regatta was held from Saturday, 31st August to Friday, 6th September.

The emphasis this year was on fostering fellowship and goodwill between all Units. Units from Perth, Albany, Bunbury, Carnarvon and Geraldton attended. In all more than 80 Cadets and Officers were housed at TS MORROW and The Geraldton Yacht Club.

All meals were served from the Yacht Club Galley, cafeteria style and these were ably prepared by Chief Wright (Shiner), Eddie and Sharon. It was agreed that all meals were of an excellent standard with many cadets and Staff looking to trim down after a week of Shiner's and Eddie's cooking.

Shiner and Bobbie (from Bunbury) being the exception as these two challenged each other to a 25km marathon early in the week and therefore involved themselves in some intensive training. Bobbie eventually was decided the winner as Shiner, it is believed, had the assistance of some diesel power.

TS Vancouver Cadets with their trophy

On arrival in Geraldton on Saturday all Cadets were hastily into uniforms and then on to attend the Sunshine Festival Parade. The home Unit TS Morrow had won the Western Australian Colours and during the parade it was presented to TS Morrow colour guard. The colour guard then showed the WA colours.

Later that afternoon, all cadets who were not on duty went on leave and most spent several pleasant hours at the Geraldton Fare. Sunday morning sailing was cancelled due to rough weather. TS Gascoyne broke a boom vang, TS Morrow and TS Perth capsized and TS Canning turtled their boat. TS Vancouver was disappointed at the cancellation as the weather was typically that experienced in Albany and was that which Albany sail best in.

Sunday afternoon was spent doing boat maintenance, an aspect of sailing which plagued Perth and Canning all week.

Monday morning two pulling races were held with TS Morrow and TS Vancouver gaining one win each. The afternoon race was cancelled due to lack of wind which puts to rest the fantasy of a reliable wind in Geraldton.

Tuesday's conditions were reasonable and Staff took to the boats for once round the course. However, not long after the commencement of the race the breeze dropped and the last seen of Shiner and Eddie (the cooks) was when they were being towed behind the rescue boat at a goodly pace, headed for the beach on the pretext of having to prepare lunch. The truth being though that Shiner was not feeling so good, apparently slightly green around the gills.

Wednesday saw some excellent sailing and Wednesday night all Cadets attended a Quiz night that was arranged by the instructors with Shiner doing an excellent job as Quiz Master using questions from Trivial Pursuit. The winning team consisted of mainly Canning Cadets, a tremendous amount of fun was had by everyone.

Thursday saw the marathon race being held in a 25-30 knot breeze. The course was about 9 miles long, with most of the course being on the open sea. This race was completed in a shorter time than last year — roughly an hour quicker.

From the start of this race it was evident that the going was to be tough when Gascoyne turtled their boat and had to withdraw. The coxswain of TS Vancouver's boat felt that the bow would be smashed to pieces in the buffeting breeze.

TS Vancouver and TS Bunbury both suffered

similar problems with their rudders popping up and coming dangerously close to snapping. The Marathon was finally won by TS Perth.

Friday morning saw the last divisional race being held and a sudden pulling race between TS Vancouver and TS Morrow when points were tallied and scores were tied. Halfway through the race Vancouver broke an oar, replaced it, and then won the race by a foot.

Trophies were then presented and the following units won the trophies:
Overall trophy — TS MORROW
Division One Sailing — TS MORROW
Division Two Sailing * scratched
Consistency * TS GASCOYNE
Open Sailing — TS PERTH
Marathon — TS PERTH
Pulling — TS VANCOUVER
Best coxswain — AB Manning TS PERTH
Best Cadet on camp — AB STOCK, TS VANCOUVER

After trophies were presented emotions were running high as the camp neared its end. Many cadets had paired up and generally many new friends were made. Friday night saw all cadets attending a film evening to view one of the latest movies made.

Saturday morning everyone was kept busy cleaning the Yacht club and packing ready for the trip home. 11 am saw all cadets safely onto buses ready for the long drive to their respective homes.

Overall the Geraldton camp was a raging success and many cadets will be anxiously awaiting the Regatta next year.

All southern Units are now looking to the TS VANCOUVER regatta in March-April which next year could be stretched to a week with the four-termed year.

Compiled by Cadet Petty Officer PAUL HINDGE, TS VANCOUVER, ALBANY, WA 6330. Mrs Waghorn, 20 Karracatta Street, Goode Beach, Albany, 6330.

WESTWARD HO!

A Naval Reserve Cadet contingent from the New South Wales Training Ships CONDAMINE, MORETON, NEPEAN, SYDNEY and TOBRUK made a "long voyage" across the Nullarbor Plain in August to visit Western Australia. The group are pictured here before departing from the HMAS STIRLING fleet support facility in Western Australia to return via Albany and Esperance to the Eastern States. The contingent under the command of Acting Lieutenant J. Park, NRC and his most capable assistant (ex-WO) Sub Lieutenant George Eaton, NRC. The group departed from Sydney on 24 August and arrived back on 8 September. They were in the capable hands of Coach Captain Paul Phillips (Ex-PO AVN, RAN).

The case for Mercedes-Benz defence vehicles is backed by very convincing arguments.

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APRIL, 1986

THE NAVY

The Magazine of
THE NAVY LEAGUE
OF AUSTRALIA

Registered by Australia Post Publication No NBP 1482

HMAS WATERHEN.

1911 1986

Royal Australian Navy
75th Anniversary

THE NAVY

EDITOR
ROSS GILLETT
PO BOX 653
DEE WHY, NSW 2099

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The magazine of the Navy League of Australia

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HMAS DERWENT in Sydney Harbour for the Navy's 75th Anniversary Salute to Australia on 24 January, 1986. A Sea King helicopter, with the largest White Ensign ever manufactured, hovers above.

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CONTENTS

Major home port for Australia's Mine Warfare and Patrol Boat Forces, HMAS Waterhen

viewpoint

THIS issue of THE NAVY features the Royal Australian Navy's small ships, a description most people associate with patrol boats, minesweepers, survey vessels and the like.

In naval parlance the traditional meaning of a small ship is a vessel of lesser size than a cruiser, and until comparatively recent times the difference between a big and a small ship was distinct and recognisable to even a casual observer of the naval scene.

Nowadays the lines separating warship types and size have become somewhat blurred: for example, some modern destroyers, in traditional terms "*small ships*", exceed in size the conventional cruiser while some cruisers, especially the new Russian types, have assumed battleship proportions.

For most of its 75 years existence the RAN has maintained a "big ship" navy, the very first fleet unit including a battle-cruiser and three cruisers as well as destroyers and other small craft. From 1924 when the battle-cruiser HMAS AUSTRALIA was scuttled under the provisions of the Washington Treaty, a succession of heavy and light cruisers and eventually aircraft carriers formed the big ship component of the fleet. When the carrier MELBOURNE was taken out of service in 1982 the RAN, so far as combatant ships are concerned, became in effect a small-ship navy.

DEADLINE
The deadline for the July 1986 issue of The Navy is 1st MAY, 1986

Big Ships and Small Ships

It is often suggested that in the age of guided missiles and other sophisticated weaponry, ship size is unimportant or not as important as it used to be. This is not so, as most things are comparative and virtually all warships — large and small — have become more lethal. Range and endurance, seakeeping qualities, space available for equipment, habitability (not to be under-valued) are all governed by the size of the hull, correctly stated, the planned role of a ship and the capability required of it determine size.

By extension, the size, type and capability of particular ships in a navy determine that navy's capability and effectiveness, and in many ways reflect national defence thinking and policies; this is particularly so in maritime countries such as Australia.

The small ships featured in the following pages are all important and all have a part to play in the Royal Australian Navy. They also have their limits — a patrol boat cannot be expected to perform the tasks a frigate or destroyer is designed to perform, nor the latter, even when equipped with perhaps two helicopters, take the place of a purpose-built aircraft carrier. It is a matter of "*horses for courses*" so to speak, or perhaps it would be better to say a boy should never be sent on a man's job — something we are apt to do with our Forces.

"*By extension the size, type and capability of particular ships in a navy determine that navy's capability and effectiveness, and in turn the structure of a navy is a good guide, in a maritime country such as Australia, to the priority accorded maritime interests and the defence of those interests, in many ways it is a reflection of national thinking and defence policies, and sometimes it provides a clue to a country's intentions.*"

GEOFFREY EVANS
Federal President
The Navy League of Australia

SPECIAL FEATURE

Mine Warfare and Patrol Boat Forces . . .

Introduction

CMDR R. G. DAGWORTHY RAN, COMAUBMINPAB

As one who considers himself most fortunate to have served many years in Patrol Boats, I am proud of the service given by these busy ships.

The aim of this supplement is to profile the Royal Australian Navy's Mine Warfare and Patrol Boat Forces and their base at HMAS Waterhen.

The fine traditions and special spirit of service in small ships is typified by our namesake, the original HMAS Waterhen, known affectionately as 'The Chook'. We at Waterhen particularly remember that 'The Chook' was the first RAN ship sunk during the Second World War as a result of enemy action. A brief history of the original HMAS Waterhen has been included.

With 15 Fremantle Class Patrol Boats and 5 Attack Class Patrol Boats, the Patrol Force is in good shape and adequate for the task. With a limitless bucket of money, we can always do better with more.

The Mine Countermeasures Force is on the verge of an exciting expansion with the imminent introduction of the Australian designed and built Bay Class Minehunters and the development of the Mine Sweeper Experimental Project.

The role for our Patrol Boats as the coastguard is easily explained and understood. I remind seafaring colleagues when discussing Mine Warfare that every ship, including the submarine, is a one-time minesweeper. The Middle East in recent years has grimly reminded us of the ever-present sea mine menace.

The RAN small ships referred to as Minor Fleet Units are an exciting part of what is essentially a young-people's navy. These ships enable officers to enjoy and benefit from the heady experience of sea command early in their career. Minor Fleet Units also call for a special breed of sailor who is willing to accept major responsibility and to be a vital member of a close-knit team at an early age. In these ships all in the crew are both operators and maintainers. The Minor Fleet Units have important national responsibilities in peace-time as well as during the time of conflict.

I would like to acknowledge the efforts of LEUT Joe Straczek in researching and editing this supplement as Waterhen's input to the activities for the RAN's 75th Anniversary Year.

I trust that from our supplement you are better able to appreciate the importance and immensity of our task. Also, I hope the pride that the RAN's small ship personnel, both past and present, have in their job and in their traditions is evident.

It remains my honour and great pleasure to have the opportunity to work with such a dedicated group of young Australians and to help tell their story. With people such as this we can all have great confidence and pride in our nation.

Fremantle Class patrol boats HMA Ships FREMANTLE, WHYALLA, WOLLONGONG and LAUNCESTON alongside HMAS Waterhen

COMMANDER R. G. DAGWORTHY RAN

COMMANDER AUSTRALIAN MINE WARFARE AND PATROL BOAT FORCES and COMMANDING OFFICER HMAS WATERHEN

Commander R. G. Dagworthy, RAN, Commander Australian Mine Warfare and Patrol Boat Forces and Commanding Officer HMAS Waterhen

COMMANDER Robert (Bob) George Dagworthy was born in Sydney on the 19th February, 1946. He spent most of his childhood in Sydney, where he also received his education, at Waverley College. In 1965 CMDR Dagworthy joined the Royal Australian Navy as a Supplementary List Midshipman. After completing his initial training at HMAS Cerberus he joined HMAS IBIS during that ship's period of service in Singapore and the Malaya Peninsula where he saw war service at the time of Confrontation with Indonesia. From IBIS he was posted to HMAS VENDETTA where he remained for that ship's deployment to South East Asia.

On VENDETTA's return to Australian waters he joined HMAS SUPPLY for training as a watchkeeping officer. After promotion to Sub-Lieutenant, CMDR Dagworthy was posted as the commissioning Executive Officer at HMAS BARRICADE. This was followed by his promotion to Lieutenant in 1969, and in due course a number of postings as the Commanding Officer of various patrol boats.

CMDR Dagworthy's period of service in patrol boats was interrupted by a posting back to VENDETTA. The bulk of his service on VENDETTA was whilst that ship was attached to the Strategic Reserve based in Singapore. From VENDETTA he was posted to HMAS ARROW and was that ship's Commanding Officer when she was lost during Cyclone Tracy. Promotion to Lieutenant Commander in 1977 was followed by a posting to Fiji.

Whilst in Fiji he served as a Defence Adviser to the Fiji Government and he assisted in the establishment of the Fiji Naval Squadron. His last two years of service in Fiji were spent as the Commanding Officer of HMFS KIKAU, an ex-USN oceangoing minesweeper converted for use as a coastguard vessel. KIKAU was also senior ship of the Royal Fiji Military Forces Naval Squadron.

After returning to Australia he attended the Royal Australian Navy Staff College at HMAS Penguin. This was followed by a posting as the Executive Officer of HMAS JERVIS BAY, the RAN's training ship.

After being promoted to Commander in 1981 he was posted to Navy Office, in Canberra, to the Inshore Minehunter Project Office, where he remained until December 1984 when he took up his present posting as Commander Australian Mine Warfare and Patrol Boat Forces and Commanding Officer HMAS Waterhen.

Commander Dagworthy, who lives in Centennial Park, is a keen windsurfer and regular runner with the Hash House Harriers in his spare time.

ACKNOWLEDGMENTS

CMDR R. G. Dagworthy RAN; Officers and Ships Company of HMAS WATERHEN and attached craft; Lieutenant Ross Gillett RANR; Fleet Public Relations, Fleet Public Relations Officer, Command Photographic Section; Carrington Slipways Pty Ltd and Krupp Atlas Electronik.

COMMANDER AUSTRALIAN MINE WARFARE AND PATROL BOAT FORCES

ROLES AND FUNCTIONS

THE overall command of the Australian Fleet is vested in the Fleet Commander and is conducted from Fleet Headquarters, located next to Garden Island. However, as a result of the experience gained through the earlier operations with the TON Class minesweepers the need to establish a separate and dedicated minor war vessel authority, under the Fleet Commander, became apparent.

With the introduction of the ATTACK Class patrol boats the Commanding Officer HMAS WATERHEN was delegated, by the Fleet Commander, responsibility for minor war vessels. Whilst carrying out the duties associated with minor war vessels delegated to him by the Fleet Commander the Commanding Officer HMAS WATERHEN has the title of Commander Australian Mine Warfare and Patrol Boat Forces (COMAUSMINPAB). The functions delegated to COMAUSMINPAB by the Fleet Commander are:

(a) Class Authority for all Mine Countermeasure Vessels (MCMV), patrol boats, torpedo recovery vessels, diving tenders and other support vessels that may be allocated to from time to time by the Fleet Commander. As the Class Authority COMAUSMINPAB is responsible for the monitoring of the performance of these vessels and advising the Fleet Commander of technical problems or shortcomings in the design of these vessels and make recommendations as to any improvements.

(b) Conducting post refit inspections and Operational Readiness Evaluations of all MCMVs and PTFs.

(c) Develop and conduct trials and evaluation of tactics for MCMVs and PTFs.

(d) Promulgation of Class Standing Orders for MCMVs, PTFs and other attached craft.

(e) Advising the Fleet Commander on Mine Warfare and Patrol Boat matters generally.

(f) Liaise and co-operate with RANRL and other external authorities, on matters relating to minor war vessels.

As well as performing the above administrative functions COMAUSMINPAB has operational control of the Sydney based support craft vessels.

COMAUSMINPAB also has the dual responsibility of being the Commanding Officer of HMAS WATERHEN. As such he is responsible for the daily running of the establishment and ensuring that it is capable of providing logistical and technical support for all attached minor war vessels and support craft.

HMAS LAUNCESTON, September 1982.

Mine Warfare

ONE of the least glamorous but certainly one of the most useful weapons in any country's armoury is the sea mine. Sea mines are manifold in their design and function and require a number of different countermeasures to neutralise them and make sea lanes safe for shipping. Mines can be used to close channels to shipping, deny ports to the enemy, force enemy ships to take certain routes where they can more easily be attacked by other means and, of course, actively to sink ships.

Since most modern mines are unsweepable and have to be destroyed one by one — they can be used to force the enemy to expend an enormous effort, both in time and money, in order to clear them, an effort quite out of proportion to that expended in laying them.

TYPES OF MINES

The old moored contact mine is not out of date, but other types of moored mines may still be found. Thus the well-known Oropesa sweep is still fitted in many classes of minesweepers and minehunters. The modern mine is almost certainly likely to be exploded by acoustic, magnetic or pressure influence.

THE MAGNETIC MINE

The magnetic mine is activated by a change in the Earth's magnetic field due to the presence of a large metal conductor, such as a ship. Ships acquire a certain amount of permanent magnetism in the process of building and this remains more or less stable throughout the life of the ship, although refits, gunfire, and the pounding of heavy seas may alter it slightly. In addition, a ship may acquire varying amounts of magnetism due to the course she is steering and her magnetic latitude.

A ship's magnetic field can be resolved into three components:

(a) the fore and aft,
(b) athwartships, and
(c) the vertical.

Any one of these components can be used to activate a mine's firing circuit and there are a number of ingenious ways in which they can be harnessed.

Magnetic mines can be set to catch the type of ship required. By setting the firing mechanism to a low figure of change in the magnetic field, ships with small magnetic signature, such as destroyers and destroyer escorts, can be caught. Large ships would explode this type of set mine too far away to be of use. By using a higher figure or course setting the small ship on, say a screen ahead of the main body, might fail to activate the mine, but the larger ships they were screening would do so.

Magnetic mines can be laid on the sea bed or can be moored below the surface. Again the method of sweeping this type of mine is to explode it at a safe distance by creating a simulated magnetic field like that of a ship.

THE PRESSURE MINE

This is the most difficult mine, apart from the rising mine, to dispose of. It is activated by the change in water pressure on it caused

The six Ton class minesweepers in Jervis Bay during the early 1960s.

by the passage of a ship over it. A ship moving through the water creates an area of low pressure beneath her which varies with her speed and draught.

There are a number of ways of using this change of pressure, most of which use some form of pressure operated device which, when the pressure on it decreases, opens and completes a circuit. Pressure mines are always laid on the sea bed. There is no method of sweeping them — they have to be found and exploded by counter mining.

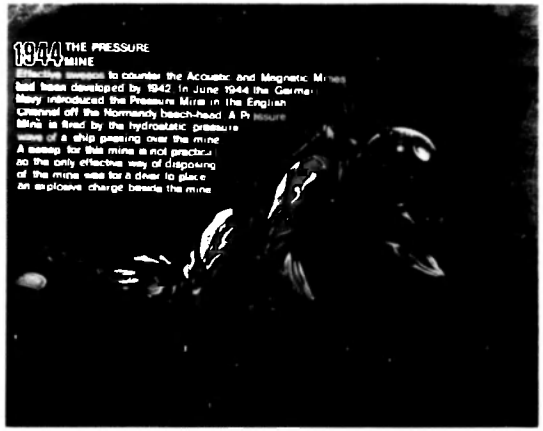
THE ACOUSTIC MINE

An acoustic mine is one which is activated by the noise made by a ship passing through the water. The noise is a combination of the cavitation of the water drops falling off the hull and the sound of the propellers and machinery.

These noises divide themselves into a range of frequencies which are picked up by hydrophones fitted in the mine and converted into electrical signals to fire the mine's detonator. The hydrophones have to be accurately adjusted to ensure that they are not so sensitive that they will pick up the ship's noises too far away and explode the mine harmlessly nor so insensitive that a ship at slow speed will fail to detonate the mine. The method of sweeping them is to endeavour to explode them prematurely by artificially making the sound of a ship but much larger than in real life.

Acoustic mines are generally laid on the sea bed and as time goes by they get covered with mud and marine growth and get less sensitive. The hydrophones are therefore arranged to get more sensitive with time, but there will eventually come a time when they have lost all sensitivity. In addition, they have to listen all the time and this is a drain on their batteries.

Thus the acoustic mine's life is somewhat limited, although it can be prolonged by arranging to 'arm' the mines only when



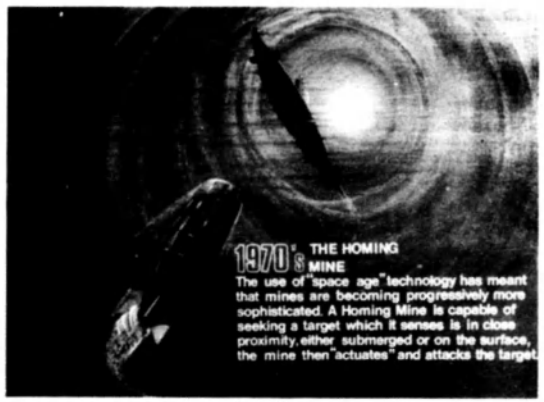
Pressure Mine.

shipping is expected and to keep the hydrophones switched off at other times. This entails complicated remote arming systems by means of acoustic underwater signals.

CAPTOR

One of the ways to make submarines easier to find and kill is to deprive them of their operational areas. The Captor is designed to do just that. Captor, standing for encapsulated torpedo, is a deep moored acoustic activated mine. It employs the latest MK 46 torpedo in a coffin-like container. It is intended to remain dormant until a given acoustic response 'brings it to life'.

Through the application of digital technology this mine and others like it are able to fully assimilate the data being returned from the ocean environment and discriminate between the intended target and all the natural phenomena and man-made decoy noise existing around it.



Captor Mine.

PRAM

Also in this category of underwater anti-submarine warfare is the Pram mine. It is known as a rising mine. This mine will be responsible for its on-target detection localisation and kill mechanisms. It will be expected to remain on station for extended periods of time, many months at a time. Quiescent when no ship is encountered, active and alert when the presence of a ship is detected. Deployment of the rising mines on the Continental Shelf will further deprive the submarines of operating area. The rising mine will be fully capable of detecting its submarine threat and exercising the same swift destruction that it will mete out to surface vessels.

MINE CONSTRUCTION TRENDS

Improvements in mines are directed towards producing smooth bodies with sometimes irregular shapes. They can be coated with acoustic absorbent materials to decorrelate the echoes which can merge with the back scattering from the bottom. Therefore, due to the inherent problems of classifying mines by their signature, their classification using shadow effects has been developed and this technique leads to far more positive and easier classification than is possible using signature classification alone. Shadow classification is carried out by examining the sonar shadow of the mine as projected on the sea-bed by the ship's sonar. Irrespective of the shape and surface coating the modern mine still projects a shadow.

HMAS DOOMBA, minesweeping in early World War II

HMAS MALLOW, one of the RAN's first generation of purpose-built minesweepers

HMAS COWRA, an Australian M'nesweeper/Corvette, 1945.

MINE COUNTS

To make the clearance of minefields more difficult, they usually consist of a mixture of all types of mines. This entails having to sweep all fields by all means — an immense and dangerous task. It is even possible to devise a mine which is activated by all three influences.

Thus, for example, a magnetic mine can be arranged not to explode unless there is an acoustic signal also present or an acoustic mine might also require a change of water-pressure and so on.

As if this did not make the task difficult enough, mines can be made to count. That is to say the mines can disregard say the first, second and third influence and explode on the fourth. Similarly, some mines in a field can be made to disregard the first influence, some the first and second and so on. A one count mine of a set sensitivity for example, could be used when trying to catch a 'large ship screened by smaller ones.

A screening vessel passing over the mine will do no more than 'arm' the mine ready to explode when the larger ship behind passes over it.

All these tricks greatly complicate the sweepers operation since it is no use declaring a minefield safe after it has been swept two or three times if four count mines have been laid.

The mine countermeasure operators have to use a system of 'Statistical Evaluation', his best judgement, coupled with what intelligence they have of the encountered mines.

As mentioned before, it is possible to set a minefield to 'arm' or be 'safe' by means of acoustic underwater signals, but a simpler and easier way is to use clocks. Although less flexible than the use of signals, clocks are of value to set a minefield to safe after a certain period when either the field is no longer required, or our own ships will have to traverse the area.

MINE LAYING

Mines nowadays are usually laid by aircraft. A very simple, but extremely effective, mine is made by fitting a sensor package to the 500, 1000 and 2000 lb aircraft-laid bombs. These are called 'Destructors' and are so versatile they can also be used to mine airfield runways and rail tracks. Even if one of these type of mines were recovered, any examination of the micro-electronic

HMAS BUNGAREE. November 1943

chip forming the core of the mine's activating system will destroy it.

This is not to be interpreted as the only method; numerous stores of World War II mines are still in stock in the various armouries of the Communist Bloc countries. A mine can be laid by any method ranging from:

(a) minelaying ships, i.e. such as HMAS BUNGAREE in World War II.
(b) submarine.
(c) merchant ship (every Communist ship is a potential mine layer).
(d) sampan (Korea, Vietnam).
(e) aircraft; and
(f) Finally, by a diver (the pressure mines so successfully used in Vietnam).

The advantage of the aircraft-laid ground mine over a moored mine is that when it explodes, the greater part of the energy released goes upwards to the surface and hits the ship on the underside of the hull, the best place to cause a hole. A moored mine releases its energy in all directions and is generally not so lethal. Mining is not an expensive form of warfare, as the modern influence mine costs only about $10,000.

The Minehunter.

MINESWEEPING

There are two types of vessels used for clearing minefields — minesweepers and minehunters, and they are often known under the general term of Mine Countermeasure craft. Minesweepers can be quite large for ocean sweeping or very small for coastal or in-shore work. They actually stream sweeps, the wire Oropesa type for cutting moored mines and the magnetic ones for exploding magnetic mines. They can also tow an acoustic sweep.

MINEHUNTERS

These are for use against ground influence mines. Their main job is to find the mines and blow them up. Many minehunters are, however, also equipped with wire and magnetic-acoustic sweeps so they can be used as minesweepers when required.

MAGNETIC MINESWEEPING

To detonate a magnetic mine, a sweeper tows astern of it two buoyant cables lashed together for a given distance, at which time they separate to form a large loop. The minesweeper has a special generator which produces a large pulsating current and this creates a magnetic field similar to that made by a ship.

A small ship is simulated by using low power and a large one by the use of high power. It is customary to carry out the first sweep on low power and then gradually step it up for subsequent sweeps.

ACOUSTIC SWEEPING

To simulate the noise made by a ship when going through the water, electrically operated noise-making devices are used. Presently in use in the RAN are the Acoustic Displacer and the Acoustic Hammer — each covering a selected band of frequencies. The object is that the noise produced will cause the acoustic mines to detonate.

PRESSURE MINES

As already mentioned, there is no way of sweeping a pressure mine — it has to be found and exploded. Indeed, with all the various tricks that can be played with mines we have now reached a point where the only safe way of ensuring a safe passage through a minefield is to locate and explode every mine.

At present the system used in the RAN is done by launching a Gemini dinghy fitted with a suspended disposal weapon beneath it. Reflections from both the mine and the disposal weapon enable the Gemini to be conned to a position where the weapon can be released and through a system of delayed firing enable the mine to be neutralised.

The French have developed a submersible known as the PAP 104 and Australia has agreed to purchase and fit this system to the Minehunting Catamarans. It consists of a wire-guided submersible which carries two explosive charges and a TV camera. It is unmanned and controlled by the parent ship. A searchlight is provided to give TV cameras lights by which to see. A gyro compass is also carried and its readout is remoted to the parent ship, which then has a continuous reading of the heading of the submersible.

Once the charge has been released the submersible ascends and is controlled to return to the parent vessel, either to be prepared for another sortie or recovered. The weapon is exploded by an acoustic signal.

One interesting development has been an attachment that can be fitted to enable the submersible to sever the mooring cable of moored mines.

Acoustic hammer on Ton class minesweeper

Divers en route to detonate an enemy mine after location by minehunter.

HELICOPTER SWEEPING

Helicopters for minesweeping were first used in Korea, since then, they have proved invaluable off Vietnam and in the Suez Canal. The RN 53D Sea Stallion chopper is used and can tow a double-wire sweep against moored mines. The wire sweep is similar to that used by surface vessels and employs explosive cutters.

Acoustic Sweep. The acoustic sweep is a towed noise-maker which operates by the pressure of water, which via water-pressure drives a turbine, which in turn rotates a noise-producing disc.

The Magnetic Sweep. This sweep consists of a towed hydrofoil sled, on board it is a Jet Turbine Generator which is controlled

from the helicopter. This produces a magnetic field in the water similar to that of a ship.

Disadvantages. Helicopter sweeping has three disadvantages, these being:

(a) Poor Endurance — the time on task and total monthly operating hours can not compete with the performance of surface ships.

(b) Poor Navigation — compared to a surface vessel — greatly increases the amount of MCM effort required to achieve any given percentage of mine clearance.

(c) Cost — thus is very high considering the logistic requirements needed to uplift and support a MCM helicopter squadron.

HOVERCRAFT SWEEPING

Advantages. In the MCM environment the Hovercraft have three advantages over conventional displacement vessels, these being:

(a) speed.

(b) relative immunity to underwater shock.

(c) low magnetic, pressure and acoustic signatures.

Disadvantages. The Hovercraft also have disadvantages, these being:

(a) poor sea-keeping.

(b) poor endurance.

(c) poor controllability, and

(d) poor towing power.

Future. Whether a Hovercraft will be sufficiently manoeuvreable to carry out mine hunting is questionable, however, a role in the form of a Precursor Sweeper to a limited degree cannot be overlooked.

PRESENT CAPABILITY

Navy's present wooden hulled TON Class minehunter HMAS CURLEW was built in the United Kingdom in the 1960s and purchased with 5 other TON Class vessels from the Royal Navy in the 1960s, all ships then being configured as minesweepers. Minesweepers counter mines either:

(a) mechanically — by towing wire astern which cuts the mooring wire of moored mines, thus allowing the mine to rise to the surface where it is destroyed by rifle fire, or

(b) by exploding mines by towing cables and equipment astern that simulate the magnetism and noise of a very large ship, thereby deceiving a mine's triggering device.

In 1969, CURLEW (and SNIPE) were converted from influence minesweepers into minehunters by removing magnetic and acoustic sweeps and installing a high frequency sonar set. Minehunting is complementary to minesweeping but is carried out in a different way. CURLEW locates mines by means of a sonar beam. The mine is then exploded by lowering a countermining charge of high explosive nearby, or divers may descend to the mine to render it harmless for recovery purposes.

HMAS CURLEW in September 1982

AUSTRALIAN MINE COUNTERMEASURES SQUADRON

	CURLEW 1121
Displacement	484 49 tonnes (476 tons)
Length overall	46 77 metres (153 ft 5 in)
Beam	8 55 metres (28 ft)
Engines	Two Napier Deltic D 18-7A diesels — 1500 bhp Hunters only — Active rudders two Foden FD6 Mk VIII-220 bhp
Generators	Three Foden FD6 Mk I or II
Propellers	Twin Screw
Speed	15 knots
Armament	One Bofors 40 60 mm (IBIS — Two)
Ship's Company	Five officers and 32 sailors

In addition to this specialised mine countermeasures role, the squadron has located aircraft that have crashed at sea, sunken ships, and underwater obstructions that could well have proven hazardous to shipping. CURLEW carries a team of clearance divers and these men have participated in operations involving disposal of World War II mines in Australian and Papua New Guinea waters, salvage of crashed aircraft, and assistance to civil powers, such as in Darwin following Cyclone Tracy in 1975.

The TON Class is constructed of a double skin of mahogany laid over an aluminium frame as protection against magnetic mines. CURLEW was also designed to operate with a low level of underwater noise as protection against acoustic mines.

The valiant efforts of operators and maintainers have kept CURLEW going, but she is approaching her end of life and her capability falls short of today's requirements of the Australian Defence Force. CURLEW will shortly be replaced by the RAN's new Inshore Minehunter, the prototype of which will be launched at Newcastle in May this year.

AUSTRALIAN MINESWEEPING PROJECT

In late 1985 the Minister for Defence announced that the Federal Government had approved expenditure of $5.8 million to develop and trial a new and innovative concept in minesweeping. At the heart of this new concept was a major breakthrough by scientists working at the Royal Australian Navy Research Laboratory. The centre point of the breakthrough was the development of a highly magnetised buoy made of a strontium ferrite alloy.

The development of this magnetic buoy means that no longer will minesweepers have to be complex an expensive ships. In fact, almost any vessel with a work area on the stern deck can be used to sweep magnetic mines. This system of using craft of opportunity will allow, in times of war, the skills and local knowledge of fishermen and other seafarers to be used in defence of their nation.

In concert with the evaluation of the craft of opportunity minesweeping system will be tests to as to whether it is possible to develop a similar "bolt on" system for use with helicopters. These helicopters could then be used to sweep ahead of the minesweepers.

Once these projects and the RAN's Inshore Minehunters reach operational status Australia will have an anti-mine warfare capability that will be the envoy of the Western world.

FLINDERS TIDE, a vessel ideally suited for use as a craft of opportunity

BAY CLASS MHCAT

Background

Minelaying is one of the most cost-effective ways of exerting naval power. As was illustrated recently in the Gulf of Suez and the Red Sea during 1984, mines can be laid clandestinely in peacetime by merchant ships, fishing craft, submarines or aircraft to either harass shipping with low-charge mines or completely seal off port approaches or deny the use of shipping channels by the thick sowing of large explosive mines.

During the Vietnam War, the Port of Haiphong was sealed off for months by heavy American mining. In the Korean War the North Koreans denied Wonsan to the United Nations forces for many weeks. During WWII the US Navy laid 25,000 mines in Japan's coastal routes and port approaches to sink 1,075 ships and caused the virtual collapse of Japanese coastal sea transport.

Every country with a sea coast and ports needs to possess mine counter-measures (MCM) forces to provide a credible capability to deal with any mine threat by hostile country, guerilla forces or terrorists.

In the 1980s the world's navies have evolved three basic ship types for dealing with the mine threat. These are:

The minesweeper, which tows sweeps through the sea to sever moored mines and activate magnetic or acoustic mines.

The minehunter, which locates suspected mines by high definition sonar, investigates the suspect object by underwater television cameras and destroys confirmed mines by remotely controlled explosive charge.

Ships which combine the capabilities of minehunter and minesweeper.

After lengthy evaluation of available types of modern mine counter-measures ships, the Royal Australian Navy has determined that the most cost-effective procurement to replace the Navy's existing mine warfare vessels and maintain a capability to cope with the mine threat in coastal waters would be a number of small, relatively cheap, specially designed, single role minehunters.

ROLES

This class of small minehunter would be required to undertake the following roles:

(a) Detecting mines laid in water depths less than 100 metres, and neutralising or disposing of mines in the same depths;

(b) Operating as training vessels in minehunting techniques and operations;

(c) Developing minehunting techniques and tactics in local waters;

(d) Collecting data for Mine Warfare Pilot Survey;

(e) Locating and assisting in the recovery or disposal of submerged objects; and

(f) Supporting diving operations.

The concept of operations for these small MCM ships is that a two-ship unit will be able to keep a port open; each operating twelve hours continually on minehunting and neutralisation and twelve hours off for maintenance, rest, and such less continually demanding tasks as marking cleared channels. This concept brings the advantages of minimum crew requirements and, accordingly, minimum accommodation, victualling and self-maintenance facilities.

For their operational tasks, such ships will need reliable and efficient systems for:

(a) Mine locating, whether the mines are riding on moorings or lying on the sea bed;

(b) Identification of located suspected mines;

(c) Destruction of the mines;

(d) Close to hand maintenance and stores support, whether by support ship or by mobile forward operating support base.

To get to the area of threat, the ships must be capable of coastal passages.

The design selected after extensive tank testing of models of the hull shape in both Australian and Netherlands test facilities and shock-testing in both Australian and United Kingdom facilities, is a catamaran hull form, to be constructed of foam sandwich GRP and fitted with an anti pitching fin between the two bow areas.

HULL FORM

A catamaran hull was selected because it provided, with minimum displacement, a very manoeuvrable, stable, shock-resistant, and relatively spacious working platform. Low displacement means a lower pressure signature to actuate pressure mines and the capability to hunt for mines in the shallow waters used by many inshore craft. The increased stability inherent with the catamaran form enables propulsion and power generation to be located at upper deck level which brings a threefold advantage in that:

(a) The ship's magnetic signature is reduced when measured at a distance below the water;

(b) The ship's acoustic signature is reduced when measured at a distance below the water;

(c) Vital equipments are provided with increased protection from underwater shock effects.

Manoeuvrability can be greatly enhanced by having two independently controlled and widely separated steering propulsion units, one to each hull and each with 360 degrees traverse.

Following weapon system studies undertaken in France and Germany, the concept of a modularised/containerised weapon system was selected which has enabled a separation of the shipbuilding and outfitting task from weapon systems integration. This concept will permit one operational weapon system to be embarked while a spare containerised system is ashore being maintained.

The Minehunting System is the primary weapon system of the Minehunter Catamaran and it comprises the following sub-systems:

(a) Minehunting sonar sub-system;

(b) Tactical Data sub-system;

(c) Precision Navigation sub-system; and

(d) Mine Disposal sub system.

To keep ship costs down, the design length of the hull has been kept to the minimum that model tank testing has shown will provide an efficient speed/length ratio and still provide space for main machinery to be installed on the weather deck, and provide an adequate area for mine disposal weapon handling.

A composite foam sandwich construction has been selected, comprising a 60 mm thick layer of high density rigid PVC foam planks with external and internal laminates. Each layer of laminate consists of alternating plies of resin and 300 gm/square metre glass chopped strand mat. The selected resin is thixotropic unsaturated isophthallic polyester.

The advantages of the foam sandwich construction are:

- Light weight;
- Ease of construction;
- Low maintenance;
- Minimum magnetic influence;
- Low noise transmission;
- Good thermal insulation.

EQUIPMENT

To enhance this new ship type's capability to operate effectively in suspected mined waters, all equipment fitted in the ship must meet the criteria of:

(a) High shock resistance (by use of shock mountings and/or vibration mountings);

(b) Minimum magnetic signature;

(c) Low magnetic permeability;

(d) Minimum noise emission.

The minimum magnetic properties criteria requirement has been followed stringently in the selection of materials for ships fittings. Fresh water pipes are plastic, hydraulics systems pipes of Tungum (aluminium silicon bronze), machinery cooling pipes are copper nickel and exhaust pipes of stainless steel. Phosphor bronze or minimum magnetic stainless steel is used for deck fittings. The tripod mast is of aluminium.

When the use of magnetic material is unavoidable (e.g. main machinery), such equipments are provided with individual degaussing coils.

The Navy has built a Magnetic Test Range ashore on which every piece of equipment to be placed on board is first magnetically checked for its magnetic signature.

An electric earthing system is provided for all metallic equipment and a lightning protection system with lightning conductors fitted on the mast yard-arms and taken down to an earthing system distributed between earthing plates, propulsion unit and sonar trunk.

A maintenance policy of repair by replacement wherever practical has been selected and the ship's design supports this concept. On board maintenance will be limited to servicing and routine planned maintenance. Each propulsion steering unit can be lifted out from the ship without requirement for dry docking as can the sonar transducer. An overhead monorail is provided in the machinery compartment for the easy removal and replacement of machinery and an overhead hatch permits the whole engine to be lifted out.

CREW

The Royal Australian Navy has decided on a ship's complement of thirteen, comprising:

Two officers — Captain and Executive officer.

Three petty officers — two seamen, one technical.

Five seamen.

Two Technical sailors.

One Communications sailor.

One spare sleeping berth is provided.

In order to confirm the accuracy of their design studies and model tank testing the Navy funded the construction of a full-scale section of hull from keel to upper deck and then in 1980 had this section subjected to a test programme of underwater explosive shocks of increasing intensity. This full scale testing proved the soundness of the minehunter catamaran hull design and of the selected material and method of construction.

Minehunter Catamaran Specification

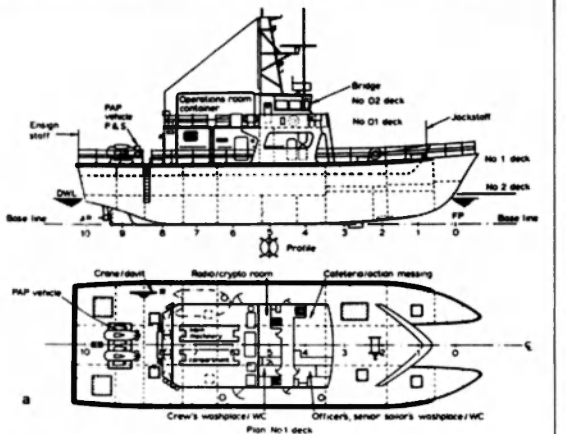
The following ship specification has been evolved from the Navy's prolonged studies and material and model testing.

DESIGN

An asymetric catamaran hull form, built of foam sandwich glass reinforced plastic (GRP), of the smallest size capable of containing and operating a modular mine detection and neutralisation weapon system, and with a diesel hydraulic propulsion system.

DIMENSIONS

Length Overall	31.0m
Length at Waterline	28.0m
Beam of Ship	9.0m



Beam of each Hull	3.0m
Depth of Keel to 1 Deck at Centreline	4.6m
Maximum draft	1.8m
Height overall	19.0m
Displacement at full load	170 tonnes
Displacement at half load	160 tonnes

SPEED & ENDURANCE

The ship is capable of a maximum continuous speed of at least 10 kts in calm seas at half load displacement and six months out of dock in tropical waters.

Under the same conditions, the ship has an endurance of at least 1,200 nautical miles, with 30% of fuel remaining.

The vessel is designed to be:

(a) Capable of making ocean passages at reduced speed in Sea State 4 and conducting minehunting operations continuously in Sea State 3.

(b) Capable of maintaining a stationary fixed geographical position to within the accuracy required for minehunting.

(c) In accord with the intact and damaged stability criteria for 60 knot winds laid down in stability and buoyancy criteria for US Naval surface ships.

BUILDING STANDARDS

The minimum service life of the hull should be of the order of 20 years with normal usage upkeep.

As far as is practicable, the ship conforms to approved RAN standards as laid down by the Department of Defence (Navy Office).

The ship complies as closely as possible with the following international regulations:

(a) Convention on the International Regulations for Preventing Collisions at Sea, 1972, including IMCO amendments.

(b) International Convention for Preventing of Pollution from Ships, 1973, including IMCO amendments.

SHOCK REQUIREMENTS

The hull is capable of surviving repeated shocks from underwater explosions to the magnitude expected from a modern sea mine.

Machinery and equipment other than purely domestic equipment are designed to be capable of withstanding, with the use of mounts if necessary, repeated shocks without sustaining damage beyond the capabilities of ship staff to repair using on-board spares.

In order that on-board spares will be capable of withstanding repeated shocks of similar magnitude without damage, appropriate shock mounted stowages for spares are provided.

Control arrangements for machinery and equipment, other than purely domestic equipment, are such that they will not be impaired by repeated shocks.

Automatic control of machinery and other equipment and labour-saving devices have been incorporated where this will result in a saving in manpower or is cost-effective on other grounds and is acceptable within magnetic and acoustic signature constraints.

PASSIVE DEFENCE MEASURES

For the ship's specialist minehunting role, it is important that the noise signature and magnetic signature emitted are kept below those that would activate a modern sea mine. This is achieved in the minehunter catamaran by:

(a) To reduce Noise Signature:

(1) the mounting of machinery on noise-isolating mounts;

(2) providing acoustic enclosures of diesel generators;

(3) oversizing of hydraulic propulsion system;

(4) special attention to insulation of noise paths;

(5) special attention to propeller and rudder design; and

(6) insulation of the hull.

(b) To reduce Magnetic Signature

(1) the use of minimum magnetic equipment,

(2) reduction of the amount of equipment to the minimum practicable and siting it as high as possible in the ship consistent with satisfactory operation,

(3) the use of minimum magnetic materials for construction of the hull, superstructure and fittings, and

(4) the use of compensating devices.

In-service checking of the signature should be carried out by portable test equipment or fixed ranges.

GUN ARMAMENT

No weapons, other than the Mine Disposal System, are carried during minehunting operations. However, provision is made for mounting two 0.5 in machine guns on gun supports (two forward and two aft), when the ship is not minehunting. Provision is also made for the carriage of small arms when required. A separate Small Arms Ammunition Magazine is provided.

Navy Vessel's Epic Maiden Trip: 100m

The Royal Australian Navy's revolutionary new minehunter, HMAS RUSHCUTTER, made its first voyage recently.

But the journey involved a distance of about 100m and it was not carried out under the ship's own power.

The RUSHCUTTER was lifted from its construction berth in a large, covered shipbuilding facility at Tomago out into the open, to allow the hull of a second minehunter, HMAS SHOALWATER, to be moved on to the berth.

The lift was done by a $700,000 heavy-lift straddle carrier built specially for the minehunter project. The straddle carrier is the biggest of its type in Australia, with a lifting capacity of 180 tonnes.

Carrington Slipways Pty Ltd's fibreglass division is building the two prototype minehunters for the Navy under a contract worth about $25 million.

Anniversary Celebration

The RUSHCUTTER is scheduled to be launched on May 3 this year and it will be the only new naval vessel to go into the water in the RAN's 75th anniversary year.

Lamination of the hull of the RUSHCUTTER has been completed and fitting-out work will begin next week.

Once the second vessel had been moved on to the construction berth, the straddle carrier lifted the RUSHCUTTER back into the covered facility, setting it down on a fitting-out berth.

Critical Period

The movement of the two vessels marked the end of a critical 18-month period for Carrington Slipways, ending what has often been a slow learning process in using fibreglass lamination.

The two ships are the first minehunters in the world to be built from glass-reinforced plastic.

Navy tests have shown that the material will be less vulnerable to sensitive magnetically activated mines than steel or timber vessels.

Carrington Slipway's contract includes options for up to six more minehunters if the vessels prove successful in extensive trials.

The firm also is engaged in an international marketing exercise, with its marketing manager, Mr Richard Miller, currently in the Middle East talking to Arab nations about the minehunters.

The completed hull of the RUSHCUTTER weighs about 55 tonnes. In the outfitting berth the ship's superstructure, electrical equipment and pipe systems will be installed.

The straddle carrier will be used for the second time in February to lift the ship outside the building for final outfitting and painting.

About 10 weeks later, the carrier will take the completed 170-tonne vessel 300m along a specially constructed road to a canal off the Hunter River and lower it into the water for its official launching.

The minehunters are each 31m long with 9m wide catamaran hulls.

The praying mantis-like straddle carrier weights 100 tonnes and has lifted up to 205 tonnes in tests, about 10% more than its nominal capacity. It sits on eight 2.5m diameter tyres.

RUSHCUTTER, MHI 01, under construction.

The KAE MWS 80 — Minehunting Weapon System

Introduction

The MWS 80 system fitted in the RAN Inshore Minehunting Catamaran was designed and manufactured by Krupp Atlas Elektronik (KAE) in Bremen, West Germany. The system provides for a new approach to Minehunting and is consistent with the Royal Australian Navy's novel catamaran solution. The extent of system integration includes common consoles, hardware and software and its packaging in Containers for easy removal/exchange which ensures high operational availability for Australian MCM forces, even in remote locations.

The photographs below show the MWS 80 Land-based Test and Training Facility at HMAS Waterhen, which was officially opened by the Fleet Commander, Rear Admiral Ian Knox, RAN, on the 4th March, 1986. This facility has been implemented for the RAN by KAE and has been used by Krupp Australia, KAE Division for installation, integration, acceptance testing of the second and third Minehunting Systems, since July, 1985. The first system was integrated in Germany and underwent Sea Trials in the North Sea.

MWS 80

ATLAS MINENJAGD-WAFFENSYSTEM MWS 80
CONTAINERISIERTE VERSION

MHCAT.

System Functional Overview

The basic functions of the MWS 80 System are: –

- to search for, detect and classify mines, whether suspended, moored or lying on the sea-bed;
- to provide co-ordination and control of MCM operations in local sea areas and port approaches;
- to identify, destroy or neutralise mines by means of a Mine Disposal Sub-system;
- to retain accurate record of the areas searched, including the classification results and geographical positions of mines and other objects detected;
- to develop new MCM techniques and tactics;
- to create a Data Base of all coastal areas from (Route Survey) operation.

The KAE DSQS-11 H is a Minehunting Sonar, suitable for detection and classification of surface mines, moored mines and ground mines. Under the sponsorship of the Federal German Ministry of Defence, the DSQS-11 H has been designed to meet the requirements of future Federal German Navy MCM programmes, such as SM 343 MJ 332. Design features of the DSQS-11 H include high performance and availability, mechanical simplicity, one-man operation and substantial provision for growth potential to combat future mine threats.

The KAE Navigation and Command Equipment (NCE) fulfils the MCM requirement of precision navigation as well as tactical display, information processing, data recording and plotting for the MCM Command. The primary precision Navigation Sensor chosen by the Royal Australian Navy is the Motorola Miniranger III System, however, the addition of the KAE Doppler Log DLO 3-2 provides a fully automatic back-up mode of operation. Like the Sonar DSQS-11 H, the NCE provides for flexibility in application and future growth potential.

The NCE is operated by one man. All standard Minehuntin ɟ procedures are largely automated, however, Menu supported manual control of the Minehunting operations is always possible.

The Mine Disposal Equipment incorporates a Mine Disposal Vehicle MDB (PAP 104) but is Government-Supplied Equipment fully integrated within the system.

In summary the functional design of the MWS 80 System facilitates the continuous monitoring of high risk coastal waters by route survey peacetime operations, such that rapid clearance can be achieved when required of our shipping routes.

Land-based MHI weapon system test and repair facility under construction at HMAS Waterhen.

System Layout

The MWS 80 system is installed in two Glass Reinforced Plastic Containers of Foam sandwich construction with connection units to provide the electrical interfaces to ship fitted equipment such as navigation sensors, communications equipment, and power supplies.

The Containerised design of the RAN MHI Catamaran and MWS 80 System is

such that the important system components can be exchanged within a matter of hours.

The ORC is the nerve centre of the ship and contains all the electronics for the system in compact modules apart from some sonar signal processing circuits which are located within the Sonar Transducer, as shown in Figure 3. The unit was designed and built in Australia by Krupp Australia Pty Ltd, KAE Division and Unisearch Limited in conjunction with the MHI Shipbuilder Carrington Slipways Fibreglass Division. The ORC is fully airconditioned and the layout as shown in the accompanying photograph, ensures that the Commanding Officer has a full appreciation of the situation. All the ship control indicators are fitted in the Versatile Console System instrumentation panel suspended above the NCE Console.

Additional instrumentation includes slave Radar Display, and slave Displays for the ATLAS DSO 20 Echo Sounder and the ATLAS Doppler Log DLO 3-2. The NCE Console with its two displays enable the Command to monitor the tactical situation on a Labelled Plan Display (LPD) whilst continuing with system operation on the second display. The Sonar equipment likewise has two displays, one for detection covering 360° in asimuth and the other for classification, and system menu driven operation. Both consoles have layouts and colour-coded presentation which enable the Command to monitor the tactical situation and the sonar performance continuously without detracting from his overall system responsibilities. Between the consoles is situated the TV monitor and controls for the PAP 104 Mine Disposal Vehicle. Utilising the sonar guidance together with the TV picture, this remotely operated submersible vehicle is firstly positioned above the mine firstly for positive identification, and secondly, after positive mine identification by the TV, for releasing its explosive charge for mine destruction.

Control console in the Operations Room Container.

The TDGC Container is of similar design to the ORC. Figure 3 shows the TDGC in its normally housed arrangement and the insert shows the section which protrudes beneath the Catamaran hull. The power electronics and hydraulic controls are contained in the upper section whilst the lower retractable section contains two sonar arrays and their associated electronics. All the signal processing is performed in the underwater electronics section, such that a purely digital interface exists with the ORC where further processing and display circuitry are housed. The system design is such that a variable depth sonar can be implemented for further extension of the system capabilities.

Summary

The MWS 80 System as fitted to the RAN MHI Catamaran is a world first in integrated mine warfare systems and will provide the RAN with a capability to rapidly clear Australian coastal waters of current and future mine threats. Numerous peacetime applications are envisaged for this versatile and capable system. The design of the system has been realised by close collaboration between KAE engineers in Germany and Australian engineers from both Defence Department and Industry for its specific role in containerised form on-board the RAN Catamaran Minehunter. Through life in-country support has been ensured by the involvement of Australian Industry, in particular Krupp Australia Pty Ltd, KAE Division, and the provision of the KAE Land Based Test and Training Facility.

Finally, recently conducted Sea Trials indicate the system will meet the Navy's requirements both now and into the next century.

THE OLD CHOOK — HMAS WATERHEN I

WATERHEN as a unit of the Royal Navy

THE latter stages of the Great War saw the introduction into the Royal Navy of a number of capable and high performance destroyers.

To operate with these destroyers the Admiralty ordered the design of a new class of destroyer leaders, known as V Class Destroyer Leaders. Following the placing of the order for the V Class Leaders work commenced on a new class of destroyer. These destroyers ordered in 1916 were designed in the light of experience gained at Jutland. The design finally chosen was almost identical to the V Class Leaders. The initial batch of destroyers was ordered in June 1916 and became known as V Class Destroyers. These destroyers were followed in December 1916 by a repeat order of 19 ships included in this order was the destroyer WATERHEN.

WATERHEN was laid down in July 1917 at the Hebburn-on-Tyne shipyards of the Palmer's Shipbuilding and Iron Company. She was launched on 26 March, 1918, and completed just prior to the end of the Great War.

In 1933, WATERHEN, as well as the destroyers VAMPIRE, VENDETTA, VOYAGER and the destroyer leader STUART, was transferred on loan to the RAN. WATERHEN and her accompanying destroyers were commissioned into the RAN on 11 October, 1933. The newly formed Australian Destroyer Flotilla departed England for Australia on 17 October. Sailing via Suez the Flotilla reached Darwin on 7 December and arrived in Sydney on 21 December. After her arrival in Australia WATERHEN was engaged in routine duties with the Australian Squadron until 9 October, 1934, when she was placed in reserve. She remained in reserve until April 1936, when she was recommissioned for a short period, after which she was once again placed into reserve.

On 1 September, 1939, WATERHEN was recommissioned and made ready for war service. Her initial war duties were carrying out anti-submarine patrols based out of Sydney. On 14 October, 1939, in company with STUART and VENDETTA, WATERHEN sailed for Singapore. On the same day as WATERHEN sailed for Singapore her sister-ships VAMPIRE and VOYAGER departed Fremantle, also bound for Singapore. The entire Flotilla was under the command of Commander H. M. L. Waller RAN. On 13 November, after all the destroyers had arrived at Singapore, the Flotilla sailed for the Mediterranean. Whilst enroute the destroyers were despatched to help search for the German pocket-battleship GRAF SPEE. WATERHEN arrived in Malta on 14 December and along with the other Australian destroyers formed the 19th Destroyer Division of the Mediterranean Fleet.

At this stage of the war Italy was still neutral and as the Royal Navy had undisputed mastery of the Mediterranean, WATERHEN and the other destroyers were engaged in routine patrols and Fleet exercises. Following Italy's entry into the war and the fall of France, the strategic situation in the Mediterranean was completely changed. The British Mediterranean Fleet now found itself virtually surrounded by hostile shores.

On 17 August 1940, WATERHEN was part of the force screening British warships which were bombarding Italian positions in Libya. A week later WATERHEN was again off the Libyan coast, this time providing covering fire for the gunboat HMS LADYBIRD as she attacked shipping and harbour facilities at Bardia. Following the Italian invasion of Greece on 28 October, 1940, WATERHEN helped escort a convoy from Alexandria to Crete. After establishing a fuelling base the warships returned to Alexandria.

In December 1940, WATERHEN, as part of the Inshore Squadron, provided support for the British Army fighting in the Western Desert. On Christmas night 1940, WATERHEN intercepted the Italian supply ship TEREREMO DIRITTO. After taking off her crew WATERHEN sank the vessel by gunfire. Five days later the Australian destroyer collided with and sank the British anti-submarine trawler HMS BANDOLERO. As a result of this collision WATERHEN was despatched to the Aegean, where she was to remain until April. On her return to the Inshore Squadron.

After completion of these repairs WATERHEN was despatched to the Aegean, where she was to remain until April. On her return to the Inshore Squadron WATERHEN took part in operations in support of the Army at Tobruk. On 14 April, whilst at anchor in Tobruk Harbour, WATERHEN was attacked by dive-bombers. Fortunately, she was not damaged by this attack. Five days later, accompanied by the destroyers STUART and VOYAGER, WATERHEN acted as escort for the landing ship HMS GLENGYLE as she carried commandos for a raid on the facilities at Bardia. For the remainder of April she was engaged in operations designed to support the Army during the campaigns in Greece and Crete. These operations included taking part in the evacuation of both Greece and Crete.

In May 1941, the Tobruk Ferry service was initiated using the destroyers of the Inshore Squadron. The object of the service was to provide logistic support for Australian and other soldiers that were surrounded in Tobruk.

On 28 June, 1941, WATERHEN, in company with HMS DEFENDER, departed Alexandria for Tobruk. At about 7.45 pm, whilst off Sollum, both ships were attacked by dive-bombers. Though neither ship was hit, WATERHEN was badly damaged as a result of near misses from three sticks of bombs.

THE first stick of bombs, which fell about 30 feet clear of the ships port bow, caused a leak in the No 1 oil fuel tank, as well as carrying away the W/T aerials. The second stick fell 50 feet astern of the ship. The final stick, which fell close alongside the ship's port side, caused the most damage. As a result of this third stick the vessel developed a list to port, the boiler fires were blown out and the ship's wheel was jammed. The list was the result of an eight foot long hole below the waterline between the engine room and No 3 oil fuel tank, the engine room and main cabin flat were flooded immediately. Flooding also occurred in the tiller flat and No 2 boiler room as a result of severe structural damage. Some 25 minutes after being attacked the ship had developed a dangerous list to starboard and was abandoned.

Three-and-a-half hours later WATERHEN was reboarded and a tow line was passed to DEFENDER, however, between 0015 and 0030 the list increased and the ship was once again abandoned, though the tow was continued. Finally, at about 0150 on the morning of 30 June, 1941, the fight to save the gallant ship was lost as the 'Old Chook' rolled over and sank.

The WATERHEN was the first ship of the Royal Australian Navy to be lost in the Second World War as a direct result of enemy action.

HMAS WATERHEN

Type	Destroyer 'W' Class
Displacement	1,100 tons
Length	312 feet 2 inches (overall)
Beam	29 feet 7 inches
Draught	9 feet 8 inches
Builders	Palmers Shipbuilding Co Ltd, Hebburn-on-Tyne, England
Laid Down	3 July, 1917
Launched	23 March, 1918
Completed	17 July, 1918
Machinery	Parsons Turbines (Twin Screws)
Speed	34 Knots
Armament	4 x 4 inch Guns 1 x 2 Pounder Gun 6 x 21 inch Torpedo Tubes (Two Triple Mountings)
Complement	127

HMAS WATERHEN II

THE site occupied by HMAS WATERHEN was created during the Second World War when the area was quarried to provide fill for use during the construction of the Captain Cook Graving Dock.

HMAS WATERHEN, late 1960s

After the site had been cleared it was occupied by the United States Navy and the Royal Australian Navy as a Boom Defence Depot. Control of the site reverted to the RAN in July 1943, when the USN withdrew from the area. During October 1945 the Boom Defence Officer wrote to the Commanding Officer HMAS PENGUIN advising him that the land had been leased from the State Government for 25 years, this was later changed to a lease in perpetuity. During the 1940s and 1950s the Boom Defence Depot was administered as a Tender to HMAS PENGUIN. With the impending arrival of the TON Class minesweepers into service in the early 1960s the decision was taken to commission the Boom Defence Depot as a self-accounting unit; this occurred on 5 December, 1962. The name selected, WATERHEN, was originally intended for the fourth Australian-built DARING Class destroyer; however, the government cancelled the ship before it was laid down.

Main mechanical workshop

To provide temporary accommodation and administration areas for the newly-commissioned base the BAY Class frigate CULGOA, which was laid up in reserve, was towed to WATERHEN. She was to remain alongside at WATERHEN until the early 1970s, when temporary facilities were completed and she was sold as scrap to the Japanese. The temporary facilities erected at WATERHEN still exist today, however, investigations are currently underway for the modernisation of the depot.

From its inception WATERHEN's primary function has been to provide base facilities, as well as technical and logistic support for the RAN's Mine Warfare forces, including the Mine Warfare School, and the Sydney-based Patrol Boats. WATERHEN is also the home base for the Navy's Clearance Diving Team One and the Sydney Port Division of the RANR.

Mine Warfare School

The Mine Warfare School staff provide instruction on all aspects of Mine Warfare to the following:

- ★ Surface Warfare Officers' courses.
- ★ RAN Tactical course.
- ★ Australian Joint Warfare courses.
- ★ Junior Officers' Stage III courses.
- ★ MCMV Pre-joining courses.

The Officer-in-Charge of the school also performs the function of Staff Officer Mine Warfare to COMAUSMINPAB and as such advises him on all aspects of Mine Warfare. In addition to this, he is responsible for the running of the Mine Warfare Pilot Survey Unit, which is located at the Royal Australian Navy Research Laboratories at Pyrmont.

Coincidental with the introduction into service of the MHI and the proposed modernisation of WATERHEN is to the construction of a Mine Warfare Systems Centre. The function of the centre will be to provide training facilities for the operators and maintainers of the MHI system, as well as any future systems.

Support Facilities

To provide the required support for attached craft and lodger units WATERHEN is divided into a number of departments. Each of these departments is responsible for the provision of specialist support.

Marine Engineering Department. The Marine Engineering Department of HMAS WATERHEN is primarily tasked with the maintenance and technical support of all propulsion and hull systems of the attached Minor War Vessels and Support Craft. As a collateral duty the department is also tasked to maintain a technical Class Authority Cell for the FREMANTLE and ATTACK Class Patrol Boats and all vessels of the Mine Warfare Force. To achieve the task the department is supported by a well-equipped mechanical and full workshop that allows all repairs, save those that require the dry docking of a vessel, to be undertaken within HMAS WATERHEN. The workshops are also supported by cranes, forklifts and trucks for the movement of large and heavy equipment. The nature of tasks undertaken by the department are many and varied, covering such repair and/or preventative maintenance actions as:

- ★ major servicing of marine diesel engines from 250 hp to 3569 hp;
- ★ marine diesel engine changes;
- ★ marine gearbox services;
- ★ marine gearbox changes;
- ★ sophisticated marine diesel engine logic control system maintenance and repair;
- ★ ship stabiliser maintenance and repair;
- ★ fuel tank cleaning and preservation; and
- ★ hull repairs to steel, aluminium and wooden-hulled craft.

Naval Stores.

Concomitant with the maintenance and repair functions, WATERHEN's technical Class Authority Cell collates and analyses equipment defects, recommends repair actions, directs publication amendments, records plant operating hours, plans repair and maintenance work and keeps other authorities informed as to the status of the Class. To achieve all this it is vital that the Cell maintain constant communication with both the vessels of the Class, the various manufacturers of components and all the refitting authorities. Other minor tasks to which the Marine Engineering Department of HMAS WATERHEN respond include maintenance tasks within the depot, short-term emergency relief for individual members of Patrol Boat crews, refuelling of all

craft and ad hoc support to major Fleet units.

Supply Department. The Supply Department at WATERHEN is responsible for providing the material and administrative support required by WATERHEN and its attached craft to carry out their assigned tasks. In order to enable the Supply Department to perform its tasks the Department is divided into a number of sub-departments. These sub departments are:

- ★ The Pay and Accounts Office, which maintains the pay records for all personnel at WATERHEN as well as those posted to attached craft. Prior to a Patrol Boat departing WATERHEN, any pays required by the boat during its absence will be made up by the Pay Office staff and given to the Patrol Boat's Executive Officer. As the pay days come due the Executive Officer then pays the ship's company. Final acquittance of the payment is done upon the boat's return to WATERHEN. As well as maintaining pay records the office also processes personal accounts, such as travelling expenses, and also traders' accounts.
- ★ Victualling section which arranges provisions for the attached craft at WATERHEN. Provisions are ordered either from the Naval Supply Centre at Zetland or direct from contractors. All the victualling accounts for the tenders are also maintained by the Victualling section.
- ★ Cookery Department is responsible for providing meals for the personnel posted to WATERHEN. Sailors posted to some of the minor support craft such as the Torpedo Recovery Vessels and the Diving Tenders are also catered for at WATERHEN. Crews of the Patrol Boats are victualled on board their own vessels.
- ★ Naval Stores at WATERHEN provides all the spares required to ensure that the Patrol Boats and other attached craft can remain fully operational. As well as providing stores support for the attached craft, Naval Stores provides the base with the spares needed to support and maintain its tenders. The entire spare parts inventory is maintained on computer and new stock is automatically demanded from the Navy Supply Centre as replenishment stock levels are reached.
- ★ The Personnel Office co-ordinates and oversees the administration of all personnel records at WATERHEN. The Personnel Office also provides an amount of administrative support for tenders.

Torpedo Recovery Vessel (TRV) based at HMAS WATERHEN.

Overall, the functions of the Supply Department can be described as providing the required support to ensure that WATERHEN and her tenders can fully perform their assigned tasks.

Overview of establishment, northern section, 1982.

Weapons Electrical Engineering Department. The Weapons Electrical Engineering Department maintains or assists Minor War Vessels in the maintenance of ship fitted electrical and electronic equipment. Almost 30 personnel of the 4 Weapons Electrical Engineering categories are employed in this task within the 3 separate workshop areas.

- ★ Power and Weapons. This combined workshop undertakes work on electrical machinery such as motors (up to 35 hp) switchgear controllers and domestic services. Ordnance and their associated mountings, together with hydraulic stabilisers and steering gear, are also catered for.
- ★ Communications. A wide range of HF, VHF and UHF radio transmitters and receivers, both ship fitted and portable sets are supported in this area and much of the more complex test equipment carried is used in this task.
- ★ Radar and Navigational Aids. In addition to the maintenance on ships' radars and displays there are many other equipments handled in this area, some of the more substantial being navigational gyros, satellite navigation receivers, speed logs and echo sounders.

Although many of the equipments are worked on in-situ the repair capability is enhanced by 'hot spares' of several equipments (i.e. radars, echo sounders, radio transmitters and receivers) being installed in workshops effectively reducing operational downtime in the event of defects. Much of the maintenance effort is preventative in preference to breakdown maintenance therefore there is greater emphasis on the development of diagnostic skills within the WATERHEN technical personnel.

Executive Department. The Executive Department is responsible for the daily running and maintenance of the depot as well as the provision of support facilities such as wharves and craneage. From the Executive Department are drawn personnel to supplement the crews of attached craft as required.

CLEARANCE DIVING TEAM ONE

CDT1 in the Solomon Islands with HMAS BETANO.

CLEARANCE Diving Team One (CDT1) is the RAN's principal diving team. Comprising 2 officers and 31 sailors, it is based at HMAS WATERHEN, in the Northern Sydney suburb of Waverton. Although based in WATERHEN, CDT1 is a separate unit which works directly for the Fleet Commander. Of the 33 personnel in the team, all are qualified Clearance Divers, except for 4, who provide the medical and technical support required for the team.

The roles of CDT1 are many and varied. They cover such things as Explosive Ordnance Disposal (EOD), underwater maintenance for ships in the Fleet, shallow water Mine Countermeasures (MCM), beach surveys and obstacle clearance for amphibious operations and exercising the Fleet in defence against swimmer attack. CDT1's area of responsibility is all of Australia, except for Western Australia (which is covered by CDT4) and any Overseas Deployments, when required.

A large part of the diving carried out by the Team consists of routine and uninteresting tasks. A good example of this is the many hours spent each week cleaning the hulls and propellers of Fleet units. This task is tedious, yet of extreme importance if these ships are to run efficiently and quietly. A set amount of time each month is also spent selecting ships diver candidates and carrying out continuation training for those already qualified. On occasions however, the Team does get involved in some interesting jobs.

The most recent and probably the most publicised major diving task that CDT1 took part in was the salvage of HMAS WOLLONGONG, one of the RAN's new Patrol Boats, from the rocks of Gabo Island, off the NSW/VIC border. The WOLLONGONG ran aground approximately one cable from shore, whilst coming to an anchorage, early on Saturday 1 June, 1985. CDT1's Duty Watch were called out immediately and flew south to Gabo Island. Over the next week they assisted a civilian salvage firm in patching what holes they could, attaching a series of flotation bags and sealing off upper deck vents and hatches. Air under pressure was then pumped into the flooded compartments, thus enabling the vessel to be floated off. The flotation bags were placed around the stern for stability. Air had to be continually pumped into these compartments until the vessel could be slipped for temporary repair. Once the vessel was slipped the team returned to Sydney.

Nearly every year, a number of divers from CDT1 are involved with a defence co-operation programme in the Solomon Islands. The work involves blasting entrances through walls of coral reefs surrounding the islands. This work itself is not difficult as it only involves basic underwater demolitions, however, it is of immense value to the Islanders. The channels that are blown through the reefs enable them to come and go as they please, rather than having to wait for the high tide before wending their way through the maze of coral. Another welcome side effect of this work is that the underwater explosions bring a multitude of dead fish to the surface, and

DTV PORPOISE, July 1982.

World War II mine prepared for demolition

Assisting after the Tasman Bridge collapse

these make a welcome addition to the Islanders' food supply.

THERE have been several occasions in the past when CDT1 personnel have been used for aid to the civil community. The biggest civil aid operation for the Team was after Cyclone Tracy, which flattened Darwin on Christmas Eve 1975. On Christmas Day of that year, virtually all the Team were recalled and flown to Darwin. Over the next several weeks they assisted in searching the harbour for sunken boats, recovering bodies and as much debris from the harbour as possible. Whilst there they also raised the Attack Class Patrol Boat, HMAS ARROW, which had sunk alongside the main wharf, effectively blocking its usage. Only a month after the Team returned from the Cyclone Tracy operation, the Tasman Bridge in Hobart was knocked down by the MV LAKE ILLAWARRA and once again CDT1 personnel were involved in the clean-up operations. The main job there was the recovery of the cars and bodies which had fallen into the river as the bridge collapsed. This operation was not carried out by CDT1 alone as personnel from CDT2 were also deployed for the operation.

There are many other tasks that CDT1 are required to conduct on a regular or as required basis. Three times each year, during the week prior to the school holidays, a unit detaches to the Jervis Bay Naval Bombardment Range to clear any unexploded bombs or projectiles. This area is very popular for tourists, and this clearance makes the area safe enough for them to be allowed access.

Channel formed by demolition of old ordnance

To carry out these tasks and the many others that are required each year there are 3 different kinds of diving equipment commonly used in the Team.

SCUBA (AIR). This is the general purpose set used in the team. It is a self-contained, open circuit breathing apparatus that is very similar to the civilian scuba diving sets. It uses two stage, single hose regulators and the air is carried in 64 cu ft tanks which are doubled up if a greater endurance is required. The set has a maximum depth of 54m, but it can be used deeper with Navy Office approval.

THE second set, which is primarily used for MCM diving, is called SCUBA (MIX) FGT1/A. This is a semi-closed circuit, self-contained set made by the DRAGER company of West Germany to RAN specifications. The gas used is a Nitrogen and Oxygen mix, the ratios of which are varied depending on the depth. As this is the set used when finding and clearing mines, it has a very low magnetic signature and is extremely quiet so as not to detonate them. It has a maximum depth of 52m with a maximum endurance of 131 minutes.

The third set in use at CDT1 is LARV. This is a closed-circuit, pure Oxygen rebreathing apparatus also made by the DRAGER company. It has only recently been introduced into the RAN but it is widely used by many navies. Being a closed-circuit set it produces no bubbles, which enables a diver to swim into an enemy ship or installation undetected. The main disadvantage is that below 10m pure Oxygen becomes poisonous and can send a diver into convulsions, therefore the depth it can be safely used is limited to 8m.

It is generally regarded throughout the Clearance Diving Branch that being sent to CDT1 is a prime posting. The diverse tasks carried out and the chance of being sent on jobs throughout Australia and overseas make working at CDT1 attractive.

However, working there does demand a lot from Team members. They are required to be proficient in a wide variety of tasks, such as underwater maintenance for ships of the Fleet and clearance of underwater explosive ordnance and they must be prepared to deploy around the country or overseas at very short notice.

Royal Australian Naval Reserve — Sydney Port Division

The Australian Naval Reserve is a part of the Australian Navy. The Royal Australian Naval Reserve (RANR) is that component established to allow personnel who are not members of the Permanent Naval Forces, and who may or may not have had previous experience, to undertake part-time Naval Service.

The RANR has active and inactive groups. The Sydney Port Division RANR (SPD) comprises members of the Attached Active Reserve.

SPD is a unit of Naval Support Command and has been lodged in HMAS WATERHEN since 1974. There are a little over 200 personnel in the Division, about 10 per cent of whom have served in the Permanent Naval Forces.

The origins of the Naval Reserve go back prior to Federation when citizen sailors drilled at Rushcutters Bay in Sydney, being part of the then styled Naval Brigade. The RANR, being established at the same time as the RAN, in 1911, celebrates its 75th Anniversary in 1986.

The RANR is open to adult men and women who are Australian citizens and meet certain medical and educational standards. Drawn from all walks of life, they are simply people in our community who wish to participate in the activities of the Port Division and be members of a volunteer disciplinary Naval Force.

SPD personnel are required to complete 56 days obligatory training every two years, 12 days of which are carried out each year as Annual Continuous Training, the balance as Non-Continuous Training on Tuesday evenings at HMAS WATERHEN and at weekends.

Reservists are liable to call out in the event the Governor General, upon the advice of the Australian Government, proclaims a Defence Emergency. Reservists were amongst the first to see action in World War I and served in all theatres during the Second World War.

The official history of Australia in the War of 1939-45, by G. H. Hill, reports a quotation from a book by W. H. Rands. The Rockies (Reservists) God Bless Em".

> *"Reservists brought something fresh into the Navy. Instead of being a ship full of sailors talking about nothing but the sea and ships and grog and women, we were a team of sailors, clerks, rabbiters, chemists, students, butchers, bakers and candlestick makers, talking about everything under the sun . . . and women. War at sea is 99 per cent utter boredom and one per cent spine chilling excitement. The Rockies entertained us 99 per cent of the time and behaved like heroes during the one per cent of action. What more could we ask?"*

The functions and roles of the RANR throughout the Commonwealth are to contribute to the functions and roles and to complement the RAN.

Its roles are to:

(a) man, operate and contribute to the support of assigned Minor Fleet Units.

(b) man and operate merchant ships taken up for military use and operate merchant ships requisitioned for Naval or Military purposes, and

(c) to provide command and control support, in particular:
- (1) Maritime Headquarters Staff,
- (2) Naval command, control and protection of shipping, and
- (3) seaward and port defence.

In conformity with the roles and functions of the RANR generally the major activities of the Sydney Port Division are:

(a) to man HMAS ADVANCE, an Attack Class Patrol Craft, for weekend sea training and periods of Annual Continuous Training,

(b) maintain HMAS ADVANCE with assistance from HMAS WATERHEN,

SPECIAL FEATURE — MINE WARFARE AND PATROL BOAT FORCES

HMAS RUSHCUTTER, SDB 1321, manned by the RANR during the 1950s and 1960s.

(c) man and operate a diving boat and deploy a diving team, Diving Team 5,

(d) man the Naval Control of Shipping Organisation, including the Naval Intelligence Division, and

(e) participate in local ceremonial and public relations activities primarily involving the SPD band.

Patrol Boat Operations. Weekend sea training is used to develop and maintain skills of seamen and technical sailors and officers. A full range of evolutions, from man overboard exercises, to officer of the watch manoeuvres and boarding exercises, are carried out during weekend training. Crews work up to participate in a Basic Operations Sea Safety Check and from there to carry out independent patrols, such as fisheries patrol and, up until recently, Bass Strait Oil Rig Surveillance.

ADVANCE also participates in Fleet Concentration Periods, operating with major units of the RAN in a full range of Naval exercises and war games.

With weekend sea training commitments and periods of annual continuous training the Sydney Port Division manages to have ADVANCE at sea for about half the number of days per year as a patrol boat manned by the Permanent Naval Forces.

ADVANCE operates mainly off the New South Wales coast but for periods of independent patrol can operate anywhere on the East Coast of Australia. The vessel cruises to Cairns for periods of refit.

Diving Operations. SPD has a highly motivated diving team which carries out its activities on Tuesday nights, weekends and during a period of annual continuous training when it operates with Port Divisions from the other States. The team is able to deploy by road to a diving site and regularly exercises at this task. The team is trained to carry out a wide range of naval diving activities.

Naval Control and Protection of Shipping (NCS). Members of this department are trained to carry out duties within Maritime Headquarters and in ports throughout the country when the necessity arises for control and protection of merchant shipping in a defence emergency. In peacetime the role is dormant but the Port Division, so far as Sydney is concerned, provides the infrastructure for expansion in time of emergency. Regular international exercises are held when NCS operations controlled through Maritime Headquarters are activated in major ports throughout the country. This activity is supported by a Naval Intelligence Department.

SPD Band. The Sydney Port Division band presently comprises 25 personnel. The band has a varied role, performing at parades, concerts and dance band activities. Participating in about 50 public performances per year, the band is a major contributor to naval musical activities within the Naval Support Command.

Arrival of HMAS ADVANCE in 1982 as the training ship for the SPD.

The Port Division has a complement of Supply personnel who work at maintaining efficient administration within SPD, the timely provision of stores and running the Reserve Pay Section. Through the week continuity is provided by a permanent service officer, the Staff Officer Reserve Training ([01] 9254618) and a Reserve Office Clerical Assistant.

Health services are provided by a complement of doctors, nurses and medical administrators.

The Port Division is commanded by CMDR A. R. L. LINDSEY RFD RD, RANR.

PATROL BOAT OPERATIONS

General Introduction

Most of the Australian Colonial Naval Forces operated a number of small torpedo boats and other auxiliary vessels as patrol craft. After Federation these ships formed the basis of the Commonwealth Naval Forces and many of the original members of the Commonwealth Naval Forces, and later the Royal Australian Navy, gained their first experiences in these small fighting ships. The Great War saw a number of vessels being requisitioned for service in the RAN as patrol boats. However, at the end of the war these were returned to their owners, and the RAN patrol boat force ceased to exist until the outbreak of the Second World War.

During the Second World War the Royal Australian Navy acquired 28 Harbour Defence Motor Launches (HDML) and 35 Fairmile B Motor Launches. These patrol boats were used for anti-submarine patrols and harbour defence and provided Australia with its first specialist patrol boat squadrons. These HDMLs and MLs were supported by a large number of requisitioned vessels. These requisitioned craft performed a myriad of tasks, ranging from normal patrol duties to survey work, air sea rescue and the insertion and extraction of members of the famous M Z Special Forces. To the RAN's patrol boat forces goes the distinction of having fought the only naval battle to occur within Australia's territorial waters. This engagement, involving mainly ships of the Naval Auxiliary Patrol, occurred when Japanese mini-submarines entered Sydney Harbour in June 1942. In the years following the cessation of hostilities nearly all these vessels were disposed of.

In 1961, six British built 'TON' Class minesweepers were purchased and after modification steamed out from the United Kingdom to form the 16th Mine Countermeasures Squadron. During the period of confrontation with Indonesia during the early 1960s the Squadron was employed in Borneo and the Malaya Peninsula waters as a patrol boat force. Subsequent to this the Australian Government identified the need for a specialist patrol boat force and in 1967 the first of 20 Australian designed and built ATTACK Class patrol boat entered service with the RAN. Operating out of Cairns, Darwin, Fremantle, Sydney and Westernport these 32m patrol craft carried the burden of Australia's coastal surveillance and fisheries protection operations for almost 15 years. Those years included the period of the migration of the 'Boat People', the growing awareness of our fisheries resources and the opening up of commercial exploitation of Bass Strait oil.

The first of the ATTACK Class replacements, HMAS FREMANTLE, one of a Class of fifteen 42 metre patrol boats, was commissioned at Lowestoft, UK, in March 1980 and subsequently steamed out to Australia. The remaining 14 vessels were built by North Queensland Engineers and Agents (NQEA) at Cairns between 1980 and 1985. Their names were taken from some of the 36 BATHURST Class minesweepers built in Australia during the Second World War.

By the end of 1985 the only ATTACK Class left in service with the RAN were the five boats manned by the Royal Australian Naval Reserve (RANR) HMA Ships ARDENT, AWARE, ADROIT, ADVANCE and BAYONET. Of the remainder, five had been transferred to Papua New Guinea and eight to Indonesia under the Defence Co-operation Programme, one is laid up at Ships in Reserve in Sydney and HMAS ARROW was claimed by Cyclone Tracy, Darwin, on Christmas Day 1975.

The new FREMANTLE Class has been designed to take the Royal Australian Navy through into the late 1990s, and to overcome some of the limitations of the smaller ATTACK Class boats. Their limitations could be summarised as weather, manpower, speed and endurance.

(a) they were severely affected by weather and do not normally operate in conditions above a sea state four;
(b) they had a very small ship's company and if operating with other vessels manpower efficiency is degraded very quickly after about 24 hours;
(c) their maximum speed is around 22 knots in a good sea state and many merchant ships often matched or exceeded their speed on a normal passage; and

Keeping an 'eye on' the northern approaches

MOURILYAN, requisitioned for patrol duties in World War I

HMAS SUMATRA, World War I patrol vessel

Fairmile B Motor Launch No 815

Harbour Defence Motor Launch No 1129

(d) although their range of operations is adequate in terms of fuel, they carried only limited fresh water and are not fitted with salt water distillation equipment.

The FREMANTLE Class overcomes all of these problems. They are bigger, stabilised and can therefore cope with more severe sea conditions. They have a larger crew, particularly noticeable in the command structure, they are faster and have greater endurance in terms of both fuel and fresh water distillation capability.

The Roles of the Patrol Boat Force

The RAN Patrol Boat force is required to fulfil or take part in a number of roles. These include:

(a) Coastal Surveillance and Fisheries Protection;
(b) Search and rescue; and
(c) General Naval tasks.

Coastal Surveillance and Fisheries Protection

The main role in peacetime, and the one in which they are most often seen by the general public, is coastal surveillance and fisheries protection. As a consequence the majority of patrol boat operations is spent in fishery surveillance within the 200 nautical mile declared Australian Fishing Zone.

Licensed Taiwanese, Japanese, Korean and Indonesian fishing vessels operate continuously around the Australian coast with as many as 400 to 600 fishing in Australian waters annually. The task for the patrol boat is to ensure that foreign vessels fishing in our waters are correctly licensed (permission to fish from the Australian Government) and that they are only taking allowed sizes and types of fish. RAN patrol boats maintain year-round surveillance of Australian waters and, as far as possible, board and investigate all foreign fishing vessels in their patrol areas.

As a result of these boardings, foreign fishing vessels have been fined, had their catches confiscated and, even on occasions, had their boats seized by the Australian Courts. This policy has resulted in far better management and conservation of our very finite and valuable resources.

HMAS YARROMA, which helped defend Sydney Harbour against the Japanese midget submarines.

The second major part of this coastal surveillance role is the patrol boat commitment to Bass Strait Oil Rig Surveillance (BSORS). Bass Strait is undoubtedly one of the roughest and most unpredictable stretches of water in the world. It is also a major source of Australia's fuel requirements and at the same time a major funnel for interstate and international shipping.

The consequences of a passing merchant ship straying from the designated channel and colliding with an oil rig needs no explanation. As a result of this possibility, and also the growing wave of international terrorism, the Australian Government has committed the RAN to providing a continuous patrol boat presence in the area.

When on station in Bass Strait the patrol boat is just like a traffic policeman, ensuring that passing vessels observe the Rules of the Road and stay in their lanes. The average Bass Strait patrol consists of 16 days, interrupted by occasional bouts of atrocious weather and with nothing much to look at except for oil rigs and seals. For all of the discomfort, however, this is still a vital part of Australia's defence commitment, guarding as it does one of our most important natural resources.

Whilst meeting the requirements of coastal surveillance and fisheries protection in the RAN, the Patrol Boat Squadrons also work regularly with the Department of Health and Immigration, in particular in the Northern Australian waters, ensuring that no illegal landings have taken place, and reminding the local inhabitants of problems to Australian natural wildlife that could exist if livestock from overseas is illegally landed. Further to this, the patrol boats ensure no illegal landings are made anywhere on our extensive coastline.

Search and Rescue

The Royal Australian Navy has always provided assistance in search and rescue operations when the need has arisen. The most recent and widely published example was that provided by the destroyer HMAS PERTH to the stricken merchant ship in late 1985. Patrol boats regularly contribute to the Australia-wide search and rescue organisation and, in Sydney for example, there is always one boat on duty and on standby for such an emergency. Patrol boats have often gone to the rescue of, or stood by, fishing boats and yachts in distress, sometimes in sea conditions when not even the patrol boat, let alone a yacht, should have been at sea. Much of this work goes on with little public attention.

Military Role

These vessels also provide the military roles and training for minor war vessels as part of the Navy's preparedness to defend Australia. The Patrol Boat Force is continuously involved in practising the art of war with the major units of the Australian Fleet. Such military training ensures that

The last active Attack Class patrol boat in the RAN, HMAS ASSAIL.

(a) the patrol boat gains valuable experience at operating in company with other ships of the RAN in co-ordinated operations,

(b) the patrol boat can practise its tactics in anti-ship attacks; and

(c) the Fleet learns to cope with operating in a patrol boat environment.

This continual training is a vital part of keeping the Navy at an operational peak and ready to defend Australia.

The Royal Australian Navy Reserve (RANR)

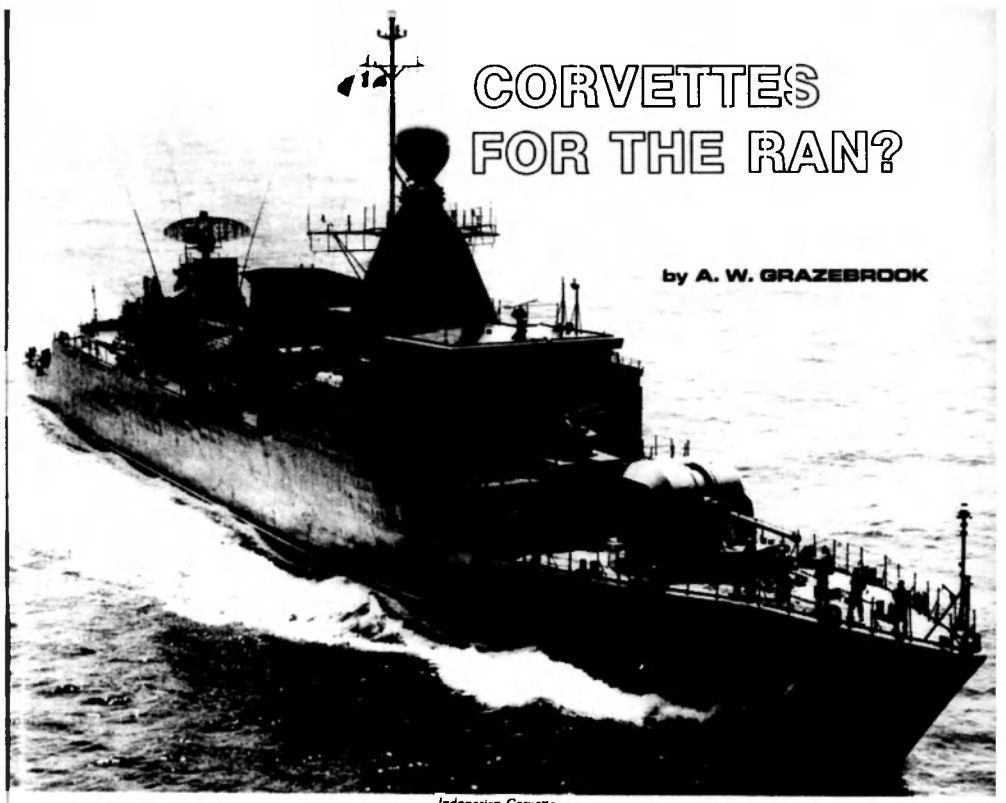
With the phasing out of the ATTACK Class the decision was made that five of these vessels should be handed over to the RANR. They are now used for the purposes of Reserve Continuation Training and for supporting the permanent Naval Force. The following Reserve Port Divisions each operate a patrol boat:

Sydney:	HMAS ADVANCE
Melbourne:	HMAS BAYONET
Hobart:	HMAS ARDENT
Adelaide:	HMAS AWARE
Fremantle:	HMAS ADROIT

In the hands of the RANR this Class of patrol boat has many more valuable years of service to give.

CORVETTES FOR THE RAN?

by A. W. GRAZEBROOK



Indonesian Corvette

Each time Navy has prepared a case for new destroyers or escorts, and on many other occasions, Navy is asked "Why aren't corvettes good enough?".

Now that Navy needs another generation of "Surface combatants", Navy is again being pressed to accept corvettes.

This raises the question of the definition of a corvette. The authoritative Janes Dictionary of Naval Terms defines a corvette as an "ocean-going warship slightly smaller than a frigate". The same source defines a frigate as a "medium-sized warship, of moderate, or high speed, with primary mission of escort and independent employment".

It is noteworthy that this authority, and others, are quite definite that the corvette is a warship. A warship has armament, damage control systems, and command and control facilities, and is built with warship methods of construction. As such, a warship (in particular, a corvette) should not be confused with a patrol vessel, even though the two may be of similar size.

A patrol vessel is optimised for peacetime use, with some limited use in low-level wartime operations. Generally, a patrol vessel is built to merchant ship standards only.

In more recent times, corvettes have been re-appearing in some (but by no means all) western navies because of a need to fill several functions:

- Keep down operating and capital costs.
- Provide greater numbers of surface craft.
- Provide a surface unit with the speed and striking power of a fast attack craft but with better endurance and sea-keeping capabilities.
- Provide a surface unit with fast attack craft strike capabilities and with at least some defence against the FAC's great vulnerability to air attack.

A glance through Janes Fighting Ships shows that a number of navies in our region are building or acquiring corvettes. These are fast surface craft with surface action armament, point defence missile systems or rapid-fire gun systems, and some anti-submarine capability.

Thus we see:

- Malaysia's 1500 ton ships, one Lynx-sized helicopter, 27 knots, diesel propulsion, four Exocet MM38 surface-to-surface guided missiles in canisters, and a 100 mm and smaller guns.
- Thailand's 900 ton ships, eight Harpoon surface-to-surface guided missiles, point defence missile systems, one 76 mm OTO Melara gun, six Mark 32 ASW torpedo tubes, diesel propulsion, maximum speed 30 knots.
- Indonesia's 1200 ton ships, one Wasp-sized helicopter, four Exocet MM38, one 120 mm gun, 6 Mark 32 ASW torpedo tubes, CODOG driven, max speed 30 knots.
- India, locally-built 1200 ton ships, 27 knots, diesel driven, armed with SSGW, possibly with a helicopter, reportedly emphasis on ASW.
- India, Russian-built, 590 ton, 36 knots, CODOG driven, SSGW armed with point defence missile system and 76 mm gun.
- India, Russian-built, 580 ton, CODOG driven, 34 knots, ASW ships (with ASW torpedo tubes, ASW rockets) with a 76 mm gun and point defence missile anti-aircraft defence system.

The first three navies — Malaysia, Thailand, Indonesia — all operate primarily in coastal and island waters, over short distances. Of course, these circumstances do not apply to Australia. Although unquestionably a major power in our region, and primarily a "blue water" Navy, India maintains and is building up further a coastal escort force for her shorter distances (Bay of Bengal, etc). India's ocean-going escort needs are being met by a separate escort construction programme.

Turning to Australia's needs, the circumstances which led Thailand, Malaysia and Indonesia to order their ships do not apply to Australia. Ships with a surface action primary role may be needed to combat surface and amphibious ships in South East Asia — where an invasion force is a threat. However, an invasion force is the least likely threat to Australia.

On the other hand, the much more likely threat to Australia is a submarine and/or air attack on our trade.

The key question in deciding whether corvettes can meet the RAN's need is whether the corvette can handle the protection of trade role.

The requirements for an RAN escort vessel are:

- Helicopter for 'distant' anti submarine work.
- Area defence surface-to-air missile system to defend both the escort herself and the merchant ships under escort.
- 'Rapid reaction' anti-submarine capability for short-range work.
- Close-in weapons for defence against missiles.
- Endurance sufficient for both our ocean and coastal trade routes.
- Survivability — the ships must have damage control, and type and strength of construction to withstand action damage.

The RAN's FFGs have all these essentials except, possibly, the last. Some authorities have questioned whether the FFGs have sufficient 'survivability'. In considering whether corvettes are good enough for the RAN, it must be asked whether the RAN can do without sufficient of the FFG7 capabilities to provide both for a reduction in size from frigate to corvette and the required improved survivability.

Two factors dictate the size of the FFG7 type ships. These are carrying two helicopters instead of one, and the presence of the area defence surface-to-air missile system.

The area defence surface-to-air missile system is essential to keep enemy long-range maritime aircraft (equivalent type to the P3s) outside their target indentification range. Air-to-surface missiles, of the type fitted to Russian-built maritime aircraft of types operated (by Russians and/or client powers) in our region, have ranges well over sixty nautical miles. However, the aircraft carrying those missiles must approach to less than twenty miles from their target to confirm the identity of the possible target. Thus, the enemy aircraft is forced to come within the range of the Standard area defence surface-to-air missile system (fitted to our FFGs and DDGs, and without which Navy's River Class destroyer escorts are vulnerable). Similar facts force Russian high performance aircraft such as Backfire to approach within range of area defence surface-to-air missile systems.

Indonesian Corvette

With the very long range of Russian LRMP aircraft, and as more and more of these aircraft enter service with regional powers, the RAN's escorts of the future must be capable of defending themselves against such attack.

The range of these aircraft, let alone the presence in the Russian Pacific/Indian Ocean Fleet of aircraft carriers, means the days when the RAN could operate in Australian waters free from air attack have gone, and gone forever. In the absence of our own aircraft carrier, any escort of the RAN lacking an area defence SAM system will be in serious danger.

TURNING to helicopters, there are two ways in which reductions could reduce the size of future escorts for the RAN. These ways are a reduction in the numbers and/or a reduction in the size of the helicopters carried. The size of a helicopter has a direct effect on the size of its payload. The bigger the helicopter the greater is that helicopter's range and the greater is its load of weapons and sensors. To reduce the size of a helicopter compels a reduction in the ability of that helicopter to find and destroy an enemy submarine or other target.

It is this very size and payload argument that convinced the Government to order the SH70B Seahawk helicpcopter for the FFGs. Exactly the same logical argument will apply to the choice of helicopter for the new surface combatant.

Turning to the need for two helicopters, that arises from the obvious fact that no helicopter can be in the air 100% of the time. A second helicopter halves the time when an escort has no helicopter in the air. A second helicopter halves the time when a submarine is much more capable of approaching its target — our merchant or warships.

From these facts it can be seen that a reduction in size of ship, from frigate to corvette, would involve a reduction in fighting capability, and leave our ships — war or merchant — in greater danger. A reduction from frigate to corvette would save money in the short term, but would be a false — dangerously false — economy in the longer term.

Yet another question is whether Navy would be better with (say) nine corvettes or with six frigates — whether a total sum spent on more smaller, less capable ships would be better spent on fewer, more capable ships.

It is the view of professional maritime defence experts that the minimum size of a ship should be dictated by the minimum attack, defence and survivability requirements. Without these minima, the ship will fail in her mission and/or be sunk.

Therefore, say the experts, future RAN escorts must have survivability, area defence SAM systems and at least one large helicopter. *Therefore, the corvette is not the ship for the RAN's next generation of surface combatants.*

75th Anniversary Calendar

The Navy League of Australia, in association with the Royal Australian Navy, produced a calendar to mark the 75th Anniversary of the RAN. Thousands of copies were sold at $10 each throughout Australia and overseas, with any surplus income being directed to assist the Naval Reserve Cadets and other maritime projects.

There are still copies available and readers are reminded that in addition to their diminishing value as calendars, the intrinsic value lies in the prints of 12 especially commissioned paintings, designed for mounting and framing.

The remaining copies will be sold at $8 plus $1.50 postage, or they can be collected from your local Navy League Secretary. Some examples of the Artwork are reproduced here. Don't miss what you will find to be a collector's item and at the same time offer assistance to our on-going support for cadets and maritime affairs.

Write to:
Chairman,
75th Anniversary Calendar Committee,
32 Luckins Road,
Moorabbin, 3189.

VALE

COMMANDER PETER BALLESTY RFD RD RANR

A well-known member of the Navy League, Commander Peter Ballesty, died early in February at the age of 50 after more than 25 years' dedicated service in the Royal Australian Naval Reserve and a lifetime spent in supporting and promoting Australia's maritime heritage.

Peter joined the RANR in 1954, was promoted to the rank of Sub-Lieutenant in 1955, and served in various capacities during the following years, including as a Lieutenant-Commander, being posted in command of the patrol boat HMAS ARCHER. In 1977, as a Commander, he capped his active years in the RANR by being appointed Commanding Officer (Reserves) of the Sydney Port Division, a position he held for 3 years.

He was an active member of the Naval Association and of the Naval Reserve Association and in the latter served both as Secretary and President for a number of years.

Peter was also a keen and dedicated member of the Navy League of Australia, joining the Executive of the NSW Division in 1980 and becoming its President later in the same year. He subsequently also took on the time-consuming role of Divisional Secretary and enthusiastically retained and maintained both positions until his illness in August last year.

Peter is survived by his wife Maree, and by his children Stephen, David, Leanne and Andrew.

FLEET SALUTE

HMAS ONSLOW during the 75th Anniversary arrival

When a seven-ship RAN Task Group sailed through Sydney Heads on Friday, 24 January, the arrival marked the official beginning of the Royal Australian Navy's 75th Anniversary year.

The Fleet Commander, Rear Admiral Ian Knox AO RAN led his Task Group comprising the six frigates and destroyers sailed into Port Jackson in a 'three abreast formation' with HMAS HOBART, HMAS DARWIN and HMAS SYDNEY leading HMAS DERWENT, HMAS PARRAMATTA and HMAS VAMPIRE. Protecting the rear was the Oberon class submarine HMAS ONSLOW. This unusual formation arrival was the first ever conducted into Sydney by units of the RAN.

By 8.30 am, when HMAS HOBART was passing Bradleys Head, the ships were formed into a single 'line ahead' formation and at 8.40 am a 21 gun salute echoed across the harbour as the ships passed Mrs Macquarie's Point in the Domain.

The Fremantle Class patrol boat HMAS GEELONG embarked the Governor General, Sir Ninian Stephen and the Chief of Naval Staff, Vice Admiral Michael Hudson, to take the salute while anchored off Bennelong Point near the Sydney Opera House.

Helicopters from the RAN Fleet Air Arm then provided the finale for the 75th Anniversary Year arrival, the lead Sea King helicopter towing a giant 48 foot by 24 foot Australian Naval White Ensign beneath its undercarriage and weighed down by a 1,000 lb plus weight. The ensign was manufactured by Southern Cross Flags especially for the RAN's 75th Anniversary.

Anniversary March

Rear Admiral Ian Knox led the Royal Australian Navy's Anniversary March of 1200 men and women, officers and sailors, for the Fleet Freedom of Entry to the City of Sydney during the forenoon of Friday, 24 January.

A 100-man Royal Guard paraded the Queen's Colours while the March included the combined Naval Support Command and Fleet Bands, NIRIMBA band and thirteen 72-man Platoons representing Naval Support establishments. Rear Admiral Knox was challenged at Martin Place by Chief Superintendent Arthur Horder representing the Commissioner of New South Wales Police with the words, "Stand fast, who goes there?" The Fleet Commander then replied "HMA Fleet exercising its Right and Privilege to pass through the City of Sydney with swords drawn, bayonets fixed, drums beating, band playing and Colours flying".

On approaching the Town Hall, the order 'Eyes Right' was given. The Salute was then take by the Lord Mayor of Sydney, Alderman Doug Sutherland.

The Chief of Naval Staff, Vice Admiral Michael Hudson and the Lord Mayor of Sydney, Doug Sutherland

BIG LIFT FOR FIRST 'CAT'

The RAN's first Inshore Minehunter Catamaran — to be named HMAS RUSHCUTTER — has been moved to the outfitting area at Carrington Slipways Fibreglass Division in Newcastle.

Her move from the construction dock to the outfit dock was described as "unique".

A triple move was achieved by the use of a specially designed heavy-lift vehicle, built at Carrington Slipways.

Some 10 metres high, 14 metres wide and 16 metres long, the mobile straddle crane has a 200 tonnes lift capacity.

Next year, in early May, this heavy lift vehicle will lift the completed RUSHCUTTER from the outfit dock and carry her out to the launching basin.

Only Harbour Trials and builders' Sea Trials will then have to be completed before the completed prototype minehunter catamaran is handed over to the RAN as HMAS RUSHCUTTER, to commence evaluation trials.

The lead ship RUSHCUTTER and her sister ship SHOALWATER are part of a $23 million contract and are due for completion next year.

Laid down on 31 May, 1984, the PVC foam planking of RUSHCUTTER's hull was ceremonially completed on 16 August, 1984, by Rear Admiral W. J. Rourke, AO, RAN.

External lamination of the hull with layers of glass and resin was completed on 31 January, 1985, when the hull was then rotated upright.

Since then, the internal hull has been laminated and decks and bulkheads installed.

The now completed hull was ready to have all its internal compartments outfitted for its operational tasks. It was moved from the construction dock, which was equipped with beams to weigh the ship as it was being assembled and to raise and lower the ship as necessary to achieve the most efficient working conditions from day to day.

FIRST SHOT FIRST HIT

The Royal Australian Navy achieved a world first when HMAS Ovens successfully launched a Harpoon anti-ship missile whilst submerged. This had not previously been achieved by a conventionally-powered submarine.

The first shot made a direct hit on a distant small remotely-controlled surface target.

The Minister for Defence, Mr Kim Beazley, said that the trial firing of the missile by the Oberon class diesel electric submarine had taken place on the US Navy's Pacific Missile Range near Hawaii.

"The successful firing marks a significant increase in the capability of the RAN submarine squadron which operates six boats," Mr Beazley said.

"All have had their weapons systems upgraded, but HMAS Ovens is the first to have fired the Harpoon missile."

Mr Beazley said the submarine had tracked the small surface target with its own sonars to provide data for a fire control solution. The missile, which can also be launched from surface ships and aircraft, was encapsulated in a buoyant canister for the launch from the submarine's torpedo tubes.

Launch, flight and terminal homing of the missile occurred exactly as planned, he said.

"The combination of Harpoon missiles and advanced Mark 48 torpedoes gives the RAN submarine force formidable firepower," Mr Beazley said. "Their value as a deterrent to any would-be aggressor is enormous.

"With the successful test firing, the RAN submarines now have the capability to engage surface targets with these sea-skimming missiles at ranges in excess of 70 kilometres."

HMAS SYDNEY IN ROYAL SYDNEY ANNIVERSARY REGATTA

HMAS SYDNEY anchored between the Opera House and Fort Denison on Monday, 27 January, to act as Flagship for the 150th Anniversary of the Royal Sydney Yacht Regatta.

The first (anniversary) Regatta of sailing craft was held on Port Jackson in 1837 to commemorate the foundation of Australia as a British Colony. This was the 150th occasion on which the Regatta has been conducted and it is now claimed as being the oldest event of its type in the world.

The format of the Regatta has varied over the years. This year it comprised of up to 25 different classes of sailing vessels, varying from small high performance dinghies of the exciting 18 ft skiff class to medium sized keel boats of classic lines, all sailing various courses on the harbour.

A $2m Order for Exercise Mines

As a part of a major programme to upgrade Australia's mine warfare capability, the RAN is to buy exercise mines worth $2 million from the Marconi Company Limited of the United Kingdom.

The Federal Government has directed that a mine warfare countermeasures capability be given very high priority.

"The exercise mines will provide the Navy with a modern device which is essential for evaluating the new Australian designed and constructed inshore minehunter," Defence Minister, Mr Kim Beazley, said.

"Two new minehunter catamarans under construction near Newcastle are due to enter service in 1988, with follow-up vessels planned.

"The minehunters, along with the exercise mines and planned minesweeping initiatives, emphasise the Government's desire to attain a very effective mine warfare capability in Australia."

The exercise mines, which can be programmed to simulate modern ground-type mines, can be laid and recovered from depths up to 100 metres.

The mines would be used for Fleet exercises and gathering vital environmental data needed for developing other facets of mine warfare.

Mr Beazley said the contract with Marconi provided for significant Australian industry participation which would allow local companies to become involved in future development of an indigenous design and production capability for this type of equipment.

The project will provide an Australain Industries participation package of at least 35 per cent of the total contract cost.

This package will include key elements of the electronic systems, assembly of the mines and manufacture of both the test and mine handling equipment.

ANTI-SUBMARINE EXERCISE

An anti-submarine warfare exercise involving RAAF and Royal New Zealand Air Force aircraft and a RAN submarine was held off the East Australian coast from 24-28 January.

Exercise TAMEX is one of a series of anti-submarine exercises, held annually, for the training of RAAF and Royal New Zealand Air Force maritime crews.

The RAAF contributed four P3C-Orion aircraft and the Royal New Zealand Air Force one P3B-Orion aircraft.

RAN participation was the submarine HMAS ONSLOW.

TWO-OCEAN NAVY FOR AUSTRALIA

THE Minister for Defence, Kim Beazley, has announced that the Government would develop HMAS STIRLING at Garden Island, Western Australia, as a major base for Australia's submarines.

"This is in addition to those facilities already provided there for Destroyers and patrol boats and reflects the strategic need for the Royal Australian Navy to operate from both coasts," Mr Beazley said.

The announcement was made during the official welcome to the Navy destroyer-escort HMAS SWAN, which is also to be permanently based at HMAS STIRLING at Cockburn Sound. HMAS SWAN arrived at Fremantle having recently completed extensive refitting at Williamstown dockyard in Victoria and a subsequent work-up from the fleet base in Sydney. The ship will be permanently home-ported in Western Australia and as a result a further 82 families would be locally based. Sixty-six new Navy houses have been built in the local area. "HMAS SWAN will join HMAS STUART as the second destroyer escort to be home-ported in Western Australia. Before 1984 the largest combat vessel base here was a patrol boat.

"The Federal Government has planned for a greater presence by the Royal Australian Navy in the west, to accord with the strategic need for maritime operations to be conducted from both east and west coasts," Mr Beazley said.

"There has not been sufficient emphasis in the past given to the requirement for a two-ocean Navy."

Mr Beazley stressed that this decision did not pre-empt future decisions to be made on the construction site for the new submarines, as there was no requirement for both facilities to be geographically co-located.

It was the Government's intention that elements of the existing Oberon submarine force would be based at HMAS STIRLING as soon as practicable, to be followed in due course by some of the new construction submarines.

However, the timing of the initial deployments would depend on the early establishment of civilian ship lift or slipping facilities. These would be needed to accommodate both destroyers and submarines and he was confident that the Western Australian Government would give this development their full support. Mr Beazley said that he had directed the Chief of the Naval Staff to provide the necessary technical advice on Navy's requirements to State officials as soon as possible.

With major Naval bases on both coasts, there will be greater operational flexibility in ship and submarine deployments, which will significantly reduce transit times for operations and enhance training activities.

"The concept of a two-ocean Navy is an essential element of the Government's objective of defence self-reliance," Mr Beazley said.

"This policy was further enhanced by the announcement earlier this week of our decision to upgrade the Over-the-Horizon Radar facility called Jindalee, which is based near Alice Springs, and our intention to look into proposals for Airborne Early Warning and Control aircraft.

"These defence surveillance initiatives, combined with our decision to go ahead with the development of Tindal, near Katherine in the Northern Territory, as a base for the new F/A-18s, will strengthen Australia's northern defences."

In addition to this increased submarine presence the Minister forecast that there would also be an increase in deployments by other Fleet Units to Western Australia. The extent to which this was practicable would be considered as part of a Government-initiated study into the movement of Naval facilities from Sydney to Jervis Bay and other studies relevant to Australia's defence.

Navy Chief Calls for Public to Celebrate

The Chief of Naval Staff, Vice Admiral M. W. Hudson, has invited the people of Australia to join with serving and past RAN personnel in celebrating the 75th Anniversary of the Royal Australian Navy throughout 1986.

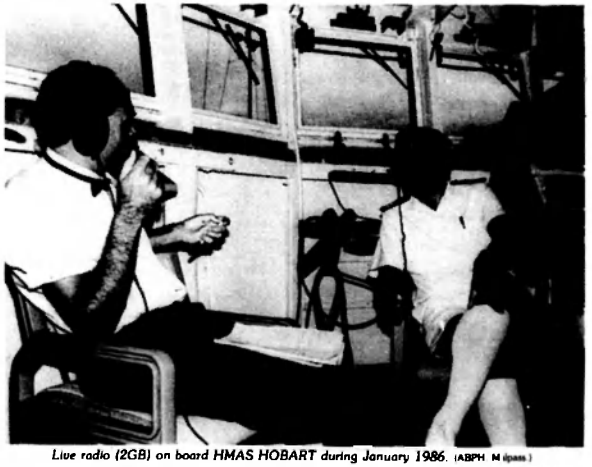
"In addition to the major events, such as the unveiling of the National Naval Memorial in Canberra in March and the Naval Review in Sydney in October, the Navy will be on show around the country with ship visits, band tours, exercising the rights of Freedom of Entry at various cities, open days on both ships and establishments, and many other special events," he said.

"I urge members of the public to join us wherever we are celebrating. The RAN is their Navy and it is only right that they should share with us our deep sense of pride in the achievements of the Service over the past 75 years."

Admiral Hudson said that Australia was a maritime nation dependent for its wealth and continued prosperity on maritime security. The role of the Royal Australian Navy as an integral part of the Australian Defence Force was to ensure the protection of Australia and her vital interests and to contribute to regional security.

During the past 75 years the RAN had met every challenge. In the process it had built up a record of service to Australians of which it, and the public, could be justly proud.

"Let us make 1986 a special year," Vice Admiral Hudson added. "It should be a year of tribute to the efforts of past and serving personnel in service to their country, and a time for full commitment to continue that service in the future."



Live radio (2GB) on board HMAS HOBART during January 1986. (ABPH M Ilpass.)

Compiled by NAVAL ROUNDUP "GAYUNDAH"

SUCCESS

Sea Trials . . .

SUCCESS, the RAN's replacement for SUPPLY, is nearing completion at Cockatoo Dockyard Pty Limited, Cockatoo Island, Sydney.

The 157m vessel with a full load displacement of 17 900 tonnes, recently completed a comprehensive programme of approximately 250 alongside tests and trials.

Heeling Trials, one of the last major trials to be conducted before Contractors Sea Trials commence, were carried out 25-26 November, 1985.

This involved the operation of ships systems and machinery at low power with the ship progressively heeled to 15 degrees to port and starboard.

Contracts Sea Trials commenced 29 November, 1985, and occupied approximately three weeks.

For the sea trials programme, SUCCESS ran from Woolloomooloo and by joint agreement, the ship was manned by a combined Cockatoo Dockyard/Naval crew under Captain J. G. Longden, RNA, the Commanding Officer Designate.

The ship was put through its paces as it carries out a range of trials, including propulsion machinery, consumption, circle, pre-wetting, and many others, designed to prove the effectiveness of the key systems which go to make up this latest acquisition of the RAN.

HELICOPTER

SUCCESS, a derivative of the French Navy-designed Petrollier Ravitalleur (PR) MEUSE, is the fifth of this class to go into service, the other four having been built in Brest for the French Navy.

Helicopter facilities will also allow the transfer of heavy stores lifts to other vessels, in addition to the varied types and duties a helicopter support facility is able to offer.

The first unit of the vessel was laid down in August 1980, at No 1 Slipway, Cockatoo, by the then Minister for Defence, The Hon James Killen, MP, now The Hon Sir James Killen, KCMG.

Her Excellency, Lady Stephen, wife of the Governor-General, named and launched SUCCESS in March 1984.

Since launching, the ship has completed the fitting out stage of machinery and accommodation areas.

The last few months have also seen the parallel activity of alongside testing of all major ship systems, culminating in the recent Basin Trials and Heeling Trials.

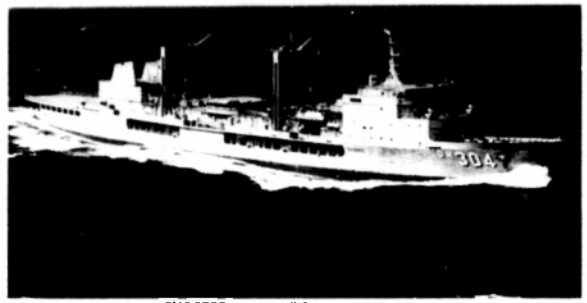
ACCEPTANCE

Following her Contractors Sea Trials, SUCCESS returned to Cockatoo Dockyard for dry docking to enable final painting and other adjustments to be made before she once more goes to sea in April 1986 for her Acceptance Trial.

It is at this stage the vessel is handed over to the RAN for operational and shakedown training.

However, the link with Cockatoo Dockyard will continue for some time to come, through the guarantee period and through the RAN Sea Acceptance Trials, when Codock personnel will be associated with Replenishment at Sea trials and other speculent testing.

The handing over of SUCCESS to the RAN will, for many, see the completion of six years of intense hard work in procurement, design, hull erection, fitting out and testing.



SUCCESS on trials off Sydney (John Morgan)

PATROL BOAT FOR INDONESIA

The RAN handed over its eighth Attack Class patrol boat to Indonesia on 30 January as part of the Australian-Indonesian Defence Co-operation Programme.

The Commander of the Eastern Fleet of Indonesia, Rear Admiral Gatot Soewardi, accepted the former RAN patrol boat HMAS ASSAIL, from Fleet Commander Rear Admiral Ian Knox, at a ceremony in Cairns.

HMAS ASSAIL is the final Attack Class vessel to be provided to Indonesia as part of the Defence Co-operation Programme's maritime project, directed towards increasing the Indonesian Government's coastal surveillance capability.

HMAS ASSAIL will work with seven other former RAN Attack Class patrol boats previously provided to Indonesia to deal with smuggling, illegal entry, protection of fishing rights and search and rescue within Indonesia's territorial waters.

ASSAIL will be renamed KRI SIGUROT when it enters service with the Indonesian Navy later this month.

Stalwart Completes Macquarie Island Resupply

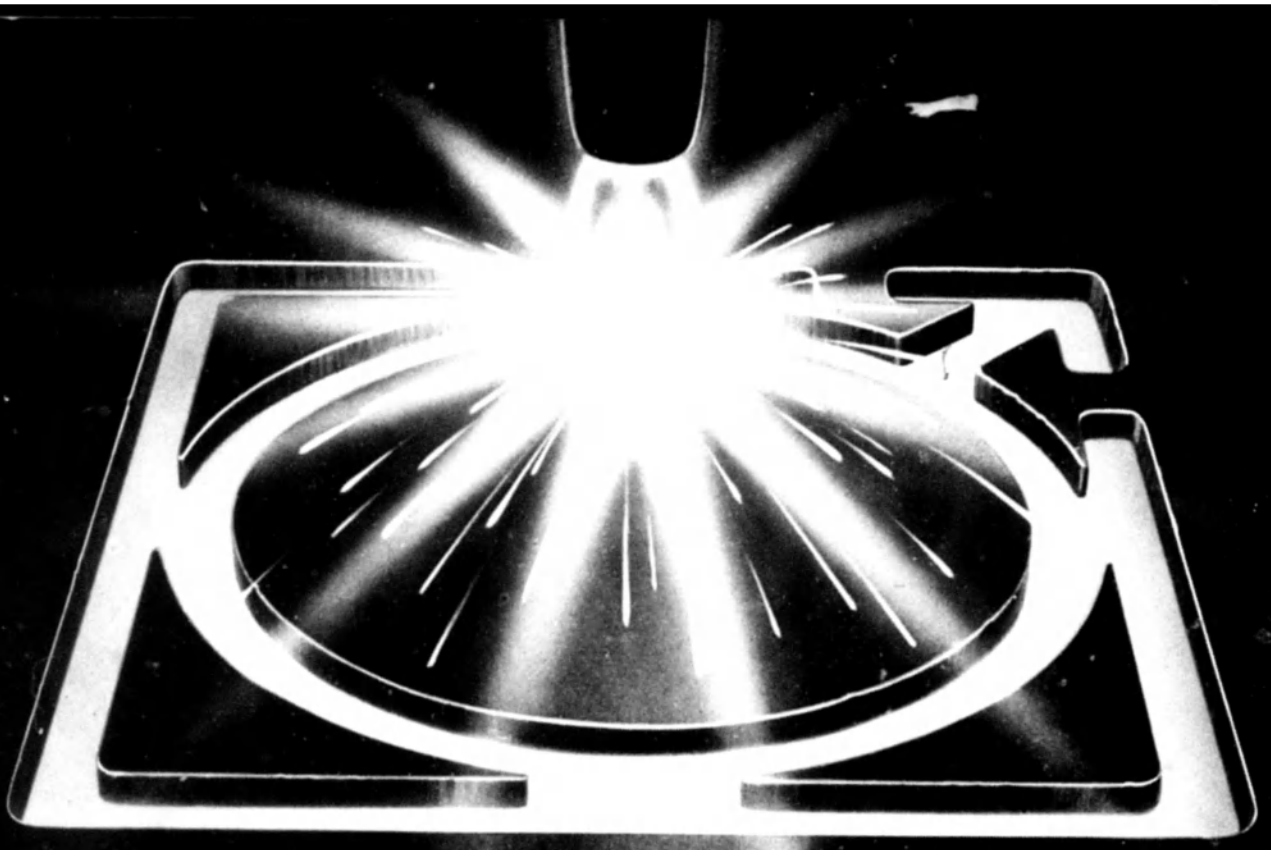
After several disruptions caused by adverse weather conditions, the Royal Australian Navy's flagship HMAS STALWART successfully completed the transfer of stores, fuel and personnel to the Australian National Antarctic Research Expedition (ANARE) sub-Antarctic station on Macquarie Island.

The wintering party of scientists, which has been on the Island since October 1984, embarked on 8 December in HMAS STALWART by the ship's Sea King helicopter, which during the previous two-and-a-half days has flown more than 100 sorties. Thirty-nine scientific personnel, intending to spend the next 12 months on the Island, were ferried to the main station ashore.

Besides resupplying the main ANARE station, the Navy's helicopter was also used to carry stores and fuel to six outstations on the Island.

Strong winds, at times gusting up to 55 knots, and rising seas, forced a halt to resupply operations on a number of occasions. In spite of the adverse weather HMAS STALWART transferred more than 200,000 litres of fuel and more than 100 tonnes of general cargo, including 1600 kilograms of pine logs and a Ferguson tractor.

During the ship's visit, small groups of Navy personnel were taken ashore to view aspects of the ANARE's work at the sub-Antarctic station.



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