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# THE NAVY

JULY, 1985

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# THE NAVY



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## CONTENTS

Viewpoint.....	3
Farewell to HMAS MELBOURNE ..	4
New Submarine Project.....	7
The Wasp Class.....	10
The Impossible Takes a Little	
Logger.....	12
Soviet Naval Power 1985.....	14
European News in Photographs.....	20
Naval Roundup.....	21
USN Destroyers.....	26
Book Reviews.....	27
Lady Nelson Project.....	28
Reserve Training Vessels of the	
RNZN.....	30
Stop Press — HMAS	
WOLLONGONG.....	32

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## Our Cover Photograph

Ex HMAS MELBOURNE is towed to China, April 1985.

(Photos — One & three, ABPH Kim Degener; two & four, LSPH Shaun Hibbitt)

The RAN's new fleet replenishment ship, SUCCESS, in the Sutherland Dock, Cockatoo Island, March, 1985 (Photo — ABPH Kevin Appi)

July, 1985

THE NAVY

Page One



## The place to build submarines ....

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THE NAVY

**viewpoint**

## The Challenge Australians Face

**E**ARLIER this year the writer attended a symposium in Honolulu sponsored by the United States National Defence University, at which 13 Pacific countries were represented by a mix of serving and former diplomats, military leaders, scholars and others involved in Pacific affairs. The countries included the ASEAN group, China, Japan, New Zealand, Taiwan, South Korea, Australia and, of course, the host country. India and Pakistan were also represented.

The object of the symposium, titled "Regional Balances of Security in the Pacific Basin", was to explore ways and means of co-operating together to ease tensions and ensure stability in the area, essential if the countries are to continue to develop and realise their full potential.

Subjects discussed ranged from technology and scientific exchange, through arms control to threats to regional stability. Given the fact that the Pacific is one of the most heavily militarised areas in the world, with over a million men under arms in Vietnam, Kampuchea and Laos; one-and-a-half million on the Korean Peninsula; over four million in China; at least a third of the Soviet Union's ground forces, that country's largest fleet and growing strategic and tactical Air Forces; and very large US forces, it was not surprising that military threats to stability received more attention than anything else. Economic "threats" were not, however, disregarded.

One was reminded at the symposium of the diversity of the Pacific nations:

- Population sizes ranging from 8,000 people in Nauru's 8 square miles to China's one billion in 4 million square miles.
- Huge differences in per capita wealth — ranging from \$US18,000 (in Brunei) to \$350 in some of the small island States.
- Cultural, religious and philosophical traditions ranging from Confucianism and Buddhism to Islam and Christianity.

On the other hand, there are many common factors. Most Pacific countries favour a market-orientated economy and appreciate the role of the individual entrepreneur; human resources are generally abundant; educational levels are relatively high and literacy ahead of other regions; a strong technological base has been formed in many countries and linked with a disciplined and skilled workforce has produced remarkable results — in South Korea, Taiwan and Singapore, for example, in a comparatively short period.

**F**EATURES of the symposium were the frankness of the discussions, the forward-looking attitudes adopted by national representatives and their realism, and an obvious willingness to work together for the common good. The ASEAN nations have already shown what can be achieved given goodwill on all sides and an ability to translate fine words into deeds — the last requiring the most effort.

After listening to the discussions the question that came to the writer's mind was — what part will Australians play in what is widely seen as a dawning "Pacific Age"? In many ways Australia is a potentially important country — in a strategic sense, lying at the junction of the Indian and Pacific Oceans and dominating a large part of the Southern Ocean, it is already important, both globally and regionally. Australia is resource-rich, but nowhere near fully developed. The population, although small, is on the whole well-educated and the skills are available. For these and other reasons the future should be bright indeed.

It has to be said though, that we appear to be mulling our chances. Generally speaking, little interest is shown in our neighbours and the way they are forging ahead. We are preoccupied with what are largely parochial matters and almost everywhere sectional interests can be seen pursuing their particular interests with scant regard to the effect on others or the country. Nowhere is this selfishness more evident or more noticeable abroad than in the maritime industry, where strife seems to be accepted as a fact of life; it is not, of course, as we will one day find out if the waste of resources continues to be tolerated.

Australians could play a constructive part in their region and perhaps beyond it, but only with a sense of national purpose and a willingness to make the necessary effort.

*Geoffrey Evans*

GEOFFREY EVANS  
Federal President  
The Navy League of Australia

### DEADLINE

The deadline for the October issue of  
*The Navy* is  
1st AUGUST, 1985

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# FAREWELL TO HMAS MELBOURNE



**BY REAR ADMIRAL D. J. MARTIN, AO, RAN  
PRESIDENT OF THE HMAS MELBOURNE ASSOCIATION**

**THE** old MELBOURNE has finally left her moorings in Sydney Harbour and is now at the breaker's yard. The statistics about her career have been chronicled elsewhere: thousands of miles steamed, thousands of deck landings and launches, the Officers who commanded her, Fleet Commanders whose flag she wore, exercises in which she took part, accidents and the countries in which she showed the Australian Flag.

Since she joined Her Majesty's Australian Fleet in 1956 she has been the most powerful single unit in the Australian Defence Force. The ship and her squadrons of aircraft, varied in types and numbers to suit the needs of the moment, endowed Australia with significant strength and influence. Australian Governments have, for more than a quarter-of-a-century, had at their disposal this impressive and powerful token of political and diplomatic will. The ship was a messenger able to influence and impress neighbours, whether they were allied, uncommitted, or potentially hostile to us. She allowed Australia to make a contribution to international exercises which encouraged, or even guaranteed, a high level response from other participating countries. She was an advertisement of Australia's commitment to regional security and co-operation. She was a real symbol of Australia's status, prestige and influence. She proclaimed the message that Australia was a useful friend and a supportive ally, and would not be a pushover in conflict. She had the ability to support the Army ashore and to supplement the Air Force in the air defence of Australia and the security of the shipping lanes. Surface ships were safer or, to put it the other way, less vulnerable because of the anti-air and anti-submarine protection she offered.

Her safety record was the envy of other Navies and aircraft carriers. During her last 16 years of life there was not a single fatality connected with air operations, and that is a reputation of which most airfields on land, whether civilian or military, would be proud. Like all of our ships, she was required constantly to engage in manoeuvres and operations which were potentially dangerous, we are not the Sea Scouts but a



Fighting Service and we become professional by living with danger and being able to handle it. She had accidents, but less than her fair share. It is not surprising that the two major collisions, in which she was the innocent victim, attracted a lot of attention and some cynical and sensational publicity. We must remember that in both of those accidents the Carrier was found, after exhaustive investigations (two Royal Commissions and an International Board of Inquiry), to have been completely innocent. Those who say that Melbourne "claimed the lives of" a number of people should be sued for slander. She did not cause one death and, in fact, she saved the lives of many. The Navy has been proud of her and every sensible Australian should have shared that pride.

There are many that do. She certainly had many admirers in Darwin after Cyclone Tracy, where she and her Air Group did fine work.

Sailors have never welcomed a posting to a big ship and there will have been few who were pleased to hear that they had a draft to the MELBOURNE. But it was always interesting to see how quickly Officers and Sailors became part of the team on board the MELBOURNE and worked together to keep her smart and efficient. She was always crowded and uncomfortable, usually happy, and always had a great spirit. She stood as an example of what a large group of average Australians could achieve, given a sense of purpose. Would that Australia as a country could achieve the standards set by her flagship. She was overworked, used and abused, admired, cherished, sworn at and loved by those who lived in her.

It is good to see that the HMAS MELBOURNE Association is off to a good start. The contingent that marched in Sydney on Anzac Day 1985 under the MELBOURNE banner drew a lot of favourable comment and it is to be hoped that many of those people who served in the ship during her life will show their support for her memory by joining the Association.

Because of a decade of procrastination in the Defence Department, we kept her running and working until she was past her peak. Towards the end of her life she was becoming difficult to maintain, her last few

## HMAS MELBOURNE ASSOCIATION Application for Membership

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Commanding Officers had to worry about the safety of the catapult, arrester gear and other machinery. The ship owes us nothing, but Australia, as a whole, is in her debt.

There is no doubt that some of the options which have been available to Australian Governments are no longer available. Some of the things which the Australian Defence Force could do can no longer be done. A significant capability is missing.

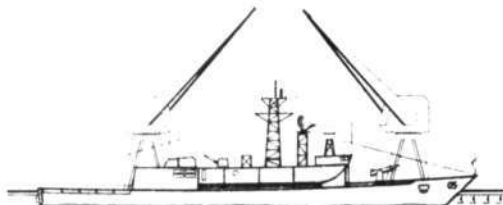
FAREWELL, OLD LADY



(Photos — ABPH KIM DEGENER)



# WILLIAMSTOWN NAVAL DOCKYARD



Warship Builders to Australia



The Minister for Defence, The Hon. Mr Kim Beazley, M.P., who officiated at the cut steel ceremony, W.N.D., March 5, 1985.



# NEW SUBMARINE PROJECT



## PRESS ANNOUNCEMENT

The Minister for Defence, Mr Beazley, announced on 21st May that two submarine design teams have been selected to undertake project definition studies on the RAN's new submarine project.

They are Ingenieurkontor Lubeck (IKL), Howaldtswerke-Deutsche Werft (HDW) and the Ferrostaal group of West Germany, offering the IKL 2000 submarine, and Kockums AB of Sweden, offering the Type 471 submarine. In addition, two combat systems suppliers have been selected to work with each design team. The first is a group led by Rockwell International, which includes Singer Librascope, Thomson CSF and Computer Sciences of Australia, and the second is the Netherlands company Hollandse Signaal Apparaten (HSA).

"The Government has decided that six new submarines will be built in Australia," Mr Beazley said.

"Subject to satisfactory arrangements with the Governments involved, and satisfactory terms and conditions being negotiated with the selected contenders, we will place contracts for the studies in July 1985.

"The study phase is estimated to cost about \$26 million.

"It is the first part of a multi-phase project leading to the construction of new submarines for the RAN.

"The purpose of the studies is to define the design configuration of the new submarines and to provide information on where the submarines will be built and on the scope and nature of Australian involvement.

"No Australian construction site will be selected until

the project definition studies have provided appropriate information on which to base a decision.

"Based on an acquisition of six submarines, construction in Australia is expected to cost about \$2600 million at current prices.

"The construction phase of the project is planned to begin in late 1987 or early 1988."

Mr Beazley said he expected that overseas submarine contenders would establish firm associations with Australian companies before project definition got under way.

"I would like to congratulate everyone involved in this major project, which has involved a comprehensive and exhaustive review of Australia's submarine needs by the Navy and the Department of Defence," Mr Beazley said.

"The Government's decision to have all six submarines built here reflects the great significance of the project for Australian industry."

The selected contractors for the project definition studies would:

- develop their design proposals;
- provide a range of costed proposals for Australian industry involvement;
- provide information on alternative construction locations in Australia;
- identify logistic support and maintenance arrangements; and
- provide firmly priced proposals for the construction phase.

## RAN REQUIREMENTS

The successor to the Oberon class will be a diesel-electric powered submarine, roughly the same size as the Oberon. It will take advantage of technological developments in submarine design and performance which have occurred since the Oberon entered service.

Specifically, the hull will be shorter and fatter, providing better hydrodynamic performance and manoeuvrability, and there will be significant improvements in underwater endurance and maintenance requirements. The period between recharging batteries (the indiscretion rate) will be extended, whilst the time taken for this process will be reduced by improved generating capacity. A low noise signature, the capacity to carry a weapon load appropriate to Australia's strategic circumstances, good shock resistance qualities and a modern combat system are sought. Living conditions for the crew will also be better than in the Oberons, largely because accommodation will be centralised and sleeping quarters separate from messing facilities. There will be 41 in the crew, compared with 63 in the Oberon.

### Range and Endurance

Two important factors in the submarine's selection are its range and endurance. The former is particularly important in view of our geographic situation and the great distances which may be involved in deploying submarines to their patrol areas.

Coupled with a submarine's range are the considerations of speed and endurance. These are important in determining its ability to remain on task, in particular in patrol areas and hence its potential ability to complete a task successfully. A submarine's endurance is influenced by the amount of food, fuel and weapons that can be carried, the crew's living and working conditions and the reliability and redundancy of equipment and systems.

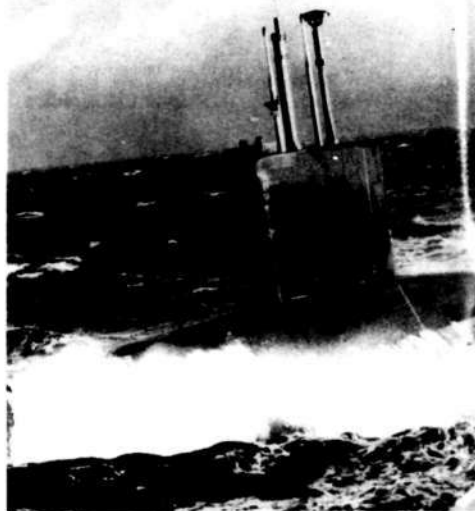
The submarine will usually remain covert when transmitting to a patrol area and when on patrol. It must therefore be a quiet platform with effective sensors such as sonar, periscopes, electronic warfare and infra-red detection aids. A minimum requirement for "snorting" to recharge the battery is important. The indiscretion rate is dependent upon the efficiency and capability of generators, batteries and, in particular, hydrodynamic efficiency of the hull and a low "hotel" load. It needs to recharge its batteries at high rates for short and infrequent periods. It is when the submarine is snorting that it is most vulnerable, partly because it is showing masts above the water surface, but more particularly because the snorting submarine is noisier than when it is operating on batteries. This increased noise whilst snorting increases the likelihood of detection. Should a detection be made or suspected the submarine needs a depth capability, manoeuvrability and burst of speed to evade and, if attacked, to resist shock and damage.

## THE FOUR PHASES OF THE PROJECT

In May 1983 a request for tender (RFT) was issued to seven submarine builders/designers and through them to combat system companies. Some four tonnes of tender documentation for the funded PDS from the six responses has undergone evaluation to shortlist the contenders. Six evaluation teams considered the operational, design and technical, logistics, production, AIP and contractual, and cost aspects of the tenders. The evaluation teams provided their individual recommendations for Evaluation Board consideration in March 1984. The Board, under the chairmanship of the Chief of Naval Material, Rear Admiral W. J. Rourke, gave its recommendation on source selection to higher Defence committees in September 1984. The Department's submission on source selection, industry aspects, submarine capability considerations and the strategy for further developing the project went to Cabinet in May 1985.

The announcement by the Minister for Defence will enable the Department to begin detailed discussions and negotiations with the submarine platform and combat system contenders selected to undertake Project Definition Studies. The studies are to identify design, Australian Industry Participation, logistics, constructions and project management implications and the preparation of firmly priced proposals for their supply. All this data will be used in the selection of one PDS contractor to go forward to Phase 2 — Project Development.

During Phase 2, production arrangements will be refined, detail design finalised, and the production contract negotiated. This work will culminate in the letting of the production contract in 1987.



An IKL 209 class submarine, designed and built for the Navy of the Federal Republic of Germany by the West German shipbuilding consortium Howaldtswerke-Deutsche Werft/Ingenieur Kantorlubeck/Ferrastaal.

Phase 3 is the production phase of the project, and relates to the following activities:

- The development of construction and support facilities in Australia;
- The construction of New Construction Submarine 01;
- The construction of six submarines.

Phase 4 provides for a further construction programme, should it be required by the Department of Defence.

## IMPLEMENTATION OF THE PROJECT

Phase 1 of the project, project definition, was approved in the context of the 1981/82 Budget, and is intended to lead to selection of a particular submarine. Subsequent phases are not yet approved.

The selection of the submarine design is a major task in itself. There were six contending submarine builders/designers from Europe and, in addition, companies from Europe and the US have provided proposals for combat systems to fit into the platforms of the six submarine contenders.

The submarine contenders were:

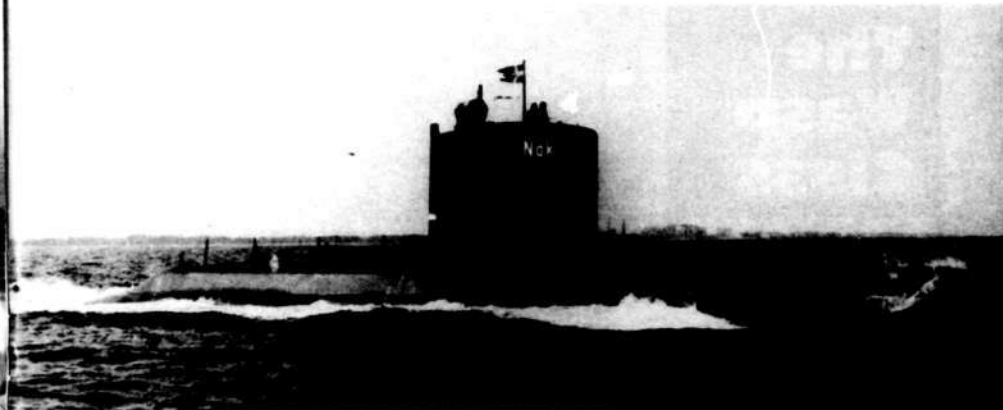
Type 471  
CD3  
WALRUS

Types 2400A and 2400B

Type IKL 2000

Types TR 1700A and  
TR 1700

KOCKUMS of Sweden  
CHANTIERS DUBIGEO of France  
ROTTERDAM DOCKYARD COMPANY  
of the Netherlands  
VICKERS Shipbuilding and Engineering  
Ltd of UK  
HOWALDTSWERKE — DEUTSCHE  
WERFT/INGENIEUR KANTOR-  
LUBECK/FERRASTAAL of FRG  
THYSSEN NORDSEEWERKE of FRG



A Nacken class submarine designed and built for the Royal Swedish Navy by the Swedish shipbuilders Kockums. Kockums have been selected as one of the two successful contenders for the project definition studies, funded by the Department of Defence, which will decide the type of submarine to be built for the Royal Australian Navy to replace the RAN's current Oberon class submarines.

- Since receiving the tenders in November 1983, there has been a detailed assessment of the tenders by a Tender Evaluation Board, which prepared recommendations on companies preferred for the project definition phase.
- comprehensive examination of the project by the Defence Source Definition Committee, which both reviewed the Board's source selection recommendations and also considered the strategies for further developing the project.
- consideration by the Defence Industry Policy Committee of guidance which could be provided at this stage of the project on the scope and nature of Australian industry involvement.
- review by the Force Structure Committee of the submarine capability in light of cost and other information provided by the tenderers.
- review by the Defence Force Development Committee of the recommendations of the foregoing committees, and
- the development of submissions to the Minister and to Cabinet on the project.

The evaluation of these tenders has led to the selection of two companies to undertake in-depth studies on the design, production and logistic support of submarines to meet Australia's requirements. The evaluation of tendered information has also identified areas in which the submarine requirement, and the matters to be examined in the studies, should be refined? These issues will be addressed by the study contractors.

At the end of the studies the Department of Defence will have a clear definition of the boat, how to build it, the infrastructure to support it and firmly based prices for the many elements of the project. An evaluation of those study outputs is planned to lead to final source selection and, it is hoped, a construction contract in 1987.

### Australian Industry Involvement

The extent of Australian industry involvement in this project will not be decided until late 1986 at the earliest. However, it is planned that all boats be built in Australia.

## COMBAT SYSTEMS

A submarine's combat system includes its sensors, fire control system, navigation and communications equipment and its weapons and their discharge system. The main sensors are sonars of several types, electronic warfare aids, radar periscopes and infra-red detection equipment. The information provided by these sensors is computed, compared and presented to the command through the fire control system for decision.

The filtered information is used to calculate the appropriate solution for firing at a target which may be 60 miles away. Fire control

information is fed to the weapon which is discharged and guided to the target. The knowledge of the submarine's position and that of the targets, of which there may be several, is an important ingredient in accurate delivery of the weapon.

There are trends in technology and philosophy which, if taken into account, will enable the RAN to update the combat system by frequent changes in software, rather than by large scale and costly hardware updates like that recently completed in the Oberons. The new combat system is planned to be fully integrated, so that a vast amount of information can be filtered, processed and presented in a manner which will not overload the Commander in his decision making process.

Rather than a large central computer, distributed processing is planned with large scale commonality of components and processes with plenty of redundancy. All this should lead to a reduction in logistic costs for a system which will cost about 25-30 per cent of the overall submarine unit cost.

## REMEMBER THE GOOD OLD NAVY



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# The Wasp Class

by **ANTONY PRESTON**  
Naval Editor, *Janes Defence Weekly*

THE US Navy's amphibious strength will be increased by the addition of a new category of assault ship, the LHD. The contract to build *LHD 1*, since named *Wasp*, went to Litton's Ingalls Shipbuilding Division at Pascagoula, Mississippi in 1984, although design began in 1981.



Artists impression of the USN's new LHD

The full story of the LHD goes back much further, to the 1970s, when the US Marine Corps put forward its needs for the 1980s and

TABLE 1

	LHA 1-5	LHD 1
Displacement (full load)	39,300 t	40,500 t
Dimensions	250m x 32m x 8m	257m x 32m x 7.9m
Machinery	2 shaft geared steam turbines; 140,000 shp	1 shaft geared steam turbine; 70,000 shp
Speed	24 kt	20 kt
Complement	920 (+ 1700 troops)	1080 (+ 1870 troops)

1990s. A total of nine 40,000 ton assault ships (LHAs) was planned, but the Carter Administration cut this to five. These, the *Tarawa* class (LHA 1-5), are highly successful and are the backbone of the USMC's amphibious lift, but there is universal agreement that four more would have been better. During the eight years since the last of the LHAs was laid down, there was pressure to build more of this proven type, but inevitably as the time passed the precise requirements underwent changes. From these emerged a modified version of the LHA, and to distinguish it the designation LHD was adopted.

The hull of the LHD is basically similar to the LHA (see Table), the principal difference being the reduction of installed power by half, which reduced top speed to 20 kt. However, there are many other minor changes. Externally the armament has been upgraded to meet the air threat of the 1990s. Three 5 in 54 cal Mk 45 guns have been replaced by 20 mm Phalanx Gatlings for close-in defence against missiles, while the original Sparrow Basic Point Defence Missile Systems (BPDMS) will be replaced by NATO Sea Sparrow (NSSMS) for short range defence against air attack. In addition, the surveillance systems will be upgraded to integrate the automatic detection and tracking functions into the combat system.

The electronic warfare system will have the latest AN/SLQ-32(V)3 equipment. It is capable of decoying missiles with passive decoys or by active jamming. An AN/SLQ-25 Nixie torpedo decoy system is also fitted, plus Mk 36 Super RBQC chaff dispensers.

The hull is similar in size and configuration to the LHA, with a floodable welldeck closed to the sea by a large stern gate. The major difference is the need to operate the LCAC amphibious air-cushion landing craft. The welldeck has been reduced by 7.9m to 15.25m to improve the docking arrangements for the LCACs. There is more than 2044 m<sup>2</sup> of vehicle space and 9290 m<sup>2</sup> of cargo space.



USS TARAWA (Photo - USN)

The command, control, communications and intelligence (C2I) functions have been relocated, from the superstructure in the LHA to 02 Deck. This move enables the vital command spaces to be better protected against battle damage, with structural steel bulkheads and decks to keep out splinters. The C2I functions are also more comprehensive, to support the Admiral and staff when embarked.

Large screen displays in the Combat Information Centre (CIC), Landing Forces Operation Centre (LFOC) and Flag Plot enhance tactical co-operation. Additional automated C2I systems are planned, including the Marine Tactical Amphibious Command Control System (MTACCS), which will be used by the landing force commander in the LFOC. Compared with the LHAs, air traffic control capability is considerably improved, enabling better use to be made of the AV-8B Harrier II ground support aircraft. Special displays will be dedicated to monitoring air movements around the ship and its amphibious group.

In addition to the LCACs, the *Wasp* class will embark assault helicopters, the STOVL Harrier II aircraft, conventional landing craft and various tracked and wheeled vehicles.

## PROGRESS

The design contract mentioned above was placed with Ingalls in December 1981. Long-term lead items at a total cost of \$55 million were funded in FY83, followed by \$1365.7 million for construction in FY84. The contract was awarded in February last year and the *Wasp* is planned to join the fleet in 1989. Three more are planned, *LHD 2-4*, to be funded under FY86, FY88 and FY89. The original intention was to build seven as replacement for the *Lowa* class LPHs, but the new goals and force levels of President Reagan's 600-ship navy mean that the first five or six LHDs will augment existing strength, and not until then will the *Lowa* class be phased out. In all, 11 LHDs are projected and, if they are built, will provide a significant increase in the US Navy's sealift and power projection through into the next century.



USS PELELIU (Photo - USN)



USS TARAWA an LHA during her sea trials in 1976. (Photo - USN)

## USS Wasp (LHD 1) specifications

Displacement (full load)	40,500 t
Dimensions	257m x 32m x 7.9m
Machinery	2 shaft Westinghouse geared turbines, 70,000 shp, 2 Combustion Engineering boilers
Speed	20 kt
Aircraft (typical types)	AH-1T Cobra, UH-1N Huey, CH-46E Sea Knight, CH-53D Sea Stallion, CH-53E Super Stallion, AV-8B Harrier II
Landing craft	1 LCAC, 1 LCU, 1 LCM, 1 LVT-7
Missiles	2 8-cell NATO Sea Sparrow SAMs
Guns	3 Mk 15 Phalanx CIWS, 8 12.7 mm machine guns
Complement	98 officers, 61 POs, 921 enlisted men (+ 1870 troops)
Radars	SPS-67 and SPS-64 (surface search), SPS-52C and SPS-49 (air surveillance), Mk 23 (target acquisition)



## The Impossible Takes a Little Longer

Airborne again (Photo — ABPH Hardy Alham)

**DURING** mid-1984, HMAS Nirimba's Air Engineering School was asked to determine the feasibility of restoring their DC-3B "DAKOTA" to flight worthiness, even though it had spent ten of its forty years as a training aid.

It was hoped that it might be flown to NAS Nowra as a Fleet Air Arm Museum exhibit and Australian Bicentennial Flypast candidate. The main difficulty of achieving legal airworthiness was mainly one of logistics: an amalgam of spares availability and of properly directed manpower fully qualified on type.

Fortunately, the AES boosted a number of instructors who bent throttles and stretched wrenches when the "Dak" was state of the art, a great iron bird wondrous to behold. Mr Jim Inkson and Mr Bruce Williams, both greasy-ragged their way around aircraft as WWII maintainers of aircraft now mostly remembered in song and story at crew-room lying sessions.

Jim was a Warrant Officer Engine Fitter RAAF and Bruce a Sergeant Airframes Fitter RAAF, both had seen more than a picture of the "Dakota" and remembered how to tune the "dunks" and beat out the more severe dents. As ATA instructors, their skills were retained in a high order of readiness.

After discussions with the Department of Airworthiness with respect to getting approval of a one-flight-only certificate, it became evident that their requirements for minute inspection, fault documentation, fault rectification and certification by service personnel working to current standards was not feasible because the aircraft no longer has full logistic support, i.e. no spares in stock, no civil contracts for parts overhaul, and no naval type-certified maintainers. In addition to the bleak hardware and manpower situation, there was no authority to spend money on this desirable but apparently man-intensive project.

However, due to a Navy Office decision not to recruit Air Technical Aircraft Apprentices for a year, Mr Inkson and Mr Williams became

available for the extensive rework necessary to ensure that this venerable collection of well-used components would remain in dangle form for the time required for a flight to NAS Nowra. During the course of the "Tracker" and "Skyhawk" fixed-wing disposal negotiations, a window opened upon "Oliver Airlines" who, as War Assets buyers, are able to fly elderly aircraft from A to B, as is, where is, provided that faults discerned by their inspection team are properly rectified in accordance with the best trade practices, and that all vital systems function as per specifications.

From June to October of 1984, the essential systems (flying control, hydraulic, flap, brake and engine, etc) were removed, examined,

repaired or serviced as necessary and after replacement were ground tested for performance. The Air School staff enjoyed much enthusiastic support from the Craft Schools in the form of welding, heat treatments and some best-not-discussed remedies for some of the more tired looking parts unearthed during the more severe surgery.

By October 1984, all the resources of HMAS Nirimba and NAS Nowra that could be manoeuvred within the regulations had been exhausted.

Overtures were made to the RAAF who, as spies reported, had tons of "Dak" spares. This intelligence, when put to the acid test, produced a solitary rudder assembly. Luckily, the other branch of supply, the old buddy net, had



Pre-flight tests (ABPH Hardy Alham)

RAAF Richmond locate some genuine WWII nuts and bolts stashed away in the early '40s when the yellow hordes posed a threat to the Australian way of life. For these and other feats of legerdemain, we have a debt of gratitude which will be difficult to repay.

A few dollars from the FAA Museum Fund bought hard-to-get spark plugs, 'O' rings and bits various which could not be manufactured or brought up to flight worthiness due to the need to maintain the highest quality assurance with respect to the right material or heat treatment. Perished elastomers created a difficult problem to beat, but the suppliers met all our needs every time.

Completion of the work list required the services of an aviator to wring out the product lest weevils, botch or murrain had been overlooked, despite the best efforts of our workers. It just happened that our First Lieutenant, LCDR Colin Talbot RAN, was a seasoned "Dak Jockey" who had expressed a more than passing interest in the project after learning of the ecological horror plan to pass a "Bush razor" across the odd tree which had come to magnificent maturity over the years since the "Dakota" had been shoehorned into position.

The movement of the aircraft from the hangar area to the runway was carried out smoothly and efficiently under the supervision of just about everybody from the Bosun's Party, ATs under training, and some Air School personnel who tended to express concern when steam locomotives, ships' propellers and telegraph poles could be seen hurriedly getting in the way.



The team responsible for the successful flight (Photo — ABPH Hardy Alham)

To prove that the aircraft was ready for flight, LCDR Talbot took the machine along the Schofields runway at near flying speeds, jammed on the anchors and generally established that the appropriate nuts and bolts had been well and truly reeled home. Nothing fell off, the brakes did, as did the propellers and, as a statement of confidence, our aviator commented that he would be willing to compete the ferry flight anytime.

The aircraft was finally parked near the tennis courts to await the date of departure, which the Air Department hoped would occur before the elements reduced her once again to a sad hulk fit only for the fire pit.

Then, at 1530 on 18th April, the RAN's last airworthy Dakota, piloted by a RAAF "Dak" pilot, became airborne from Schofields, arriving safely and with no 'hitches' at Nowra about 40 minutes later.

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# Soviet Naval Forces — 1985

**T**HE growth of the Soviet Navy since 1960 and the expansion of its oceanic areas of operation have made it a highly visible symbol of increasing Soviet military capabilities.

During this period, the ballistic missile submarine force has become the second most important strategic arm of the Soviet Armed Forces, while the Navy's power, mobility and capability for world wide deployment give it the ability to support Soviet State interests abroad to a degree unmatched by other branches of the Soviet military.

While the modern Soviet Navy has not been tested in battle, it is clearly designed and structured for particular wartime tasks. Overall, the missions of the Soviet Navy are to conduct strategic strikes against land targets, to provide for the maritime security of the USSR, and to support Soviet policy and promote Soviet interests world wide. Within the context of these missions, the Soviet Navy would have the following wartime tasks:

- protect Soviet strategic strike capability and carry out strategic submarine launched ballistic and cruise missile strikes when directed;
- counter the perceived threat from Western sea based strategic forces;
- achieve sea control in the approaches to the Soviet Union and other Warsaw Pact countries;
- conduct sea denial operations in selected ocean areas to prevent Western forces freedom of action in these areas;
- support Warsaw Pact ground operations by protecting their seaward flanks, seizing vital straits and islands, and conducting amphibious assaults.



Slava class guided missile cruiser. (Photo — USN)

- protect vital sea lines of communication (SLOC) and
  - interdict Western SLOCs.
- The pattern of implementation of these tasks would vary from fleet to fleet. The Northern and Pacific Fleets, to which all SSBNs are assigned, would be initially concerned with deploying and protecting those submarines. The nearly landlocked Baltic and Black Sea Fleets, on the other hand, would likely concentrate initially on seizing control of their approaches and on supporting continental theatre operations. A major concern of all four fleets

would be countering Western naval strike groups, especially aircraft carriers and cruise missile-equipped platforms approaching the USSR.

The Soviets rely on in depth defence in the sea approaches to the USSR in order to provide immediate protection to the homeland and to secure access from bases to operating areas. Most Soviet general purpose surface, submarine and naval air forces would likely be assigned initial wartime tasks within this perimeter, where they could provide both protection for SSBNs and defence against sea-based, land attack platforms. Here, Soviet surface combatants would deploy in independent, mission-orientated task groups, unlike the large, multipurpose, carrier-centred battle groups of the West.

## Naval Organisation

The Soviet Navy is headed by a Commander in Chief (CINC) who is also a Deputy Minister of Defence, he functions as the equivalent of both the US Secretary of the Navy and the Chief of Naval Operations and is the chief adviser on naval policy to the Minister of Defence. Fleet Admiral of the Soviet Union, Sergey G. Gorshkov, has commanded the Navy since 1955 and was appointed Deputy Minister of Defence in 1956. He is assisted by several deputies who supervise the day to day operations of the Navy, including the work of more than ten directorates.

The Soviet Navy is comprised of four major fleets: Northern Fleet, Pacific Ocean Fleet, Baltic Fleet and Black Sea Fleet. Fleet headquarters are located at Severomorsk for the Northern Fleet, Vladivostok for the Pacific Ocean Fleet, Kaliningrad for the Baltic Fleet, and Sebastopol for the Black Sea Fleet. In peacetime, the fleet commanders report directly to the Chief of the Main Navy Staff and exercise



YAK-36 Forger V-stol aircraft on board the carrier MINSK. (Photo — USN)

operational control over all general purpose forces afloat and ashore within their fleet areas. In wartime, naval fleet CINCs would become the naval component commanders of the combined arms high command in the appropriate TVD. Under each fleet commander there are several major operational elements, including surface and submarine forces, naval base commands, naval aviation and naval infantry. While the fleet commands provide administrative, logistic and operational support to the strategic submarine force, operational control of Soviet SSBNs is at the national level.

## Submarine-Launched Ballistic Missiles

The Soviets maintain the world's largest ballistic missile submarine force. As of early 1985, the force numbered 62 modern SSBNs carrying 928 nuclear-tipped missiles. These totals do not include 13 older submarines with 39 missiles currently assigned theatre missions.

Eighteen SSBNs are fitted with 300 MIRVed submarine-launched ballistic missiles (SLBMs). These 18 units have been built and deployed within the past 8 years. Over two-thirds of the ballistic missile submarines, including those

equipped with MIRVed missiles, are fitted with long-range SLBMs that enable the submarines to patrol in waters close to the Soviet Union. This affords protection from NATO anti-submarine warfare operations.

Three units of one of the most modern Soviet ballistic missile submarines, the TYPHOON, have already been built. Each TYPHOON carries 20 SS-N-20 solid-propellant MIRVed SLBMs. The TYPHOON is the world's largest submarine, with a displacement of 25,000 tons, one third greater than the US OHIO-Class. The submarine can operate under the Arctic Ocean icecap, adding further to the protection afforded by the 8,300-kilometre range of the SS-N-20 SLBM. Three or four additional TYPHOONS are probably now under construction and by the early 1990s the Soviets could have as many as eight of these potent weapons systems in their operational force.

In accordance with the SALT I Interim Agreement, the Soviets have, since 1978, removed 12 YANKEE I units from service as ballistic missile submarines were produced, in order for the overall Soviet SSBN force to stay within 62 modern SSBN/950 SLBM limits established in 1972. These YANKEES,

however, have not been scrapped. Some have been reconfigured as attack or cruise missile submarines.

The Soviets may have begun to assign theatre attack missions to some of the 21 remaining YANKEE I submarines.

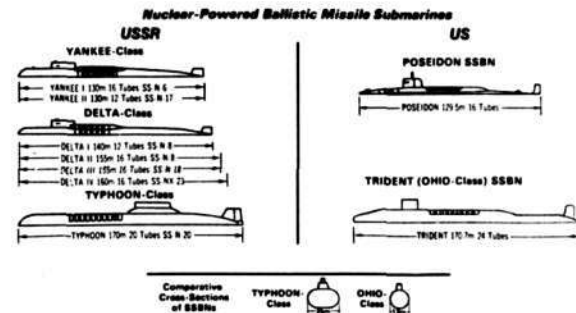
**Force Developments.** The Soviets have launched two units of a new class of SSBN, the DELTA IV, which will be fitted with the SS-NX-23 SLBM, now being flight tested. This large, liquid propelled SLBM will have greater throw-weight, carry more warheads and be more accurate than the SS-N-18, which is carried on the DELTA III SSBN. The SS-NX-23 is likely to be deployed on DELTA IIIs as a replacement for the SS-N-18 as well as on the new DELTA IVs.

## Submarines

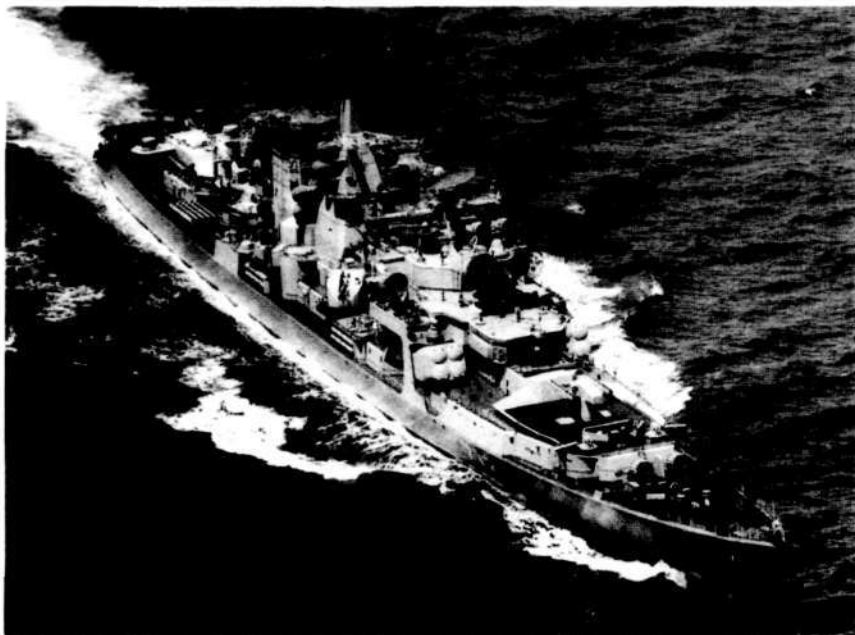
A significant part of Soviet naval strength lies in its general purpose submarine force, the largest in the world. Today, this force numbers some 300 active units composed of some 25 different classes of torpedo attack, cruise missile and auxiliary submarines. Nearly half the force is nuclear powered and this percentage is expected to rise in the years ahead as heavy investment in submarine building programs continues to receive priority allocations of military resources.

Currently, the Soviets are producing or testing nine different classes of submarines. Of these, all but one are nuclear powered. This program spans the entire range of undersea warfare applications, including torpedo and antiship cruise missile attack, land-attack SLCM, technology research and specialised communications support. Backed by aggressive research and development, the newest Soviet submarine designs show evidence of an emphasis on quieting, speed, nuclear propulsion, weapon versatility and incorporation of advanced technologies.

This emphasis has been underscored dramatically since 1983 with the introduction of four new classes of nuclear-powered attack submarines. The MIKE SSN, at almost 10,000 tons, embodies the Soviets' state-of-the-art in propulsion and pressure hull design. It is capa-



Victor class nuclear attack submarine. (Photo — RAN)



Kara class guided missile cruisers were the first to carry three separate missile systems. (Photo - USN)

ble of firing a wide range of submarine-launched weapons, including the SS-N-15 nuclear depth bomb, the SS-N-16 ASW missile and possibly the SS-NX 21 land attack SLCM.

The second nuclear-powered attack submarine introduced in 1983 was the SIERRA. At 8,000 tons, the SIERRA is about 20 per cent larger than the VICTOR III, which was introduced only four years earlier. In this era of rapidly developing technologies, the SIERRA is a clear demonstration of the high priority that submarine development programs receive in the Soviet Union. Technological advances are incorporated into designs as soon as practical and while SIERRA differs little in hull form from the VICTOR III, it is believed to have a larger pressure hull and improved capabilities.

A third submarine development of 1983 typifies another aspect of Soviet philosophy, which is to incorporate new innovations into older designs, thus extending the service life and tactical utility of its submarine force. In this case, the ballistic missile tubes were removed from a YANKEE SSBN in a process that converted the unit to an attack submarine. This YANKEE SSN has probably been re-equipped with updated systems such as fire control and sonar, in addition to other modifications that will enable it to launch a wider variety of weapons.

In 1984, another new class of nuclear-powered attack submarine — the AKULA-Class — was launched. The lead AKULA unit is also similar to the VICTOR III and SIERRA-Class.

Other submarine missions have received

emphasis as well. Patrols by the OSCAR-Class nuclear-powered cruise missile submarine have now become routine. At 14,000 tons, the OSCAR is fitted with 24 submerged-launched, 550-kilometre, nuclear-capable SS-N-19 anti-ship cruise missiles, targeted primarily against NATO carrier battle groups. In addition to continued OSCAR production, the Soviets are proceeding with a program to convert the older 1960 vintage SS-N-3-equipped ECHO II SSGNs to the improved, 550-kilometre, super-sonic SS-N-12 anti-ship missile.

### Surface Forces

The surface forces of the Soviet Navy also continue to improve their ability to fulfil a broad range of naval operations, especially in waters distant from the USSR. In general, the afloat forces are modern and well equipped.

The trend in Soviet major surface warship programs has been toward larger, technologically more sophisticated units. Construction of these Soviet ships over the last decade has produced increasingly larger ships with an upgraded array of weapons systems and complementary sensors. These ships can cruise for longer distances, carry more ordnance, and conduct a greater range of operations than their predecessors. This has created a new flexibility and versatility for Soviet surface forces in carrying out deployed operations on a world-wide scale.

Currently, the largest ship in the Soviet Navy is the KIEV-Class aircraft carrier. Its weapons suite includes a battery of 550-kilometre-range SS-N-12 anti-ship missiles that can be

targeted beyond the ship's horizon by on-board HORMONE helicopters or information derived from satellites or land-based long-range aircraft. This class also carries an array of other weaponry and support equipment, including over 100 long- and short-range surface-to-air missiles, air defence gun batteries, tactical sensors, electronic warfare systems and advanced communications devices. The 600-foot flight deck accommodates both HORMONE and HELIX helicopters and the FORGER vertical/short take off and landing (V/STOL) aircraft that is capable of daylight attack, reconnaissance and intercept missions.

A new era in Soviet warship development began in 1980 with the appearance of the initial units of the most technologically advanced classes yet produced. These included the first Soviet nuclear-powered surface warship, the KIROV guided-missile cruiser and the UDALOY and SOVREMENNY guided-missile destroyers. In 1982, the first of a new class of gas-turbine-powered guided-missile cruisers — the SLAVA — entered the inventory. The SLAVA is equipped with 16 SS-N-12, 550-kilometre range anti-ship cruise missiles, 64 SA-N-6 air defence missiles, 40 SA-N-4 point defence missiles, a 130 mm twin-barrel, dual purpose gun, and the surveillance variant of the HORMONE helicopter.

Each of these classes is currently in series production and illustrates the Soviet Navy's trend toward construction of larger displacement ships with greater firepower, endurance and sustainability for distant operations. The

KIROV CGN, with a displacement of about 28,000 tons, is the largest warship, with the exception of aircraft carriers, built by any nation since World War II. In 1984, FRUNZE, the second unit of the KIROV-Class, became operational, and a third ship is under construction.

Other new construction combatant programs show similar evidence of Soviet concern for the multidimensional aspect of modern naval warfare. All new principal surface combatants are equipped with surface-to-air missiles and sensors and weapons for antisubmarine warfare, in addition to helicopters and specialised weaponry. The SOVREMENNY DDG, for example, is estimated to carry 44 SA-N-7 short-range surface-to-air missiles, a HELIX helicopter, 53 cm torpedoes and 120 anti-submarine rockets, as well as 8 SS-N-22 super-sonic anti-ship missiles.

A newer era still in Soviet naval development will begin soon with the launching of a new type of aircraft carrier now under construction at Nikolayev in the Black Sea. Expected to displace some 65,000 tons, this new unit will probably incorporate a nuclear propulsion system based on that of the KIROV nuclear-powered guided-missile cruiser CGN.

The ultimate flight deck configuration of the new carrier is still not confirmed and the aircraft for its air wing are still under development. In order for this carrier to be capable of flight operations comparable in kind and tempo to

those of the US Navy, it would require a system of catapults and arresting gear. Two catapults would enable the forward launch of aircraft with recovery on the angled deck by means of arresting wires. Other possible flight deck configurations include the option of an angled launching ramp — or ski jump — in place of catapults that would limit the type and performance of embarked fixed-wing aircraft and would degrade the operational flexibility of the air wing.

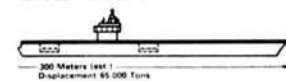
In support of the development of aircraft for the new carrier, the Soviets have an active test and evaluation program underway at Saki naval airfield in the Black Sea. There, the Soviets have constructed a 975-foot flight deck outline, arresting gear and aircraft barricades, and a catapult remains under development. In addition, two ski-jump ramps have been erected to test aircraft in short, rolling, ramp-assisted take-offs.

Although it will take several years after launch and fitting-out and training with an operational air wing to develop a credible operational effectiveness, the new Soviet carrier will enable the Soviets to extend their operations beyond the umbrella currently provided by land-based aviation. The high performance aircraft of the embarked air wing will permit the Soviets to conduct integral air defence of task groups, decrease the vulnerability of their deployed surface forces and eventually contribute to overall national air defence.

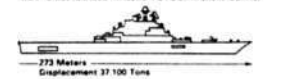
### Surface Ship Comparisons

#### USSR

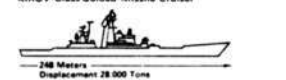
##### New Class Aircraft Carrier



##### KIEV Class Guided Missile V/STOL Aircraft Carrier



##### KIROV-Class Guided Missile Cruiser



##### SLAVA-Class Guided Missile Cruiser



##### UDALOY-Class Guided Missile Destroyer

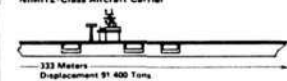


##### SOVREMENNY-Class Guided Missile Destroyer



#### US

##### NIMITZ Class Aircraft Carrier



##### VIRGINIA-Class Guided Missile Cruiser



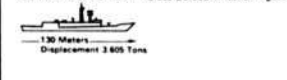
##### TICONDEROGA-Class Guided Missile Cruiser



##### SPRUANCE-Class Destroyer



##### OLIVER HAZARD PERRY-Class Guided Missile Frigate



### Naval Aviation

Although there will be an increasing emphasis on sea-based aircraft developments, Soviet Naval Aviation (SNA) will remain primarily a land-based force. Numbering over 1,600 aircraft, SNA alone is larger than most of the national air forces in the world today. Since the mid-1950s, when the force was first equipped with missile-carrying jet bombers, weapons systems and tactics associated with its principal anti-ship strike mission have been progressively upgraded. The Tupolev-designed variable-geometry-wing BACKFIRE bomber entered the SNA inventory in 1974 and is currently deployed in the Black Sea, Baltic Sea and Pacific Ocean Fleets. The BACKFIRE can carry anti-ship missiles, bombs, or mines and exhibits marked improvements in performance, nearly doubling the combat radius of its BADGER and BLINDER predecessors.

Swing wing fighter-bombers are also assigned to SNA. Its FITTER C aircraft, which can carry over 7,000 pounds of ordnance, are well suited to such roles as the support of Soviet amphibious forces and anti-ship attacks against fast and highly manoeuvrable small combatants. Naval FITTERs were first assigned to the Baltic Fleet and a new naval unit was formed recently in the Pacific.

ASW is an important and growing mission for SNA as new and improved airborne sensors are deployed. A BEAR F turboprop variant, designed for ASW missions, was introduced in 1970 and has since been upgraded. For ship-board applications, a new ASW helicopter, the HELIX, became operational in 1980.

### Amphibious Forces

Another area of continuing development in the Soviet Navy is their amphibious assault force, Soviet Naval Infantry (SNI). Since 1968, Soviet amphibious warfare capability has improved steadily and the SNI now numbers some 16,000 troops allocated among the four fleets. Each western fleet has a naval infantry brigade of some 3,000 men, while the Pacific Ocean Fleet contains a single 7,000-man division.

Unlike the larger US Marine Corps, which could carry out extensive independent operation, the SNI's primary mission is to spearhead amphibious landings for other ground forces — sometimes in concert with airborne troops. Secondary missions would be to hold captured littoral areas and to defend naval complexes. The SNI is highly mechanised, equipped with tracked and wheeled amphibious vehicles, including PT-76 tanks and BTR-60 armoured personnel carriers. The recent addition of 122 mm self-propelled Howitzer artillery and other upgraded weapons has improved the organic firepower of SNI units.

Amphibious lift for the naval infantry is provided by a number of specialised ships, the largest of which are the two IVAN ROGOV-Class amphibious assault transport docks (LPDs). The IVAN ROGOV can carry four HELIX helicopters and has bow doors and a wet well-deck at the stern that can accommodate two LEBED air cushion vehicles (ACVs). This ship can transport over 500 SNI troops and their equipment. Additional lift is provided by ALLIGATOR- and ROPUCHA-Class amphibious vehicle landing ships (LSTs) and smaller

POLNOCHN Class medium amphibious assault landing ships (LSMs)

The Soviet Navy is also the world's largest operator of military air cushion vehicles. These craft, because of their high speed and non-displacement hulls, are able to move troops and equipment for short distances more rapidly and effectively than conventional landing craft. Air cushion vehicles like the GUS, LEBED, AIST and others in development will likely play an increasing role in Soviet amphibious warfare operations.

## Naval SPETSNAZ Forces

A smaller body of a specially trained troops is also present in each fleet area. Designated Special Purpose Forces, or SPETSNAZ, these troops are controlled by the Main Intelligence Directorate (GRU) of the Soviet General Staff and are trained to conduct a variety of sensitive missions, including reconnaissance, sabotage and assassination operations. A brigade-size unit is assigned to each of the four Soviet fleets.

In wartime, small 5-12 man teams would be transported to a target area by aircraft, submarine, or surface ship and would be inserted immediately prior to hostilities. Their training includes parachuting, scuba diving, demolition, sabotage, surveillance and target selection, as well as languages, such as English and French.

Once deployed, naval associated SPETSNAZ would conduct reconnaissance and tactical operations against a wide variety of naval targets, such as ship and submarine bases, airfields, command and intelligence centres, communication facilities, ports and harbours, radar sites, and — of prime importance — nuclear weapons facilities. Though a small force, SPETSNAZ has the potential to achieve results disproportionate to its size against such a critical, yet often vulnerable, target list.

Maritime Border Guard. In addition to the fleet and SPETSNAZ forces, the Soviet Union maintains an armed force of some 20,000 men assigned to the Maritime Border Guard, sub-

## USSR Attack Submarines

### TANGO Class SS



12 Meters



12 Meters



13.8 Meters



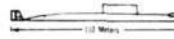
19 Meters



130 Meters



70 Meters



100 Meters



100 Meters



100 Meters



127 Meters



105 Meters

USS LOS ANGELES Class is shown for comparison purposes. Other US attack submarine classes are STURGEON, SKIPJACK, SKATE, and PERMIT

## US Attack Submarines

Armament: Torpedoes, Poseidon ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1972

Armament: Torpedoes, SS N-9 antiship cruise missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1974

Armament: Torpedoes, SS N-10 ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1976

Armament: Torpedoes, SS N-11 ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1978

Armament: Torpedoes, SS N-12 ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1980

Armament: Torpedoes, SS N-13 ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1982

Armament: Torpedoes, SS N-14 ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1984

Armament: Torpedoes, SS N-15 ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1986

Armament: Torpedoes, SS N-16 ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1988

Armament: Torpedoes, SS N-17 ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1990

Armament: Torpedoes, SS N-18 ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1992

Armament: Torpedoes, SS N-19 ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1994

Armament: Torpedoes, SS N-20 ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1996

Armament: Torpedoes, SS N-21 ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 1998

Armament: Torpedoes, SS N-22 ASW missile  
 Displacement: 1,400 MT  
 Submerged Displacement: 1,400 MT  
 Initial Operational Capability: 2000

ordinate to the KGB. It is the approximate Soviet counterpart of a coastguard and is charged with maintaining maritime border security and augmenting the Navy's coastal ASW and anti-surface warfare capabilities in wartime. It is equipped largely with Corvettes and patrol combatants, but in 1984, the Sea of Japan contingent received the first helicopter-equipped KRIVAK III-Class frigate, a major improvement in surveillance and combat capabilities.

## Soviet Naval Deployments

With the acquisition of larger, more capable ships over the past two decades, the Soviet Navy has dramatically increased at sea operations. Today, the Soviet Union maintains a naval presence in virtually every maritime theatre. Soviet naval ships, supported by submarines and aircraft, provide a visible element of Soviet power and a credible military presence opposite NATO and Japan and in critical areas of the Third World.

Mediterranean Sea: The Soviets maintain some 45 ships and submarines in the Mediterranean Sea, where they serve to promote Soviet policies and increase the range of Soviet political and military options in crisis. This contingent of ships, the Soviet Mediterranean Squadron (SOVMEDRON), can be augmented quickly and substantially by units of the Black Sea Fleet. SOVMEDRON units regularly carry out antisurface ship, antisubmarine and air defence exercises and have participated in joint exercises with Syrian and Libyan forces, as well as with other navies of the Warsaw Pact. SOVMEDRON combatants routinely shadow ships of the NATO nations and have established operating areas near checkpoints. They are thus

poised to move quickly to block strategic straits essential to support the Southern Region of NATO.

Indian Ocean: Following the 1979 invasion of Afghanistan, Soviet naval presence in the Indian Ocean rose dramatically to some 30 ships through 1982 but has since stabilised at an average of about 20 ships on continuous deployment. The Soviet Indian Ocean Squadron (SOVINDRON) conducts operations, port visits and show-the-flag missions designed to enhance the political image and military position of the Soviet Union. The squadron has demonstrated a capability and willingness on the part of the USSR to employ its naval power in support of regional objectives. Normally, the majority of the force operates in the north-western Arabian Sea astride the vital oil lines from the Middle East. Support facilities are maintained in Ethiopia, where a floating drydock is positioned at Dahlak Island, and in Aden. PDRY. Considerable effort is also being devoted to broaden naval access throughout the area in strategically located islands and littoral countries, including Mozambique, Mauritius, the Seychelles, the Comoro Islands, and India.

South China Sea: Before 1979, Soviet naval units only occasionally operated in the South China Sea. However, in the past several years, their presence, centred on Cam Ranh Bay, has increased dramatically to an average of over 25 deployed units. Cam Ranh Bay itself has evolved from an infrequently utilised support facility to a major staging complex for Soviet Pacific Fleet submarines, ships and aircraft. The complex, still under development, encompasses missile storage and handling, fuelling, communications, barracks, and other

support facilities. Permanent facilities to support a deployed squadron of BADGER strike and reconnaissance aircraft are under expansion and could support up to a 30-aircraft, regimental size force. A squadron of Soviet-made MG-23/FLOGGERS that has recently become operational at Cam Ranh will provide air defence and strike escort for Soviet BADGERS operating in the region. Their increasing naval presence in the South China Sea offers the Soviets distinct military advantages by providing the capability to augment the SOVINDRON in crisis, monitor and interfere with international shipping along a major sea route, threaten the southern coastal areas of China, and strike US and allied air and naval forces in the South China Sea and in the Philippines.

West Africa: Since December 1970, the Soviets have maintained a naval presence off the west coast of Africa, drawing on assets from the three Soviet western fleets. An average of three combatants and three support ships operate in the Gulf of Guinea, often calling at Angolan ports to which they have had easy access since Marxists seized power in 1976. Aside from the small Nigerian and South African navies, the Soviet combatants maintain the only continuous naval presence in that area of the South Atlantic astride the vital oil route from the Persian Gulf to Western Europe.

Caribbean: Since 1969, the Soviets have deployed 24 naval task groups to the Caribbean to provide visible support for the Castro regime and to demonstrate an ability to operate in waters close to the United States. In conjunction with these deployments, Soviet ships have visited Cuban ports and conducted exercises with the Cuban military forces.



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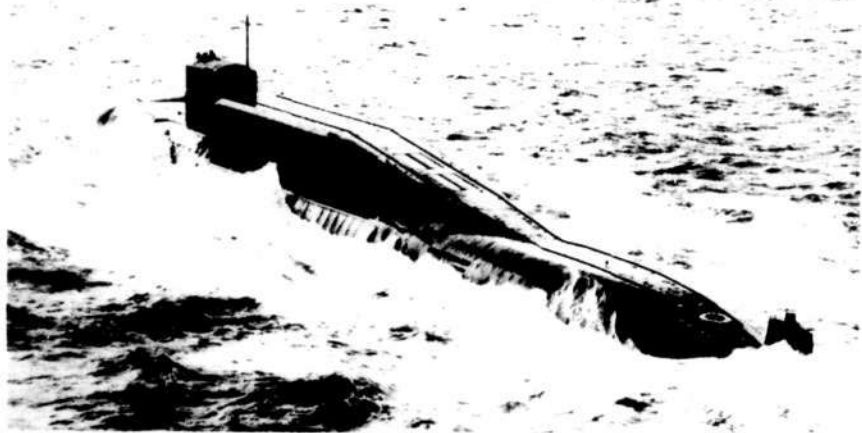
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Delta III missile submarine (Photo - USN)

## EUROPEAN NAVAL NEWS 'In Photographs'

(Photos courtesy WRIGHT & LOGAN)



HMS BOXER



The recently completed RCT (Royal Corps of Transport) vessel ANDALSNES, coming into Portsmouth on its first visit in July 1984



The Tracker Mk II class patrol craft HMS HUNTER, arriving in Portsmouth, August 1984. These craft have been built primarily for reserve training facilities, with a wartime local patrol role



HMS STARLING, the newly completed patrol vessel for Hong Kong, which will replace the ageing Ton class in service there, shown arriving in Portsmouth



A surprising visitor to Portsmouth in July 1984 was RMAS ABINGER, which is attached to the RN unit of Aberdeen University



The new River class minesweeper HMS WAVENEY, purpose built for the Royal Navy Reserve



The Dutch Alkmaar class minehunter HrMs SCHEVENINGEN during exercises at Portland, August 1984



The German Bremen class guided missile frigate RHEINLAND PFALZ on exercises at Portland

## Compiled by NAVAL ROUNDUP "GAYUNDAH"

### Realistic Ship Handling Training Can Now Be Done Without Going to Sea

A land-based, computer-controlled simulator, designed to teach young naval officers many of the practical applications of ship-handling (that previously had to be learned the hard way, on a ship's bridge at sea), became operational for the Royal Australian Navy in late April.

The RAN bridge simulator, the first military maritime simulator of its type in the world, was officially opened at HMAS Watson, Sydney, by the Minister for Defence, Mr Kim Beazley, on Wednesday, April 24, 1985.

The simulator, which is housed in a specially-designed building, was developed to train junior naval officers in ship manoeuvring and navigation.

It is controlled by computers which can run pre-set exercises, or carry out verbally injected commands to present realistic situations to trainees. These might include demanding manoeuvres in close formation with other warships, or avoidance of impending collision or grounding, which would be impractical in real life.

The bridge mock-up, which can be configured to represent a guided-missile destroyer,



HMAS WATSON's new bridge simulator (Photo — LSPH Shaun Hubert)

### A FIRST FOR HMAS STIRLING



A first for the Stirling facility took place on 25th February 1985, with the arrival of the Darwin-based patrol boat HMAS BENDIGO. Three of the Fremantle boats were present at the same time: HMAS GERALDTON was being slipped (rear), with HMAS BUNBURY and HMAS BENDIGO alongside. (Photo — LSPH Eric Pitman, RAN)

guided missile frigate, or a destroyer escort, includes radar display, instrumentation and communications systems normally found on bridges of RAN ships.

The simulator can roll, pitch and vibrate under computer control to simulate ship characteristics during manoeuvres, or the effects of calm to heavy sea conditions. This realism will be enhanced by the simulator generating background noises normally present on a bridge at sea.

To complement the real-life image of a ship's bridge at sea, a panoramic scene surrounds it over an arc of 250 degrees, reflecting computer-generated images from 11 overhead colour projectors.

In this way, trainees will be presented with surrounding seascapes which can comprise coastlines, navigation lights or buoys, islands or other ships — either warships in company, or merchant ships.

In addition, the system can reproduce all visibility conditions, such as dawn, dusk, day, night, rain or fog.

The simulator was designed and manufactured by the German company Krupp Atlas Elektronik in collaboration with its local subsidiary Krupp Australia, and Computer Sciences of Australia which designed and wrote the computer software to control and monitor the bridge instrumentation and communications.

The total project cost for the RAN simulator, including the building which houses it at HMAS Watson, was \$13 million.



## FLEET COMMANDER CHANGEOVER

After 18 months as the Royal Australian Navy's Fleet Commander, Rear Admiral Geoffrey Woolrych, AO, RAN, relinquished his command to Rear Admiral Ian Knox, RAN, during a ceremony on board HMAS JERVIS BAY at Garden Island, Friday, 3rd May.

Rear Admiral Woolrych joined the RAN in 1944 and graduated from the RAN college in late 1947. During more than 40 years of service he served in HMAS ANZAC during the Korean War and later commanded HMA Ships DERWENT and VAMPIRE. In 1979 he was appointed Deputy Fleet Commander.

Rear Admiral Knox joined the Naval College in 1947 and graduated in October 1950. During the early 1960s, he was the project officer for the development of the Australian-designed anti-submarine Ikara Missile System.

Rear Admiral Knox served as the executive officer of HMAS PERTH during the ship's first deployment to Vietnam in 1967-68 and in 1971 became the first commanding officer of HMAS TORRENS. In 1973, he joined HMAS HOBART as captain and in 1979 assumed command of HMAS MELBOURNE.



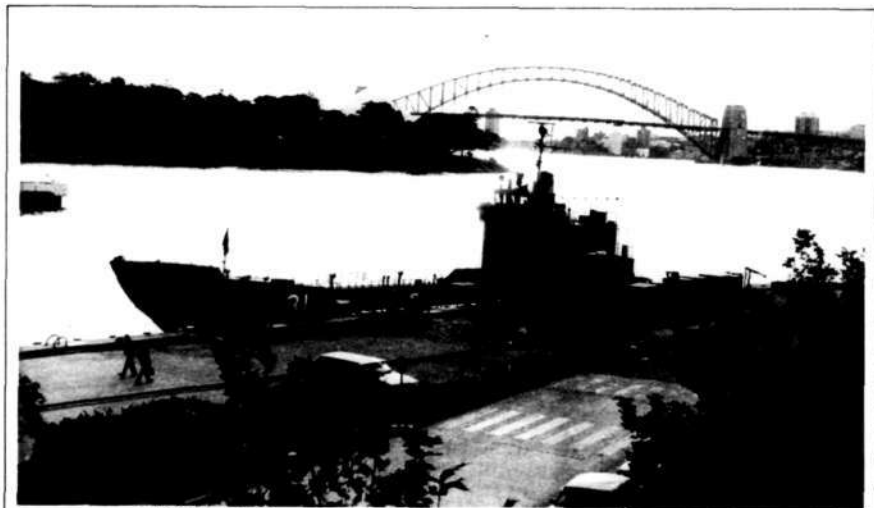
Rear Admiral Woolrych (left) welcomes his successor, Rear Admiral Knox, during the ceremony aboard HMAS JERVIS BAY. (Photo - RAN)

In July 1984, Rear Admiral Knox became the Deputy Chief of Naval Staff.

Navy had two Fleet Commander flags flying at the same time.

Rear Admiral Woolrych also introduced the new Fleet Commander to his commanding officers and senior fleet staff.

The ceremony on board HMAS JERVIS BAY was one of the few occasions when the



HMPNGS SALAMAU visited Sydney in early May prior to a refit in Ballina. (Photo - ABPH Mal Johnson)

## Design for Pacific Patrol Boat Selected

Australian Shipbuilding Industries (ASI) of Jervis Bay, Western Australia, has been selected as the preferred tenderer to build a new class of patrol boat which Australia

plans to give to South-West Pacific nations under the Defence Co-operation Program.

Announcing this on 9th May, the Minister for Defence, Mr Kim Beazley, said five countries —

Papua New Guinea, the Solomon Islands, Vanuatu, Tonga and Western Samoa — had indicated an intention to take part in the project.

"Up to 10 patrol boats will be provided, together with spare parts and other support items, and a training and advisory package," he said.

"The aim of the program is to assist Pacific States to establish or maintain effective national maritime surveillance and enforcement capabilities."

"The project is the largest and most complex ever undertaken under the Defence Co-operation Program," he said.

Mr Beazley said the design selected is known as the ASI 315. It is 31.5m long and displaces 165 tonnes. It features a deep V hull made of steel, a wide beam and an aluminum superstructure. It was assessed for compliance with a requirement, which was prepared after consultation with the participating countries, to take the maximum account of the most important characteristics — including range, speed, accommodation and ease of maintenance.

The Pacific Patrol Boat project was announced at the Canberra meeting of the South Pacific Forum in August, 1983. The Government, in conjunction with South Pacific countries, undertook to develop a vessel to meet the needs of regional States for an effective means of policing their 200 nm Exclusive Economic Zones.

In October 1983 shipbuilders were invited to register interest in the development of the vessel. Forty-seven companies responded, including three from New Zealand. In August last year, the Prime Minister, Mr Hawke, speaking at a meeting of the Forum in Tuvalu, announced that 13 Australian companies had been invited to tender for the project. When tenders closed in November last year 10 companies had responded with 13 designs.

Mr Beazley said he expected that a contract would be signed with ASI when contract negotiations had been successfully completed — in about June this year. The total project cost will be approximately \$43 million, including, among other components, the provision of RAN advisory assistance and training to the countries concerned. The first patrol boat should then be ready for delivery about the middle of next year.

"The project should provide work for about 60 employees for about four years," the Minister said.

Mr Beazley said that officials would visit participating countries in the near future to brief them on the specific capabilities of the ASI 315 and the reasons for its selection, and to discuss with them their preparations to receive the vessel, including the work necessary to develop local support and command and control facilities to make effective use of the craft when delivered.

The ASI 315 design is longer, larger and more spacious than the next ranked tenderer. Its hull is more easily repairable and its sea-keeping and survivability capabilities are assessed as being better, particularly in extreme sea states and winds. The ASI project also has a \$5 million advantage on price over that tenderer on the cost of 10 boats.



The Royal Australian Navy Corvettes Association Memorial, which was erected at the Fremantle War Memorial late last year. The commemoration and dedication service took place on 4th November, 1984, during the 3rd Annual Corvettes Reunion, which was held in Western Australia. The impressive memorial was dedicated by the RAN Chaplain G Clayton. (Photo - LSPH Eric Pitman, RAN)



A rare sight in Success Harbour in the Port of Fremantle on 14th May was the tug QUOKKA, high and dry. The 110 tonne tug was lifted out of the water to enable a broken seal and oil leak to be repaired. (Photo - LSPH E. Pitman, RAN)

## Navy Helicopter Boost to Australian Industry

The Minister for Defence, Kim Beazley, has announced that the Government would go ahead with the purchase of eight Sikorsky S-70B-2 Seahawk helicopters for the RAN.

Federal Cabinet has endorsed the Australian Industry Participation package proposed by Sikorsky Aircraft of the United States as being a satisfactory base from which to negotiate a purchase contract. Mr Beazley said.

The initial cost of the project to acquire the helicopters, their sensor and weapons system and associated equipment is about \$317 million at April 1984 prices, with the associated ship modification costing a further \$51 million.

The Australian Industry program will lay the groundwork for the Australian aircraft industry to increase its participation in the growing world helicopter market.

The initial step is a work package of about \$90 million to be incorporated in the purchase contract for the Navy helicopters.

It is the first stage in the Government's plan to develop the local helicopter industry and will result in significant high technology work packages for Australia's industry.

The contract will provide substantial opportunities for the Australian electronics and aerospace industries to participate in the program and will provide Australian companies with access to international markets.

This will give Australian industry access to new concepts and techniques and provide a local capability for the evolution of the RAN helicopter during its 25-year life.

The program also provides valuable design and development work in other areas, such as high strength composite components and repair techniques, and will assist industry to participate in existing and future helicopter programs.

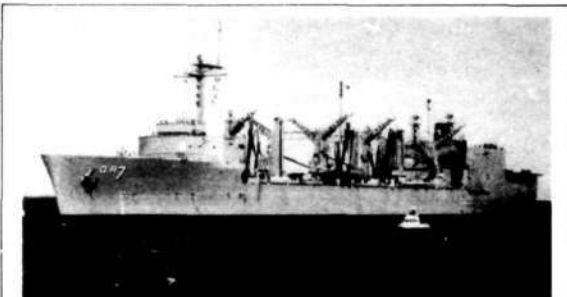
Mr Beazley said other areas of industry involvement would include:

- the final assembly and test of the helicopters;
- fabrication of tail and intermediate gear boxes;
- fabrication and assembly of electro-mechanical components;
- long-term local support for the helicopter;
- engine component manufacture; and
- technical publications.

Additionally, \$27 million of the \$51 million for ship modifications is expected to be spent in Australia, mostly in the dockyards.



The US Navy nuclear powered Sturgeon class submarine USS PUFFER makes ready to depart from the HMAS Stirling fleet support facility in Western Australia on 9th May. The small naval tug QUOKKA stands by. Thus was PUFFER's third visit to Western Australia since 1981. (Photo - LSPH Eric Pitman, RAN)



The replenishment oiler USS ROANOKE was one of the US Navy Battle Group which visited the Port of Fremantle between 19th and 26th April, 1985. Also in port at that time was the old RAN fleet oiler HMAS SUPPLY, making an interesting comparison! (Photo - LSPH Eric Pitman, RAN)



The guided missile cruiser USS LEAHY visited the Port of Fremantle as part of a US Navy Battle Group between 19th and 26th April, 1985. LEAHY is seen entering the inner harbour. (Photo - LSPH Eric Pitman, RAN)

## Major Exercises with US and NZ

The Australian Defence Force would host two major bilateral exercises — one involving the United States and the other New Zealand — later this year, the Minister for Defence, recently announced.

The first exercise, to be known as Coral Sea, would involve Australian and US maritime, air and land forces and would be held off the east Australian coast in October.

The second exercise, named Tasman Warrior, would be held in the Shoalwater Bay Training Area, near Rockhampton, Queensland, in late October and early November. It would involve mainly land and air forces from Australia and New Zealand.

The two exercises would replace Exercise Kangaroo '85, which had been planned for this period and would have involved forces from all three nations.

"The cancellation of Exercise Kangaroo '85 was made necessary because the US has determined that military exercises with New Zealand are not appropriate at this time," he said.

"Kangaroo '85 aimed to practice and further develop conventional military skills and tactics in three specific areas — air defence, maritime warfare and mechanised land operations.

The two exercises which will replace Kangaroo '85 will fully meet these important training objectives of the Australian Defence Force.

The primary US involvement planned for the maritime and air phases of Kangaroo '85 will now become the basis of Exercise Coral Sea.

Exercise Coral Sea was expected to involve significant US Navy, Army and Air Force elements. Australian forces would include six destroyers, two submarines, four patrol craft, four support ships, F111, Mirage and Orion aircraft, two RAAF radar units and Army air defence missiles. A total of about 5,500 men and women would be involved.

Tasman Warrior would involve soldiers from the Royal New Zealand Infantry Regiment, Royal New Zealand Air Force Skyhawk aircraft, the headquarters of the Australian Army's 1st Brigade, 5th Battalion, the Royal Australian Regiment, Leopard tanks, armoured personnel

carriers, HMAS TOBRUK, RAN landing craft, F111s, RAAF and RNZAF transport aircraft and helicopters. A total of about 3,600 men and women would participate.

Detailed planning for the two exercises had

now begun and further details would be announced in due course.

Mr Beazley said consideration was being given to holding a major national exercise in the Kangaroo series next year.

## NAVY TO SHOW THE FLAG



HMAS PERTH (Photo - RAN)

The Royal Australian Navy 'showed the flag' to a number of small island nations in the south-west Pacific during the months of May and June.

The FFG, HMAS CANBERRA, and the guided missile destroyer, HMAS PERTH, visited Suva, Nukualofa, Apia, Vila and Suva between May 20 and June 6.

HMAS CANBERRA's visit to Apia (May 30-June 4) coincided with that country's annual independence celebrations.

A highlight of HMAS PERTH's 10-day deployment to the area was a wreath-laying ceremony on board ship on May 23 to commemorate the sinking, near Honiara, in August 1942, of the cruiser, HMAS CANBERRA.

About the same time as the two major warships visits, two Fremantle Class patrol boats, HMAS FREMANTLE and HMAS GEELONG, showed the Navy colours at a number of ports in the south-west Pacific, including Apia, Honiara, Lae and Port Moresby.

The two patrol boats also visited the Solomon Islands on July 7 for that country's independence celebrations.

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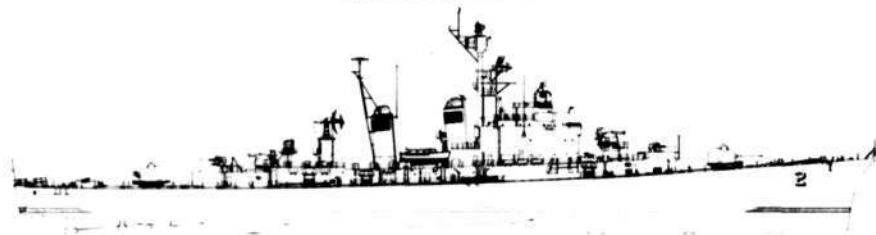
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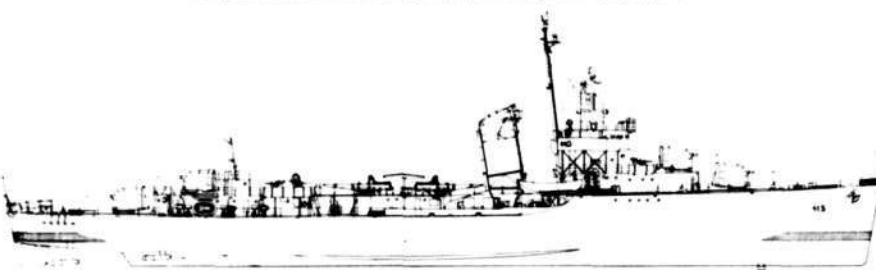
# USN DESTROYERS

by A. D. BAKER III



## USS Mitscher (DL 2) in 1953

MITSCHER was the first post-World War II US Navy destroyer to be completed, commissioning in May 1953, and was originally to have been numbered DD 927. Instead, the 4,750 ton ship was initially classed as a "frigate" (DL) and was later extensively rebuilt as a guided missile destroyer (DDG 35), recommissioning 29th June, 1968. MITSCHER and her three sisters were important as the first destroyers built with 1,200 lb/in<sup>2</sup> boilers, which produced superheated steam to drive two sets of turbines, giving the ships a speed of nearly 35 knots in trials. MITSCHER, named for famed carrier admiral Marc A. Mitscher, was stricken from the Navy List on 1st June, 1978.



## USS O'Brien (DD 415) in August 1942

O'BRIEN was a unit of the 12-ship SIMS class (DD 409-420), five of which were lost in combat during World War II. DD 415 herself (named for Captain Jeremiah O'Brien, who commanded the sloop UNITY in its defence of Machias, Maine, against HMS MARGARETTA in June 1775) was commissioned 2nd March, 1940. The 1,960 ton ship survived a torpedo hit on 17th August, 1942, but sank while en route home for repairs on 19th October. No less than five US Navy destroyer-type ships have been named O'BRIEN, including the current DD 975.



## USS Harwood (DD 861) in October 1945

HARWOOD (named for naval aviator Commander Bruce L. Harwood, winner of the Navy Cross with two Gold Stars for his heroic service in World War II), was one of 101 GEARING (DD 710) class destroyers to enter service between May 1945 and September 1952 and was commissioned 28th September, 1945, just too late for action during World War II. Her appearance in the drawing, however, is typical of units of the class that saw hard combat during the late stages of the war in the Pacific. After long service in the US Navy she was transferred to Turkey on 1st February, 1973 and was sunk by accidental bombing on 7th July, 1974.

Drawings by A. D. Baker III, from Norman Friedman, "US Destroyers: An Illustrated Design History," published by the Naval Institute Press, Annapolis MD 21402.



## "COMBAT FLEETS OF THE WORLD 1984-85"

Published by United States Naval Institute  
Edited by A. D. Baker III (English language edition)  
Reviewed by ROSS GILLET

Every two years the prestigious naval reference work "Combat Fleets of the World" makes its appearance on the shelves of booksellers across the continent. And every two years, the book is a quantum improvement over and above its predecessor.

In this, the latest imprint, "Combat Fleets" describes all the warships and auxiliaries of 160 navies. One of the special features of the book is the large series of well-prepared scale line drawings of many of the world's warships. Most are described by a key system, which allows easy identification of most equipment, whether it be radars or armament.

"Combat Fleets" is updated to early 1985 via a series of addendas, but it is the photographs within its covers that makes the book such a valued investment. Over 70 per cent of the illustrations are new, compared to the previous edition, and include highly detailed and, most importantly, clear views. Falling into this category are the new Russian warships commissioned during the past 24 months.

In respect to Australia, the RAN section spans 12 pages and includes type and numbers of all vessels, even down to the lighters and workboats. The new minehunter catamaran is illustrated via line drawings prepared by the book's editor.

As a prelude to the main warship reference sections, "Combat Fleets" boasts a series of lengthy tables which describe all available details of naval aircraft, radars, guns, missiles and counter measures.

One of the great advantages of "Combat Fleets", compared to its rival "Jane's Fighting Ships", is a narrative section which is continually updated, unlike the latter, which seems to repeat the same information year after year. "Combat Fleets" is also much cheaper than "Jane's".

The next edition of "Combat Fleets" is expected to be published in an upright, rather than horizontal, format. This should lead to much redesigning, making this good book even better.

Strongly recommended.

## "THE BRITISH AIRCRAFT CARRIER (2nd Edition)"

By Paul Beaver  
Published by Patrick Stephens Ltd  
Review Copy from Thomas C. Lothian, Melbourne  
Price: \$28.95  
Reviewed by "PALUMA"

I looked forward with great anticipation to this updated reprint of "The British Aircraft Carrier". The author has assembled a myriad of facts, figures and illustrations for the reader and presented them in a very informative and readable format.

In the second edition, Paul Beaver has added the Falklands campaign of 1982 and included additional news of the Sea Harrier and the Invincible class, up to and including the new ARK ROYAL.

The book commences with chapters describing the aircraft experiments aboard such ships as HMS ARGUS, HMS FURIOUS, HMS GLORIOUS and HMS COURAGEOUS, followed by the carrier exploits during the 1930s and the 1939-45 conflict. Post-war details, including operations in Korea, are described, as well as interviews with the inventors of the mirror landing sight and angled deck.

"The British Aircraft Carrier" also examines the ships themselves, the acquisition processes and, of course, the aircraft carried by the flat-tops.

The RAN's two Majestic and one Colossus class light fleet carriers rate a good mention, although I was surprised to learn that SYDNEY had been laid up only recently and will shortly be sold. Any "Combat Fleets" or "Jane's" would have properly detailed the ships disposal from

decommissioning in 1973 to her sale in October 1975. MELBOURNE is also reported as finally scrapped in 1983!

Despite a downturn in carrier operations through the sixties and seventies, the Royal Navy's belief in the type witnessed the development of the Invincible class, from their early descriptions as through-deck cruisers, to their present designation as light aircraft carriers.

Carriers will remain an important part of the Royal Navy for many years to come. Pity the same couldn't be said of the Royal Australian Navy.

## "NAVAL WINGS"

By Adrian Vicary  
Published by Patrick Stephens Ltd  
Review Copy from Thomas C. Lothian, Melbourne  
Price: \$23.95  
Reviewed by "PALUMA"

Fifty aircraft types which have made up the carrier borne squadrons of the Royal Navy since 1912 are described in this book.

Each entry highlights the statistical information in table form, with supporting narrative and photographs.

Some RAN Fleet Air Arm aircraft rate a mention, while for others no notation is made.

At only \$23.95 "Naval Wings" is recommended to both naval and aviation enthusiasts.

## "SHIPS & AIRCRAFT OF THE US FLEET"

Published by Arms & Armour Press, London in April 1985.  
The book is available in Australia through  
Thomas C. Lothian Pty Ltd,  
11 Munro Street, Port Melbourne, Victoria  
Recommended Retail Price: \$69.95

This reference is a must for any research into the United States Navy and its capabilities. Lavishly illustrated with 887 black-and-white photographs and 12 line drawings, the book is laid out in a concise easy-to-use format.

Published every third year, this is the 13th edition, describing the US Navy in depth at a time when it is undergoing an unprecedented peacetime build-up.

Containing 31 Chapters covering: State of the Fleet; Navy Organisation; Fleet Organisation; Fleet Marine Force; Rapid Deployment Force; Naval Personnel; Naval Reserve; Naval Aviation; Naval Aircraft; Weapons; Electronics; and chapters on each type of vessel in US Navy Service, from Aircraft Carriers to Service craft.

This is supported by a series of excellent appendices covering subjects such as Coast Guard; National Oceanic and Atmospheric Administration; Advanced Technology Ships; and Shipyards.

The author, Norman Polmar, needs no introduction. An internationally known analyst and writer specialising in the US and Soviet Navies, he is a member of the US Secretary of the Navy's Research Advisory Committee.

Retention rates are up, as are ship numbers (552 in 1984), as the United States pushes to attain its goal of a 600-ship Navy.

In late 1984, the active strength of the US Navy was 68,500 officers and 496,000 enlisted men and women. A total of 564,000, this excluding almost 75,000 reservists on active duty.

The major combat units on active service include 14 aircraft carriers, 135 submarines, two battleships, 29 cruisers, 68 destroyers and 94 frigates.

Many new ships are described, including the Ticonderoga class Aegis missile cruisers, Arleigh Leigh class missile destroyers, the planned SSN 21 advanced nuclear attack submarine and the new MSH and MCM minesweeper classes.

Some of the fascinating facts found in this book are items such as the fact that there are 45 floating dry docks (21 of these leased, six also in reserve), ranging in size from 1,000 to 60,000 tons capacity.

Shipyards is another interesting area, there being some 200 in the USA. Some of the figures are mind-boggling. For example the Newport News Shipbuilding Yards cover an expanse of 435 acres and have a current work force of 28,250.

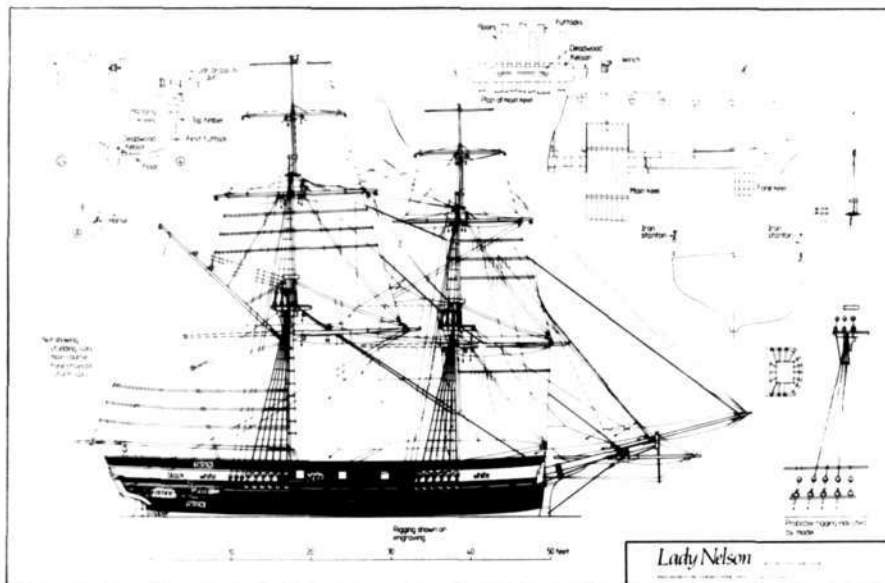
Among the Naval Shipyards, Mare Island covers an astounding 4,071 acres and has 10,300 employees. The smaller Norfolk Naval Shipyard (801 acres) has 13,420 naval and civilian employees.

"Ships and Aircraft of the US Fleet" is possibly the most definitive reference on this subject available today. A highly recommended book.

— VIC JEFFERY

CONTINUED ON PAGE 29

# LADY NELSON PROJECT



LADY NELSON

The Tasmanian Sail Training Association was formed in 1981 with their principal objects being "to build and maintain in survey a replica of the Colonial Brig, His Majesty's Armed Tender Lady Nelson as an operating public sail museum, and to use her for adventure training cruises under sail for members of bona fide youth groups, for the provision of pleasure outings for under-privileged children, for charitable and community purposes generally."

It is particularly the aim of the Tasail to "promote opportunities for people, especially between the ages of 15 and 25 years, to participate in voyages in suitable sailing vessels."

It is also the intention of Tasail to complete the Lady Nelson replica in time for the 1988 Bicentenary Celebrations and to use this vessel both within Tasmanian waters, and in conjunction with other sail training vessels in a proposed Bicentenary circumnavigation of Australia.

The original Lady Nelson was built at Deptford, England in 1799, and was despatched to the colony of New South Wales in 1800.

Even by contemporary standards she is a small vessel, being only 52' 6" on the gundeck, beam 17' 6" and of 60 tons "burthen". By comparison Bligh's "Bounty" was 90' long with 24' beam, and 200 ton, and Cook's Endeavour was 120' long with 28' beam and 368 ton. Lady Nelson is about the same size as a typical Tasmanian trading ketch, such as the May Queen.

Her association with Tasmania is unique, and is more significant to Tasmania than any other vessel is to any other state.

On the voyage to Sydney she was the first vessel to pass through Bass Strait, after its discovery by Bass.

On 9th September 1803, she anchored in Risdon Cove with the first settlers in Van Diemens Land. The ship returned to the Derwent on 21st February 1804, and moved some of these settlers from Risdon Cove to Sullivan's Cove, now Hobart.

Lady Nelson was also responsible for the initial survey of Tamar River which resulted in her carrying the first settlers to Port Dalrymple in November 1804, establishing what is now Launceston.

Lady Nelson also has historic significance to mainland states. She was the first vessel to discover Port Phillip, and planted crops in Westernport in 1801. She worked out of Sydney for 26 years, taking the first settlers to Newcastle and Port Macquarie and later worked with Matthew Flinders in exploring the Barmer Reef. There she was lost, believed burnt by natives in the Torres Strait in 1826.

The replica Lady Nelson will be built as nearly as practicable to the original design, with appropriate modification to meet current survey requirements, and the use of modern materials and equipment where appropriate.

In size and appearance it will be as near as possible to the original, maintaining the unique characteristics of an 18th century square rigger.

Nevertheless she will be fitted with a diesel engine, and carry all appropriate safety and navigational equipment for this day and age. Such equipment will be suitably camouflaged to maintain the visual appearance of the original. It is intended that she be manned by a permanent full-time crew of 3, or as otherwise required by appropriate authorities. She will have overnight accommodation for 12-14 people, for extended cruising, with short term accommodation for 25-30 people, for day trips.

The vessel will be built to survey for working up to 200 miles offshore, and will be capable of extended coastal cruising.

It is intended that she will work from Hobart and Launceston, as well as other ports throughout the year, taking school children and other youth groups on daytime outings and overnight cruises.

During the school holidays she would work on 5-10 day coastal cruises including both the East and West Coasts. Major sponsors of the project would have the opportunity to use the vessel annually for specified periods.

It would provide a flagship for all regattas and other historic events, and would provide a suitable representative for Tasmania in the Bicentenary celebrations in 1988.

## THE PROJECT TO DATE

Tasail is a founding member of the Sail Training Federation of Australia which currently consists of Sail and Adventure Ltd. (New Endeavour, NSW), Jubilee Sailing Ship Project, Inc (One and All, South Australia), with correspondents being the Western Australia Sail Training Association (WA) the International Sail Training Project (Queensland) and the Australian Square Rigger Training Association (NSW).

## BUILDING SCHEDULE AND BUDGET

The total budget for the Lady Nelson project is	\$458,000
<b>Stage I</b> — Preliminary Planning, tank testing, preliminary survey approvals and purchase of materials.	
October 1984 to December 1984	\$47,000
<b>Stage II</b> — Construction of Hull by professional boat builder to launching	
January 1985 to December 1985	\$173,000
<b>Stage III</b> Fitting out of vessel and rigging to completion by the project's own labour.	
January 1986 to December 1986	\$237,500
	<u>\$458,000</u>

It is intended to finance this over the next 3 years as follows:	
Tasmanian Government Grant (estimated)	\$100,000
Major Sponsorship from 3 or 4 sponsors, up to	\$300,000
Minor Sponsors and supporters	
(in cash or in kind) up to	\$100,000
Employment grants & subsidies up to	\$ 50,000
Fund-raising subscriptions, donations up to	\$ 50,000

It is planned to have the vessel operational by early 1987. Sailing trials would be completed by November 1987 to allow participation in the Bicentenary Celebrations of 1988.

## FINANCE OF THE PROJECT

There is no intention to proceed with the project without significant Government support, to ensure its viability.

This project offers considerable ongoing, statewide publicity and prestige to such sponsors together with the opportunity to participate Australia wide in the Nation's greatest celebration.

Major sponsors will be able to have use of the vessel for specified periods each year for their own purposes.

It is believed the money supplied by sponsors over the next three years will be more than recouped in value of publicity and benefits during the next ten years.

## THE FUTURE OF THE PROJECT

The Tasail committee believes this a unique opportunity to build a replica of the most historic Tasmanian vessel, and to use it as an ongoing educational tool.

It is considered more practical to build a new vessel to current survey requirements than to restore an existing vessel even if a suitable vessel was still available within the State.

The Lady Nelson will provide a suitable representative for Tasmania in the 1988 Bicentenary celebrations, and an ongoing educational experience for thousands of Tasmanian children in the years to follow.

As Tasmanian-built wooden ships have a well deserved reputation for seaworthiness and long life, often over 100 years, there appears no reason why Lady Nelson should not be working on the Tasmanian coast for the rest of this century.

It will also be a fitting centrepiece for Tasmania's own Bicentenary in 2003, now only 19 years away.

Please contact:

Dr Joe Cannon	(002) 44 2522 (work) 47 9180 (home)
Michael Desmarchelier	(002) 34 4788 (work) 23 5016 (home)
Bill Stewart	(002) 30 3054 (work) 27 8769 (home)



## "THE FIGHTING SHIP IN THE ROYAL NAVY, AD 897-1984"

By E. H. H. Archibald  
Illustrations by RAY WOODWARD

Price \$33.95

Available in Australia from Australia & New Zealand Book Co Pty Ltd  
10 Aquatic Drive, Frenchs Forest, NSW

This book was previously published as "The Wooden Ship in the Royal Navy" (1968) and "The Metal Fighting Ship in the Royal Navy" (1971), which both won awards. These two books were re-issued as a boxed set in 1981, where they quickly sold out.

Now, for the first time, they have been combined in one splendid volume, fully revised by the author to bring them up-to-date.

Containing 416 pages, the combined volume carries 115 colour illustrations and 319 line drawings to supplement its 32 chapters and eight appendices.

Mr Archibald's 30 years as a curator at the National Maritime Museum at Greenwich, England, clearly shows in this comprehensive reference work.

This work covers the era of Alfred the Great's small wooden ships, armed with foot soldiers of AD 897, to the missile-age Navy of 1984.

No area of the Royal Navy's illustrious history has been overlooked, details of the Falklands conflict are the last recorded conflict.

The advances in ship design are examined in great detail, the evolution of sailing rigs, the development of stable gun platforms in wooden ships up to four decks and the advent of steam power and armoured hulls are just some of the developments examined.

A glance at the contents gives a quick insight into the depth of this book. Chapters include: Allied the Great to William the Conqueror, The Elizabethan Galleon, The Rates, Turret versus Broadside, Watts and the Dreadnoughts, The Battle-cruiser, Post Second World War Frigates and Destroyers, and Coastal Craft.

One delightful aspect of all 20th century warship types included in this book is the fact that each is covered by a class appearance line drawing and every ship of that type is named.

Approximately one-third of this magnificent book is devoted to the delightful eight appendices included in this fascinating section of this reference book.

The appendices are as follows. A summary of British Naval Events from AD 897-1983, British and Enemy Losses (Ships of over 50 guns) 1688-1855; Some Establishments of the Ships, Guns and Men 1517-1805; Further Abstracts of the Strength of the Royal Navy to 1983; The Naval Surveyors from 1544; Two Gun Establishments from A Seaman's Grammar, 1627; Flags and Pennants of Command and Distinction, and finally Types of Shot and Shell.

An extract from the Appendix 3 section of Edward VI's reign of the "General State of the King's Ships" of 26th August, 1552, is divided into six types, an interesting comparison with today's terminology. The types are:

- 'All these Ships and Pinnaces are in good case to serve, so that they may be grounded and caulked once a year, to keep them tight'.
- 'These ships must be docked and new dubbed, to search their Treennals and Iron-Work'.
- 'These ships be already dry-docked, to be new made at your Lordship's pleasure'.
- 'Dry-docked — Not thought worthy of new making'.
- 'Thought meet to be sold'.
- 'Not worth keeping'.

The 1689 Rates of Pay in the same appendix are also interesting reading. Among the officers, a First Rate Captain earned 15/- per day and this decreased proportionately down to a Sixth Rate Captain on 5/- per day. Among some of the other ranks the monthly rate for an Able Seaman was £1/4/- and a Gunsmith £1/5/-.

A highly recommended and most enjoyable book —

— VIC JEFFERY



# Reserve Training Vessels of the Royal New Zealand Navy

by ROSS GILLETT

In February 1982, a contract was signed between the Royal New Zealand Navy and Whangarei Engineering & Construction Ltd, calling for the construction and delivery of four reserve training vessels to replace elderly craft in use since the Second World War. The value of the order was \$10.4 million.



HMNZS MOA (Photo - RNZN)



HMNZS KIWI (Photo - RNZN)



HMNZS TOROA (Photo - RNZN)

In addition to their primary role of seamanship training and reserve duties, the vessels are also employed on search and rescue and resource protection tasks.

All of the vessels were erected using the upside-down method, then after the completion of welding, the hulls were uprighted and hauled into the fabrication shop. The new class was constructed of steel with aluminium superstructures.



HMNZS WAKAKURA ex KOURA, deleted in 1983 (Photo - RNZN)

MOA, the first to be completed, was launched on 16th July, 1983 and accepted into service in September. She was handed over to HMNZS Toroa in Dunedin on 19th February, 1984. Trials had been conducted earlier in Auckland from November 1983.

The second vessel, KIWI, was launched on 7th May, 1984 and delivered to the Canterbury Reserve Division, HMNZS Pegasus at Lytleton on 11th August, 1984. Subsequently, WAKAKURA was launched on 29th October, 1984, arrived in Auckland in November 1984 and was handed over on 7th December. In March 1985 she joined HMNZS Olphert in Wellington.

The fourth and final vessel, HINAU, was to join the Auckland RNZNVR Division HMNZS Ngapona after her launch in mid-1985 as a replacement for the last World War II motor launch HMNZS PAEA (in the training role) which was paid off last December.

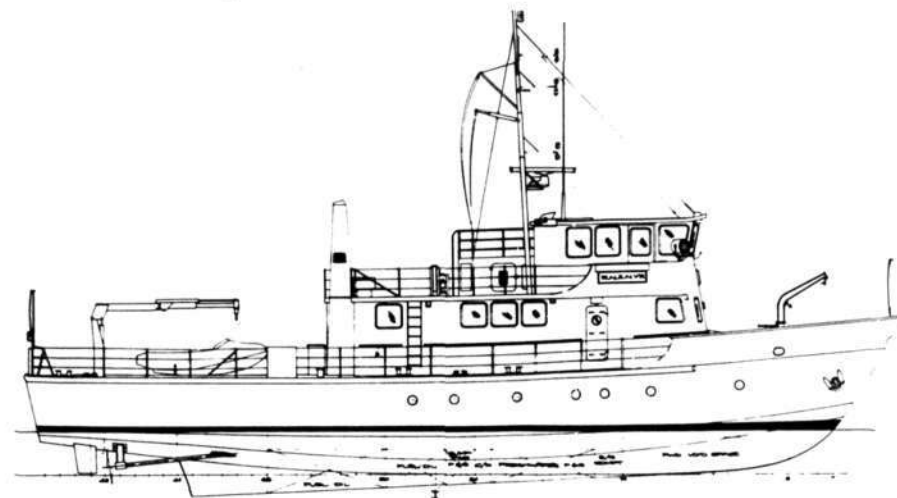
Like the earlier survey boats TAKAPU and TARAPUNGA and the

diving vessel MANAWANUI, the RNZNVR training craft were modelled on the RAN's 88 foot torpedo recovery vessels, but with an enlarged superstructure, including bridge, office and accommodation areas to satisfy specific Royal New Zealand Navy requirements.

The four Reserve boats each displace 110.7 tonnes full load and

measure 26.82m in length, 6.1m across the beam and draw 2.18m. Power is provided by twin Cummins diesels for 12 knots. A crew of 18 is normally carried.

HINAU carries the pendant number P3556, KIWI P3554, MOA P3553 and WAKAKURA P3555.



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HMAS WOLLONGONG



(Photos top and bottom POPH Ron Berkhout; inset John Mortimer)

# MINEHUNTER

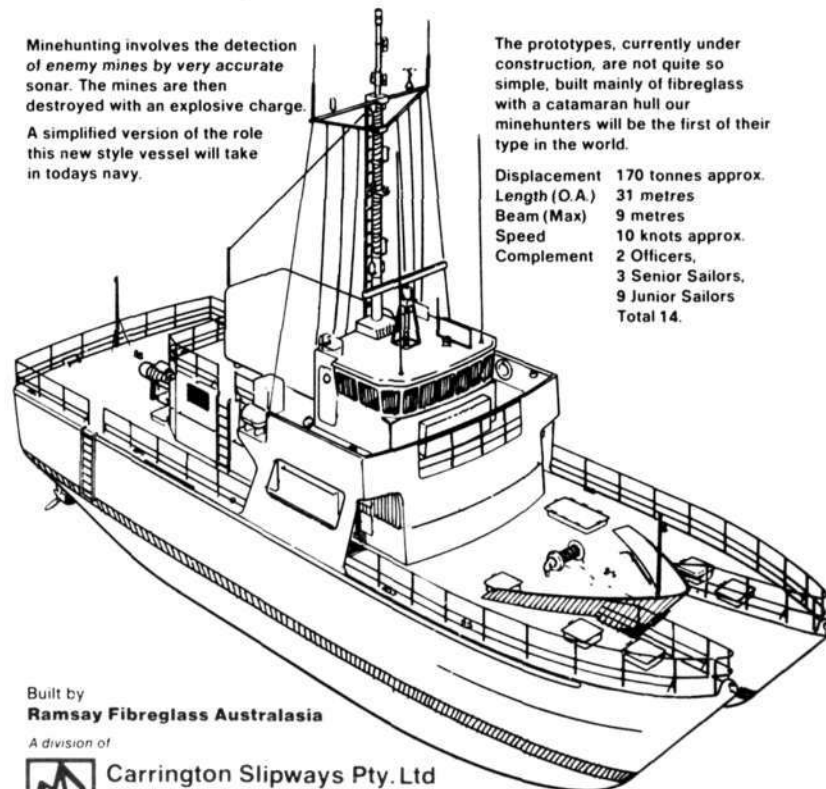
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# THE NAVY

*the magazine of*  
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# THE NAVY



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No 4



The US Navy guided missile cruiser USS WORDEN seen entering the Port of Fremantle in Western Australia on July 19 for a five day rest and recreation visit. WORDEN was a unit of the visiting USS CONSTELLATION (in the background) task group. (Photo — LSPH E. Piman)

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## *Our Cover Photograph*

Getting Together — HMAS BRISBANE leads her two sister ships, HMAS HOBART and HMAS PERTH, during a rare meeting off Sydney on July 17, 1985. (Photo — RAN)

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THE NAVY

## CONTENTS

Viewpoint .....	3
Naval Roundup .....	4
Australia Demands the Best for Her Submarines .....	11
Seaplane Tenders of the USN .....	12
"Commitment & Strategic Vision" .....	17
Allied Landing Craft of World War II .....	20
Doenitz .....	22
Report to the Congress — Excerpts from Fiscal Year 1986 .....	27
The Dutch Navy — South-West Pacific .....	31
Book Reviews .....	38
Navy League & Cadet News .....	40

Page One

## BELIEVE IT OR NOT

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### HOW TO FIGHT LIGHTER, FURTHER AND FASTER.

This FFG Guided Missile Frigate - very latest addition to the Australian Navy's blue-water fleet - must be capable of sailing over 7000 km at 20 knots, then manoeuvring at much higher speed in combat. It must be able to carry anti-aircraft as well as anti-ship missiles, torpedoes, guns, 2 helicopters, fuel, a maze of high tech radar gear and crew, all within a slim 3600 tonnes.

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CINUS 80/100

October, 1985

## viewpoint

## Shoals Ahead For The Defence Minister

**I**T is obvious the Defence Department has financial problems and while this is not a novel experience for defence authorities in peacetime, they are more serious than usual and come at a time when Australian defence strategy is under review.

Of the three Services, the Navy is undoubtedly under the most pressure at the present time. The carrier decision fractured the structure of the force to an extent not even now fully realised by most people, apart from the very considerable internal problems caused by that decision: not least in the area of highly-trained manpower, the Navy has to cope with the day-to-day economies forced on all the Services and without any clear direction as to its future structure.

The future shape of the Navy and possibly the Army - the RAAF seems more or less committed to a particular structure - will not be known until some time after Mr Paul Dibb submits his report to the Defence Minister early next year. It is possible, however, to gain the impression from ministerial and other comments that the Australian defence effort will be fairly circumscribed and that the capabilities of the Navy will be limited when compared with the past.

An Australian Defence Force with a limited maritime defence capability (limited by the structure of its Navy) would surely dismay the political and military leaders of our principal ally, the United States.



Just a memory (Photo: RAN)

In quite recent times the Secretary of State (Mr Shultz), the Commander-in-Chief Pacific Command and Chairman-designate of the Joint Chiefs of Staff Committee (Admiral Crowe) and former Chief of Naval Operations (Admiral Hayward)\* have all made it quite clear they expect America's allies to contribute to overall security and stability in the Pacific and Indian Ocean regions.

**G**IVEN the cost to the American taxpayer of maintaining that country's armed forces - about three times that of the Australian taxpayer's contribution to defence - their expectations are not unreasonable.

As remarked, it will probably be some time before the revised structure of the Defence Force is finally determined, but it is safe to say that unless the naval element of the Force is well-balanced and includes ships with good seakeeping qualities, range, endurance, offensive and defensive capabilities, and assured air support, Australia's contribution to regional security and stability will be minimal. Not only that, the integrity of mainland defence will be suspect.

*Geoffrey Evans*

GEOFFREY EVANS  
Federal President  
The Navy League of Australia

\* Transcript of an address by Admiral Hayward during a recent visit to Australia appears on page 17 of THE NAVY.



### MUSEUM SHIP FOR SA

RIP ex HMAS WHYALLA, in Port Phillip, 1984. The former RAN Corvette is now at Whyalla, South Australia, for refurbishment as a museum ship (Photo - Tim Ryan).

### DEADLINE

The deadline for the January, 1986 issue  
of The Navy is  
1st NOVEMBER, 1985

## NEW FRIGATE HELICOPTERS

The Minister for Defence, Mr Kim Beazley, announced in late July the signing of a multi-million dollar purchase contract for eight Sikorsky Seahawk helicopters to operate from the RAN's four FFG guided missile frigates.

The initial contract commitment is for \$A244 million at June 1985 prices for the helicopters, their sensor and weapons system and associated support equipment but not the associated modifications to the frigates. The approved project cost also includes provision for elements of training and support not yet taken up.

The helicopters will act as the eyes and ears of the RAN by greatly enhancing the surveillance, over-the-horizon targetting, anti-submarine search and attack, and search, rescue and liaison capabilities of the four frigates," Mr Beazley said.

"They will particularly enhance the capacity of the frigates to provide protection in choke points around the Australian coastline. The Seahawk's considerable capabilities will also enhance the ability of the frigates to protect shipping further from the Australian coastline."

"A principal feature of negotiations has been to secure constructive involvement of Australian industry."

"The industry program will lay the groundwork for the Australian aerospace industry to increase its participation in the growing world helicopter and aircraft electronic systems market. Already \$US23 million in contracts has been awarded to Australian firms," Mr Beazley said.

"The project will allow industry access to new

concepts and techniques and thereby provide a local capability for the proposed development of the RAN helicopter during its predicted 25 year life.

"In this respect, the project is a vital first step in the Government's plan to develop a local helicopter industry."

"The program also offers valuable design and development work in specialised areas such as high strength composite components and repair techniques."

Deliveries are scheduled to commence in January 1988 with the new Seahawks entering operational service about May 1989.



Until the Seahawks are delivered, Navy will fly the Squirrel helicopter from the FFGs. (Photo - RAN)

## PATROL BOAT CIRCUMNAVIGATES AUSTRALIA

The Darwin-based Fremantle class patrol boat, HMAS BENDIGO, left Darwin on Tuesday, July 16, on the first leg of a deployment during which the ship will circumnavigate Australia — the first such deployment by a Fremantle class patrol boat.

The deployment will last for three-and-a-half months and cover more than 8,000 miles. During her absence from Darwin, HMAS BENDIGO will conduct patrols of the Australian fishing zone as well as surveillance of oil rigs and shipping in Bass Strait. She will also take part in a number of exercises.

A highlight of the deployment will be HMAS BENDIGO's visit to Melbourne during which the ship's company will make an inaugural visit to the City of Bendigo to cement the already strong relationship between city and ship.

HMAS BENDIGO attracted world-wide attention in June 1983 with the dramatic sea rescue of the "Lone Rover", Peter Bird. Bird had attempted to row from the United States to Australia but was swept from his intended track northward towards the Great Barrier Reef. In poor visibility and mountainous seas, HMAS BENDIGO plucked Bird to safety just one mile

from the perilous reefs and 24 miles from Bird's target — mainland Australia.

Since the Peter Bird rescue HMAS BENDIGO has concentrated on surveillance tasks with other RAN and RAAF Units. Early in 1984 HMAS BENDIGO rescued a diver with the bends off Broome, and has taken part in two major Naval Air exercises.



Two former RAN mine warfare vessels, IBIS and SNIPE (rear) lie alongside the derelict White Bay wharf in Sydney during July, 1985, prior to being broken up for scrap. (Photo - Ross Gilbert)

## Destroyer Escort to be Decommissioned

After more than 24 years' service with the Fleet, the destroyer escort, HMAS YARRA, is to be 'paid off' from the Royal Australian Navy.

The Minister for Defence, Mr Kim Beazley, said that the 2,750-tonne River class ship, which had been launched at the Williamstown Naval Dockyard late in 1958 and commissioned into the RAN in July, 1961, would be decommissioned in November.



HMAS YARRA, 1961. (Photo - RAN)

"HMAS YARRA has served the nation well for more than two decades," he said. "However, its replacement with a modern ship can only add to the strength of the Defence Force."

Mr Beazley said the RAN's five other River class destroyer escorts had either undergone, or were programmed for, major refits which would ensure they remained effective units of the Fleet for some years to come.



HMAS YARRA, 1984. (Photo - RAN)

"The withdrawal of HMAS YARRA from service will not diminish the RAN's destroyer force as the guided missile frigate, HMAS DARWIN is due to arrive in Australian waters in October," Mr Beazley said.

"Its arrival will keep the strength of the RAN's destroyer force at 12 ships."

"HMAS DARWIN is a far more capable ship than HMAS YARRA. It is armed with more

modern and longer range air defence missiles and in addition carries what is probably the best surface-to-surface naval weapon in the world — the Harpoon missile — and has facilities for two helicopters."

Mr Beazley said HMAS DARWIN — the fourth of the RAN's US-built guided missile frigates — was presently completing trials off the US west coast.

## FIRST AUSTRALIAN BUILT FFG

Another important milestone in the Australian Frigate Project was marked on schedule on Friday, July 12, by an official keel-laying ceremony at Melbourne's Williamstown Dockyard.

The Minister Assisting the Minister for Defence, Mr Michael Duffy, positioned a 36-tonne, nine metre long midship section of the warship's hull on the shipbuilding slipways.

Two new FFG7 guided-missile frigates will be built at Williamstown at a total project cost of \$860m. About half of this will be spent in Australia, providing employment for up to 2,000 people over the next eight years.

The two frigates, the first major surface combatant ships built in Australia since the last of the River Class destroyers almost 20 years ago, are similar in design to the four FFG vessels purchased from the USA but will be fitted with the Australian designed and manufactured Mulloka Sonar. The first is due for completion in 1990.



Destined to be the last active RAN Attack class patrol boat, HMAS ASSAIL is scheduled to 'pay off' on October 18. She is pictured here off Rottnest Island in March 1984. (Photo - POPOH S. GILBERT)

## HMAS Wollongong Operational Again

The Fremantle-class patrol boat HMAS WOLLONGONG, which was extensively damaged following grounding off Gabo Island on May 31, should be operational and back with the Fleet by mid-November of this year following repairs by the ship's builder, North Queensland Engineers and Agents (NQE) at Cairns.

The Chief of Naval Staff, Vice Admiral M. W. Hudson, said that the patrol boat had been assessed as economically repairable. Damage to the ship had involved considerable plate buckling, holes and splits in the hull, missing rudders, damaged propellers and stabilisers, and bent shafts.

There had also been internal damage resulting from the holing and subsequent flooding.

Vice Admiral Hudson said sailors from the Fleet's mobile maintenance organisation had carried out repairs to HMAS WOLLONGONG on the slipway at Eden. The aim was to ensure seaworthiness and watertight integrity during the tow to NQE.

A contract for both the tow and subsequent repairs was later awarded to NQE.

Vice Admiral Hudson said the company was the only builder of the Fremantle class patrol

boats in Australia, and it had the knowledge and equipment necessary for the construction and repair work now needed.

He said that NQE had expressed confidence that they could return HMAS WOLLONGONG to an "as before the incident" condition before the end of November.

Commenting on the salvage operation at Gabo Island and the subsequent tow to Eden for interim repairs, Vice Admiral Hudson said the salvage operation had reflected excellent co-operation between naval personnel, the Howard Smith Salvage Division, Twofold Bay Slipway and Charter Marine Pty Ltd. The success of the operation had, to a large extent, been due to co-operation of all concerned in the salvage.

## New Management for Navy's Submarine Project

To meet the increasing level and complexity in the work of the Navy submarine acquisition program a new dedicated position has been

approved for overall management of the submarine project.

Announcing this senior management arrangement, the Chief of Naval Staff, Vice Admiral M. W. Hudson, said the position, designated Director General New Submarines, would be filled by Commodore O. J. Hughes.

The present submarine project director, Captain G. D. White, who had been with the project since it was established in 1982, would report to the Director General, New Submarines, and would continue to be responsible for operational, technical and support aspects for this important project. Additional senior staff would be responsible for financial, contractual and Australian Industry Participation matters.

Vice Admiral Hudson said that he and the Secretary to the Department, Sir William Cole, had agreed that the overall management of the submarine project within the Department would need to be separated from other Naval ship construction and modernisation projects at this stage.

The management task, unlike other major Defence acquisition projects such as the F/A-18 or FFG acquisition, posed unique management challenges not previously encountered.

The Government decision that construction of all submarines would be undertaken in Australia would place additional demands on project management.

Vice Admiral Hudson said the development and integration of the combat system would be of a magnitude and complexity not previously experienced.

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Task Group Comes Home  
The RAN guided-missile frigates HMAS ADELAIDE and HMAS SYDNEY arrived in the Port of Fremantle in Western Australia on July 18 after a three month Indian Ocean deployment. HMAS SYDNEY is pictured entering Fremantle after refuelling at HMAS Stirling in Cockburn Sound. The ships had departed from Sydney on April 21, 1985. (Photo — LSPH E. Pitarini)

## NAVY'S TANKER RETIRES



HMAS SUPPLY, with HMAS TORRENS (left) and HMAS ADELAIDE (right). (Photo — RAN)

The Navy's oldest ship, the 25,000-tonne oiler HMAS SUPPLY, is to retire at the end of 1985 after more than 31 years' service.

HMAS SUPPLY would be replaced by the Navy's newest ship, HMAS SUCCESS, which was nearing completion at Sydney's Cockatoo Dockyard. HMAS SUCCESS was expected to start trials in early 1986.

HMAS SUPPLY had provided many years of capable service to the Fleet, and had now reached an age at which it was not economical to keep the ship operational.

The decommissioning of HMAS SUPPLY would free naval manpower required to commission HMAS SUCCESS.

Although originally planned as a war operations requirement in 1951, HMAS SUPPLY was considered unnecessary for the RAN when completed in 1955. As a result it was operated by the British Admiralty under the name TIDE AUSTRAL.

HMAS SUPPLY was commissioned into the RAN in 1962 and has since participated in exercises over most of the Indian and Pacific Oceans.

## Separate Women's Services In Navy Now Abolished

Separate Naval Services for women in Australia, such as the Women's Royal Australian Naval Service (WRANS), were abolished last June.

All members of these Services have now become members of the RAN, become eligible to join the RAN Reserve, and be able to serve in non-combat related positions under the same conditions of service as male members.

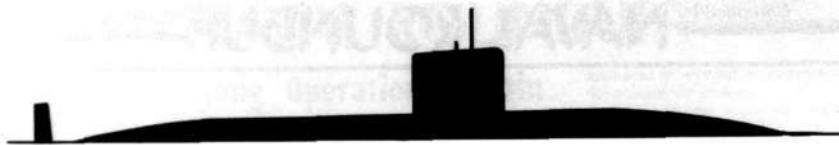
The changed status of servicewomen in the Navy is in keeping with the Federal Government's policies on the equality of status for men and women. Over a period, regulations governing women's service have been gradually aligned with those for male members, and as the regulations are now identical, separate Services for women are no longer needed.

The Chief of Naval Staff, Vice Admiral M. W. Hudson, stated that for most members currently serving in the women's Services, the repeal of the regulations would have little practical effect.

However, the change to equality was an historic one, and he welcomed it, confident that servicewomen would continue their dedicated and loyal service in the future.

Vice Admiral Hudson said that for the time being it was intended to retain the rank titles in incorporating the letters WRAN for all non-commissioned women members of the RAN.





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## Compiled by **NAVAL ROUNDUP** "GAYUNDAH" **BRISBANE ACTIVITY TO BE REDUCED**

As part of measures to improve manpower efficiency and rationalise naval operations in the Queensland area, the Royal Australian Navy has decided to reduce the numbers of naval personnel serving at HMAS MORETON, and deploy ships home-ported there to other centres.

Announcing this the Minister for Defence, Mr Kim Beazley, said that by implementing the decision to move 300 personnel from the shore establishment HMAS MORETON, and from the Amphibious Squadron, there would be a net manpower saving of 175.

The reductions were planned to be in effect by the middle of next year, 1986. Five landing craft would be transferred to Cairns, of which two would be used for hydrographic surveying. The remaining three would be placed in operational reserve and could be reactivated in approximately 21 days should there be a requirement to do so. The 6,000 tonne amphibious heavy lift ship, HMAS TOBRUK would be home ported in Sydney by early 1986.

HMAS MORETON would continue to operate as headquarters for the Brisbane Port Division of the Naval Reserve which had 170 active reservists. Their major task was to provide a nucleus for future expansion of amphibious operations and they would continue to operate HMAS LABUAN, the heavy landing craft, which would remain in Brisbane.

Mr Beazley said that while the rundown of HMAS MORETON and the Amphibious Squa-



Being transferred to Sydney. (Photo: RAN)

dror, reflected Defence priorities, skills needed for amphibious operations would be maintained by HMAS TOBRUK, the landing craft remaining in commission at Cairns, and with the Reservists in Brisbane.

Referring to the personnel implications of the changes, the Minister said that Navy had delayed HMAS TOBRUK's refit and permanent

move to Sydney until early in 1986 to mitigate disruptive effects to seagoing personnel and their families.

Mr Beazley said that even with the reductions, Navy would still have 250 full-time personnel in the Queensland area, most of whom would be based at the patrol boat base, HMAS CAIRNS.



**Nuclear Visitor.** The US Navy nuclear-powered guided missile cruiser USS CALIFORNIA visited the HMAS Stirling fleet support facility on Garden Island in Western Australia between July 19-24 for a five day rest and recreation visit. The ship is a unit of the USS CONSTELLATION task group which visited various WA ports. (Photo: ARPH M Russell)

# MINEHUNTER

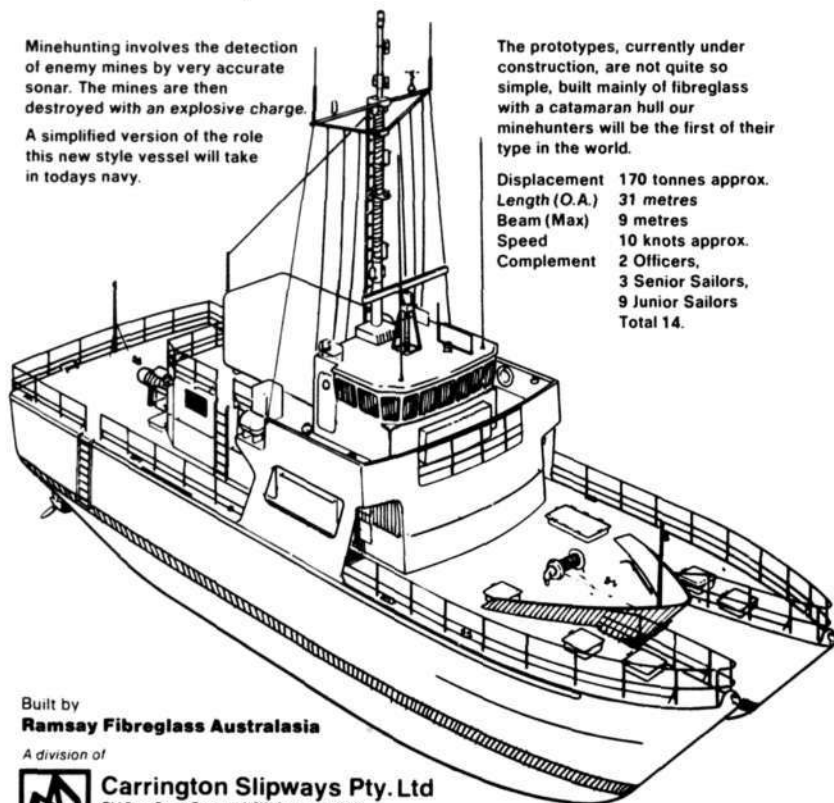
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## Australia Demands The Best For Her Submariners

by JOHN C. GROVER, OBE, BE, MSc, FRGS,  
FIMM, FIEAust, MAusIMM

**D**EFENCE is our insurance for survival. Of generations who do not remember the history of their forbears, life demands a terrible penalty.

Without courageous people, good allies, the best of equipment and the full support of a committed community in times of threat, Australia cannot survive as a free nation. Thinking people know that too many with educational inadequacies are servile to fashionable causes and Soviet policies.

Our failure to stand in the face of media-sponsored emotional disinformation leads to its acceptance by the ignorant. Only one of many examples is our refusal to accept the nuclear age. We can see where it has brought us on the current submarine issue and defence, which should be the first duty of government.

We should remember that when Japanese forces attacked Rabaul, Canberra ordered it defended "at all costs". The young RAAF pilots responded with the telegram "WE WHO ARE ABOUT TO DIE SALUTE YOU" before taking off in their Wirraways to fight the Zeros — and die. But Canberra had the excuse then that they had not known of the superior Jap planes.

Those advising diesel electric submarines for the 21st century have no such excuse. They well know the superiority of USSR nuclear submarines, the 25,000 ton Typhoon Class travel at 63 knots submerged. Yet our brave young submariners in the 21st century are to be condemned to the old technology of WWI which also served us so well in WWII, 40 years ago. The Nuclear Free Pacific unreality must not be the yardstick it was ordered at the Prague Conference of the



USSR dominated World Federation of Trade Unions in 1978 and implemented by Mr Halpenny and Mr Clancy.

Maximum speed for diesel electric submarines is about 22 KNOTS FOR ONE HOUR, after which they need SEVERAL HOURS surface-snorkelling to recharge their batteries, when with diesels hammering they would be ALMOST DEAF AND VERY VULNERABLE to modern detection.

They are useful, for they ARE SILENT AT 3½ KNOTS and can lie in wait like intelligent mines, if lucky to be near the enemy route, and fire their weapons once, hit or miss. But they COULD NOT FOLLOW OR OVERTAKE FAST, MODERN NAVAL FORCES, OR INTERCEPT THEM UNLESS THEY WERE APPROACHING.

Taking three or four times as long as the same sized nuclear propelled sub to go anywhere, their speed of advance is usually 10 knots, surface snorkelling 20% of the time to recharge batteries. They probably would not reach the patrol area. Such inaction and slow speed means they cannot fulfil all our defence requirements.

Forty-odd years ago, of the 842 diesel electric German U boats that saw action, 781 were lost, 93%! Of a total of 39,000 brave men, 28,000 died and 5,000 were taken prisoner, 85% casualties! Facing better Allied subs, radar and escort aircraft carriers, only two out of every ten boats that set out could be expected to return! New captains, even with veteran crews, stood no chance of returning from their first patrols! IT MUST NOT HAPPEN HERE!

Of the USSR's 200 nuclear submarines, 28 are now in the Indo-Pacific along with 92 conventional subs, being replaced steadily by nuclear propelled units. Certainly we can't afford and don't need such large N subs as these 5,000 or 11,000 or 25,000 tonnes. (The Soviets set 1985 as the year they would be ready to impose their will on the Western powers.)

Unmentionable officially and in our media are the small nuclear propelled killer subs of the same size as the proposed conventional 2,400 tonnes. They cost about one fifth more, carry the same weapons, have about four times the power (20 megawatts), and each can cover the area patrolled by FOUR diesel subs! Only the propulsion is different, safer and cleaner. They are destined to become the backbone of the navies in smaller countries and it is vital that Australia should get in early if she is to control their proliferation. Such a superior submarine platform in potential enemy hands would be disastrous.

Instead of 20,000 to 30,000 tonnes of fuel oil costing seven to nine million dollars, the N-sub uses one tonne of uranium fuel as particles integrally part of solid metal and unbreakable. In its lifetime of 30 years it DOES NOT NEED TO BE REFUELLED. We don't need to be experts to realise what this means in wartime when we shall be so short of fuel oil, which has to come from overseas as nearly all our oil is the lighter fraction only.

The N-sub's range while submerged is unlimited. It travels more silently over the whole range of the diesel sub speeds because of great improvements in transmission and cooling in recent years. Both British and German diesel sub manufacturers want that nuclear engine, the technology is based on 20 years of research costing billions and is now offered to Australia if we want to build here, as we must. But activists pretend it doesn't exist.

Truth, defence and vigilance are the insurance that rational people pay to ensure peace and survival. The alternative is the frightful penalty that life demands of us when we deny nature, and grasp unreality, not using the intelligence God gave us.

We do not have the right to surrender our heritage by inviting war through weakness — giving brave young men a fleet of hopelessly inferior submarines in the nuclear age. We deserve better than frightening untruths about the very safe and clean nuclear propulsion.

Australia must not remain a gullible "has been", clinging to the coal and diesel age simply because everyone is more familiar with those older technologies. We must accept the nuclear propulsion age, for the sake of our children. It is time to stop being suicidally hypocritical.



# SEAPLANE TENDERS OF THE USN

by ROSS GILLET



USS CURTISS, 17th December, 1940, shortly after commissioning. Two 5-inch guns are mounted in A and B positions, the other pair atop the after superstructure. (Photo: USN Courtesy A. D. Baker III)

**F**OR the United States Navy, Seaplane Tenders were more than just vessels equipped with one or more reconnaissance float-planes. The Americans used the classification to describe large support and repair ships employed as floating bases and equipped with a full range of supplies, parts, weapons and fuels. Each ship could also provide accommodation areas for the aircraft crews.

The United States Navy's first seaplane tender, AV-1, USS WRIGHT was, in reality, utilised as an antiship tender from commissioning in December 1921 to November 1923. In December 1944, she was renamed USS SAN CLEMENTE, as a special ship. AG-79, AV-2 and AV-3 were the former colliers USS JASON and USS JUPITER respectively. JASON operated as a seaplane tender during the 1930s, while JUPITER was reclassified in April 1937. Prior to this time she had served as the US Navy's first aircraft carrier USS LANGLEY. Following the outbreak of the war, LANGLEY served as an aircraft transport, but was sunk early in 1942.

This article is primarily concerned with the large purpose-built seaplane tenders of the Curtiss and Currutuck classes. The former were the first ships to be planned from the keel up as dedicated AVs, and included a spacious workshop area forming the aft section of the superstructure, a large stern working platform, two heavy cranes for hoisting seaplanes and a powerful armament so the ships could work in the forward combat areas.

Both units of the Curtiss class, USS CURTISS (AV-4) and USS ALBEMARLE (AV-5) were launched and commissioned in 1940, the

first being hit by Japanese aircraft at Pearl Harbour on 7th December, 1941. ALBEMARLE operated in the Atlantic Ocean during the Second World War and was not decommissioned until 1960. Four years earlier she had undergone modernisation to handle the larger jet seaplane, P6M Seamaster. This included stern ramps, servicing booms and a service drydock for the aircraft.

Although stricken in September, 1962, she underwent conversion to a helicopter repair ship, USS CORPUS CHRISTI BAY, in March, 1965. ALBEMARLE was then equipped to repair light aircraft and helicopters at sea, primarily in the Vietnam area. Finally, in 1973, she was withdrawn from service.

## CURTISS CLASS

Displacement (full load)	12,053 tons
Length	527' 4"
Beam	69' 3"
Draught	22' 3"
Machinery	Geared turbines, 12,000 shp
Speed	18 knots
Fuel	2,164 tons
Armament	4 x 5-inch guns (4x1), 48 x 40mm (12x4), 8 x 40mm (4x2), 12 x 20mm
Crew	160 + 1,035

## SHIPS IN CLASS

No.	Name	Laid Down	Launched	Comm.	Decomm.	Stricken	Notes
AV-4	CURTISS	3 1938	4 1940	11 1940	9 1957	7 1963	
AV-5	ALBEMARLE	6 1934	7 1940	12 1940	1960	9 1962	Converted to ARVH-1

The four Currutuck class seaplane tenders which followed between 1944 and 1945 bore a marked similarity to the first pair. The new ships boasted only a single funnel, compared to the two in the Curtiss class, and a small increase in the ship's complement. Armament was also increased with an additional four twin 40mm and eight 20mm guns.

Early in her career, 1945, USS CURRUTUCK temporarily lost her two single 5-inch guns to allow space for a helicopter platform. During the late 1950s, the ship was modernised, like ALBEMARLE, to handle



USS CURTISS arriving Sydney, 4th March, 1957. A helicopter platform has replaced the two forward 5-inch guns. Most of the other weapons have also been deleted. (Photo: Ross Gillett collection)

the P6M Seamaster jet flying boats. However, the P6M project was cancelled in the early 1960s.

NORTON SOUND was converted to a Guided Missile ship (AVM) under the 1963 conversion programme. The ship has evaluated the Tartar and Typhon air defence systems, and in later years Standard missiles. Only recently she received the first operational vertical launch missile system for trial purposes. NORTON SOUND remains active today.

The three remaining Currutuck ships all assumed the role of flagship of the "Commander Fleet Air Western Pacific" and were finally withdrawn from service in 1967.

## CURRUTUCK CLASS

Displacement (full load)	14,300 tons
Length	540' 5"
Beam	69' 3"
Draught	22' 3"
Machinery	Geared turbines, 12,000 shp
Speed	19.2 knots
Fuel	2,324 tons
Armament	4 x 5-inch guns (4x1), 48 x 40mm (12x4), 16 x 40mm (8x2), 20 x 20mm
Crew	162 + 1,085

## SHIPS IN CLASS

No.	Name	Laid Down	Launched	Comm.	Decomm.	Stricken	Notes
AV-7	CURRUTUCK	12 1942	9 1943	6 1944	10 1967	4 1971	
AV-11	NORTON SOUND	9 1942	11 1943	1 1945			AVM-1 8 1951
AV-12	PINE ISLAND	11 1942	2 1944	4 1945	6 1967	2 1971	
AV-13	SAUSBURY SOUND	4 1943	6 1944	11 1945	3 1967		

## CAREERS OF THE NAME SHIPS OF THE CLASS

### USS CURTISS

Curtiss (AV-4) was launched 20 April, 1940 by New York Shipbuilding Corp, Camden, NJ, sponsored by Mrs H. S. Wheeler, and commissioned 15 November, 1940, Commander S. P. Ginder in command.

Curtiss operated out of Norfolk and in the Caribbean for training and in fleet exercises through the spring of 1941. On 26 May she got underway for Pearl Harbour from which she served on patrol as well as tending two patrol bomber squadrons. From 15 October to 9 November she voyaged to Wake Island carrying aviators, air crewmen, and cargo



USS ALBEMARLE, May, 1942. (Photo: USN Courtesy A. D. Baker III)



USS ALBEMARLE, November, 1943. Three Catalina flying boats are parked on the after deck area. (Photo: USN Courtesy A. D. Baker III)

to reinforce the garrison there. When the Japanese attacked Pearl Harbour Curtiss got underway immediately, firing at the enemy planes. At 0836 she sighted a periscope and opened fire. A torpedo from the submarine missed Curtiss, smashing into a dock at Pearl City. Four minutes later the Japanese midget submarine surfaced and was further damaged by gunfire before diving again, after which Monaghan (DD-354) took over with a depth charge attack. Curtiss turned her attention to the air again. At 0905 she hit an enemy plane which crashed into her No 1 crane and burned. Three minutes later she splashed a plane, then began firing at a dive bomber. A bomb from this plane crashed Curtiss in the vicinity of her damaged crane and exploded below decks, setting the hangar and main decks and No 4 handling room on fire, as the plane splashed off her port beam. Despite 19 dead and many wounded, Curtiss' crew quenched the fires, then turned to for emergency repairs. On 28 December she was underway for San Diego



USS CURTISS after a routine overhaul, 2nd January, 1952. Note the quad 40mm mounts at the bow, stern and atop the superstructure. (Photo: USN Courtesy A. D. Baker III)



USS NORTON SOUND, January, 1945, boasting a Second World War camouflage (Photo - USN Courtesy A. D. Baker III)

for permanent repairs and replacement of the damaged crane with 20mm guns. Her repairs completed in only 4 days, she was back in Pearl Harbour 13 January, 1942, to begin the job of ferrying men and supplies to forward bases at Samoa, Suva, and Noumea until June.

Departing Pearl Harbour 2 June, 1942, Curtiss served as flagship for Commander, Naval Air, South Pacific, at Noumea from 16 June to 4 August, then served as seaplane tender, flagship, repair and supply ship for destroyers and small craft engaged in the Solomons operation from Espiritu Santo until 9 July, 1943. After overhaul at San Francisco, she arrived at Funafuti, Ellice Islands, 7 November to serve as flagship for Commander Air, Central Pacific, based at Funafuti until 29 December 1943, then at Tarawa (31 December, 1943-8 March, 1944), Kwajalein (10 March-26 June), Eniwetok (27 June-9 August), Saipan (12 August, 1944-1 January, 1945), and Guam (2 January-7 February).

After repairs at San Francisco, Curtiss sailed to Okinawa, arriving



USS NORTON SOUND as AV-M1, February, 1956. A helicopter platform has been fitted forward and the large crane on the starboard quarter removed. (Photo - USN Courtesy A. D. Baker III)



USS NORTON SOUND, October, 1964 (Photo - USN Courtesy A. D. Baker III)



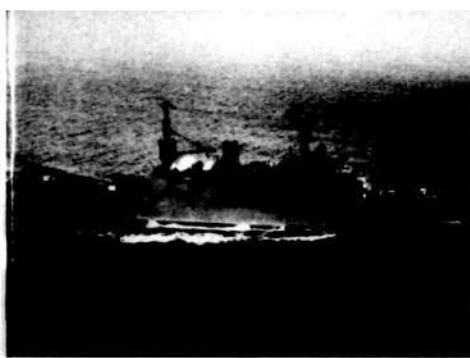
USS PINE ISLAND, May, 1945, only a month after commissioning (Photo - USN Courtesy A. D. Baker III)

22 May, 1945, to serve as flagship for Commander, Fleet Air Wing 1. On 21 June a kamikaze and its bomb ripped two holes in her hull and exploded on the third deck, killing 35 and wounding 21 of her crew. Effective damage control kept her afloat and 4 days later she was underway for the west coast and an overhaul at Mare Island Navy Yard.

Rejoining the Fleet in the Western Pacific, Curtiss embarked Commander, Fleet Air Wing 1 (who was also Commander Task Force 75) at Okinawa 5 December, 1945. She joined in fleet exercises, operated with patrol squadrons in the Formosa Strait, ferried men and supplies to outlying bases and made several visits to Tsingtao, China, until 8 March, 1947, when she headed for the west coast for overhaul and alterations recommended by the Atomic Energy Commission for storage of scientific equipment.

Curtiss operated off the California coast on a number of fleet and training exercises until early in 1949 when she served as flagship for Commander First Fleet for 3 weeks of amphibious operations in Alaskan waters to evaluate cold weather equipment. She continued to serve as flagship for this command during amphibious exercises off Seattle during the summer of 1949. Shortly after the outbreak of the Korean War, Curtiss sailed from San Diego to join the 7th Fleet in July 1950, on patrol in the Korean Strait. Sailing out of Iwakuni and Kure, she tended two PBM Mariner squadrons and a squadron of British Sunderlands operating over Korean territory. She returned to San Francisco 14 January, 1951, for further alterations to fit her as a base for scientific work.

From 23 February to 13 June, 1951, Curtiss served as flagship for



USS PINE ISLAND, January, 1963 (Photo - USN Courtesy A. D. Baker III)

Operation "Greenhouse" and was the base for civilian and military technicians during the atomic tests at Eniwetok. She also provided meteorological information and operated a boat pool. Curtiss served at San Diego in local operations until 29 September, 1952, when she again sailed to Eniwetok as flagship during the atomic tests of Operation "Ivy". Returning to San Diego 4 December, she cruised the west coast, and visited Acapulco, Mexico, in 1953. From 10 January to 28 May, 1954, she participated in Operation "Castle" during which the first hydrogen bomb was exploded.

Fitted with a helicopter deck during November and December 1954, Curtiss engaged in a large scale amphibious exercise on the coast of California in March 1955. From 21 March to 8 August, 1956, she took part in Operation "Redwing", the atomic tests at Eniwetok during which she was visited by the Assistant Secretary of the Navy. As flagship for the First Fleet she was visited by Vice Admiral A. H. Vdel, Commander-in-Chief of the Royal Danish Navy on 20 September, 1956.

Curtiss departed San Diego 27 December, 1956, for Operation "Deep Freeze II," carrying sailors of the wintering-over party, and scientists to take part in the International Geophysical Year program. Calling at Port Lyttelton, New Zealand, from 12 to 15 January, 1957, she entered McMurdo Sound 19 January and transferred cargo by helicopter to Glacier (AGB-4). From 21 to 28 January she put men and cargo ashore in the same manner as she lay moored to the ice shelf, continuing these operations at Little America from 30 January to 6 February. She carried out ice reconnaissance to Okuma Bay and Sulzberger Bay, then departed McMurdo Sound 10 February. She called at Port Lyttelton and Auckland, New Zealand, and Sydney, Australia, before returning to San Diego 25 March to undergo repairs for ice damage. She continued her local operations until placed out of commission in reserve 24 September, 1957.

## USS CURRITUCK

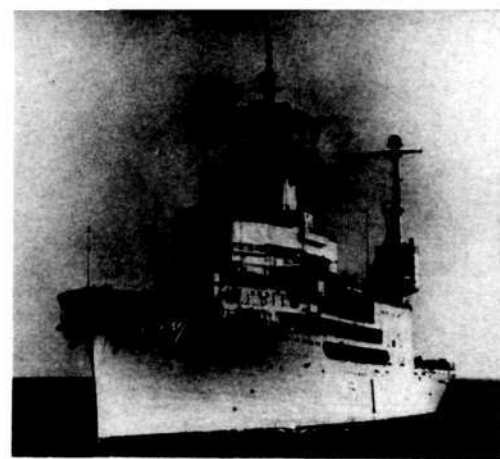
The USN's second Currutuck (AV-7) was launched 11 September, 1943, by Philadelphia Navy Yard, sponsored by Mrs. M. F. Draemel, and commissioned 26 June, 1944, Captain W. A. Evans in command.

Currutuck put to sea from Philadelphia 31 August, 1944, bound for duty with the Pacific Fleet. At Balboa, C.Z., she embarked passengers for transportation to Manus, then continued on to Mios Woendi to unload cargo. She carried men and airplane spare parts and supplies for Tangier (AV-8) from Manus to Morotai, then returned to Mios Woendi briefly before arriving in San Pedro Bay, Leyte, 6 November to begin tending seaplanes flying missions in the Leyte operations.

Currutuck sailed from Leyte 6 January, 1945, for the initial landings at Lingayen Gulf, Luzon, three days later, and remained there, at Cabaltan Bay, and at Mindoro tending seaplanes and directing seaplane search operations. She returned to Leyte 5 February, then sailed for Manila on 3 March. Upon her arrival three days later she sent boarding parties to inspect abandoned Japanese vessels in the harbour. Her tender duties at this port included maintenance of the 76th Wing of the Royal Australian Air Force from 27 April to 6 May.

Departing Manila 10 June, 1945 Currutuck maintained a base for seaplanes conducting night searches from Lingayen Gulf between 11 June and 20 August, then returned to Manila 24 August. She sailed for Okinawa on 30 August.

Currutuck remained in the Far East in support of the reoccupation of



USS NORTON SOUND, November, 1974 (Photo - USN Courtesy A. D. Baker III)



USS PINE ISLAND lifts a P5M Marlin flying boat onto its deck (Photo - Ross Gillett collection)

the Chinese mainland, tending seaplanes at Jinsen, Korea, and Shanghai, Tsingtao, and Taku, China, returning to Okinawa 28 October. She got underway for the United States on 9 December and arrived at San Francisco 30 December. After local operations from this port and San Diego, she sailed 2 December, 1946, touched at the Marquesas Islands and visited Sydney, Australia, from 13 to 20 March, 1947. She returned by way of the Panama Canal to Norfolk, Va., arriving 18 April. Currutuck was placed out of commission in reserve 7 August, 1947, berthed at Philadelphia.

Recommissioned 1 August, 1951, Currutuck got underway 17 December for Norfolk. From this port she operated locally and in the Caribbean, primarily on training duty. She departed Norfolk 23 August, 1952 on a cruise which included visits to Thonon, Norway, and Leith, Scotland, returning to her home port 17 October. After local operations and a brief voyage to Bermuda, she sailed again from Norfolk 24 August, 1953, passing through the Panama Canal for operations around the Galapagos Islands, and returning to Norfolk 25 September. On 6 July, 1954, she cleared for a European cruise, calling at Milford Haven, England, continuing to Taranto, Italy, and touching again at Milford Haven and Portsmouth before returning to Norfolk 18 September.

Between 26 August and 13 December, 1956, Currutuck served with the 6th Fleet in the Mediterranean, returning to training cruises to the Caribbean and local operations at Norfolk until 9 January, 1958, when she entered the Philadelphia Naval Shipyard. She was decommissioned there 12 February, 1958, for thorough modernisation and was recommissioned 20 August, 1960.

CURRITUCK remained in service for another seven years before being laid up again.



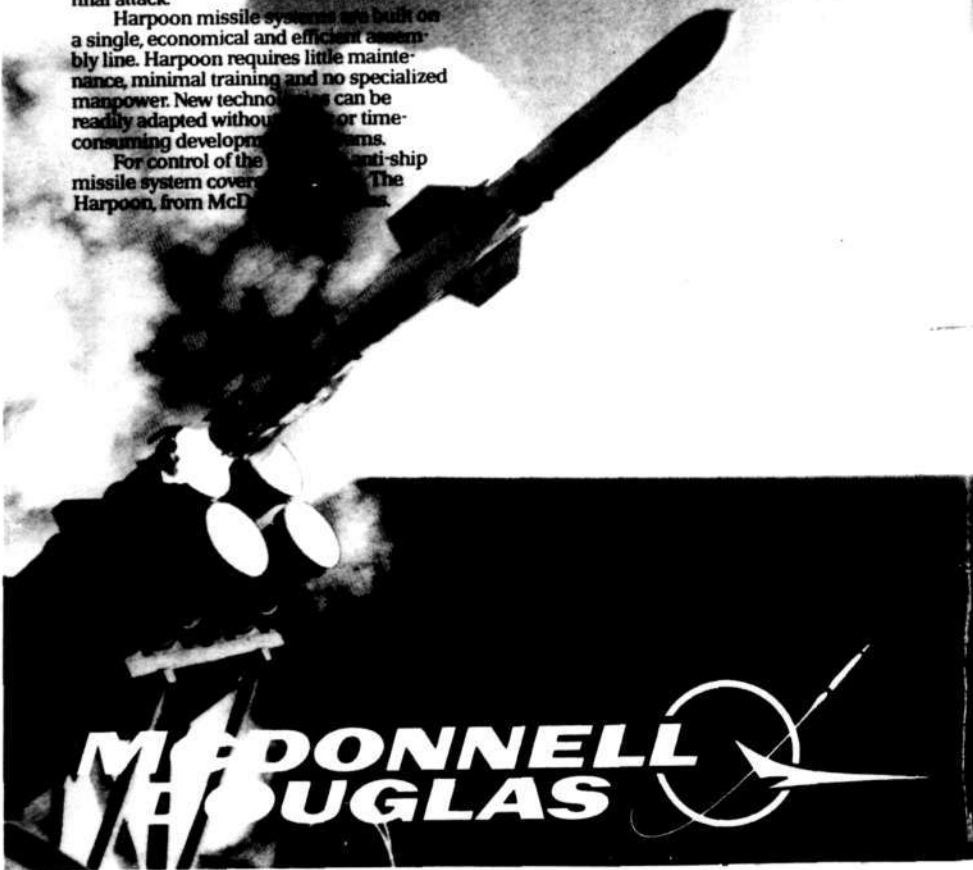
## WITH HARPOON, ONE SHIP, PLANE OR SUB CONTROLS MORE THAN 20 000 SQUARE KILO- METRES OF OCEAN

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## "Commitment and Strategic Vision"



RAN and USN ships alongside at HMAS Stirling

Commitment, strategic vision and acceptance of regional responsibility were sought from Australia by Admiral Thomas B. Hayward, former Commander-in-Chief of the US Pacific Fleet and Chief of Naval Operations, during a visit in June-July sponsored by the Navy League and the Australian Naval Institute.

The following is the text of an address given by the Admiral to an ANI meeting in Canberra.

I AM terribly pleased to be here with you, and honoured to be able to address this special group and to share some thoughts of the strategic situation facing Australia and the United States here in the Asia Pacific region, from an American perspective. It is always a special delight to be back in one of my favourite of all countries — among friends and compatriots. I arrive here fresh from a week in Washington DC, our nation's capital, where I am always amazed at what a fascinating, astonishingly interesting place it is. Some of you, I am sure, have been posted there in the past, and will agree with me that while one may not always like what's going on there, one can't complain about there being an inadequacy of activity. Our legislature, in particular, is undoubtedly one of the most perplexing, yet fascinating of bodies. Mark Twain, one of our great American humourists, is said to have remarked after visiting our congressional halls, that congress is a place where every law is a joke — and every joke becomes law — but there are few laughs in Washington today.

As you can well imagine, there is a frenzy of concern over the hijacking of the TWA Airliner and the state of the passengers still held hostage. As a former Washington decision maker, it is not difficult for me to empathise with the President, who finds himself frustrated by the limited options available to him, and suddenly much more sympathetic towards his predecessor and the plight which he faced five years earlier in the terrorising hostage crisis of Iran. There are no easy solutions to terrorism. In my judgment Americans will increasingly become favourite targets.

While the Congress is busy criticising and admonishing the administration over their handling of this particular crisis — and we have our own tax bill to emasculate — it is also engrossed in an intense debate over the adequacy, or as many would allege, the profligacy of the 1986 Defence Budget. It is a

debate that comes at a time when economic forecasters variously predict a national deficit of 150-250 billion dollars annually for the next two years at least. Furthermore, it is in an atmosphere of acrimony and retribution that this budget debate takes place, in reaction to a plethora of alleged and proven examples of corruption by some of our most prominent defence corporations, of improper use of gratuities, and a ridiculous overpricing of such vital defence items as toilet seats, coffee makers and ashtrays. The true impact of this abuse is yet to be known — except we can be certain it will undermine the credibility of the Department of Defence and the Defence Industry, lead to major cut backs in Defence programmes, and present a troubling opportunity for those who wish to play part in politics at the expense of national security.

Remarkably, in the midst of the budgetary turmoil, a most unusual event occurred — President Reagan and Secretary Weinberger acceded to the wish of some members of the Senate to restrict the 1986 Defence Budget to zero real growth after inflation! For those of us who have been in the business of Defence Budget formulation and justification for years, you can be sure we were astonished and perplexed by this shift in the administration position, especially after having watched with considerable admiration some of the most effective battling for Defence spending increases over the previous four years.

Thus my participation in Washington last week and the final session of a year of long study centred on evaluating the impact of a no-growth Defence Budget for the next five years has turned out to be a present and excruciatingly pertinent effort.

HOW big a problem does a no real growth Defence Budget present? Would you believe \$300 billion from the existing five year plan? \$300 billion, or

about a 20% cut. Wouldn't you like just a 2% slice of this? It would double your annual Defence Budget in one fell swoop! Well, if this projection comes to pass, I can assure you that its impact will be felt as far away as Australia, and you will be intensely interested in its consequences. Just as importantly, America will be vitally interested in Australia's reaction, in a strategic sense.

Oddly, throughout this wrenching experience of looking for ways to live with a reduction of such enormous dimensions, I kept having a feeling of déjà vu. We've been here before! So Drawing shows amphibious

We've surely dealt with budget cuts a plenty in prior years.

We persisted for half a decade or more in the 70s with negative growth, while trying to patch up a well worn armed force following years of combat in Vietnam.

Even the fickleness of the American public is not new. Now they are clamouring for big cuts in Defence (or so our Congress and the media would have us believe). Five years ago they were clamouring for a massive build-up in our forces following the humiliating Iranian hostage crisis and the Soviet invasion of Afghanistan.

Nor is there any evidence the Russians have changed. Their economy is still in a shambles. Their surrogates are still avidly, though ineptly, at work worldwide. They are as obstinate and intransigent in Arms Control Negotiations as ever. And troublesomely, their Armed Forces continue to modernise and build along the track that we predicted they would — an inexorable display of constancy of purpose. It would be wonderful to see our Governments so inclined.

So what has changed to concern us if

anything? Let me suggest at least one highly significant factor — one that is irrevocable and will permanently alter the nature of international security — the "globalisation" of geopolitics.

I appreciate that that is a most esoteric sounding phrase — globalisation of geopolitics — but it has very special meaning, especially to those of us who live and strive in the Asia Pacific region — certainly including America and Australia.

We have witnessed a gradual but certain shift in the geopolitical centre of gravity away from central Europe where it has resided for decades, through the Middle East and South Asia to East Asia where it will surely remain through our lifetime. Affected by the endless conflict between Arabs and Jews, the oil crises of the 70s, the mindless slaughter of Iraqis and Iraqis, the Soviet occupation of Afghanistan, the widening effects of Islamic fundamentalism, and now the revitalisation of India under Rajiv Gandhi's leadership. All are leaving their special mark.

But it is in East Asia, especially, where the alter geopolitical posture is stunning and of overwhelming importance to political, economic and defence planners. The "error of the Pacific", an overworked phrase to be sure, is nonetheless expressive of the evolving situation, with two overriding developments having the most meaningful influence, the explosive emergence of Japan as the industrial giant of the region — perhaps of the world, and the flowering of China, in all of its dimensions and ramifications.

Certainly not to be overlooked, or underemphasised, is the ASEAN success story — still to be proven permanent — but impressive nevertheless. ASEAN's political nature and economic growth rival any in the developing world. I wish to stress, however, that these achievements have been made in an atmosphere of strategic security — comfortably ensconced within the umbrella of a well understood, non-threatening US Military presence.

SO let's talk a little bit then, about this geopolitical phenomenon in the Asia Pacific region, bearing in mind as we do the mutual interests, and responsibilities of Australia and the United States. To help us with this analysis, let me suggest that there are no less than five major events or factors which we need to take into account, especially as we reflect upon the long established Australian Defence policy of "forward strategy", the evolving policy of "self-reliance", and the American preoccupation with "deterrence".

Taking these factors in chronological order, one comes first and prominently to the Guam Doctrine, enunciated by President Nixon in 1969 — a doctrine which has been referred to by many senior officials of the Australian Government as an event which has had a dramatic impact upon the thinking of Australian Defence Leaders, especially as it affected the now discarded policy of "total reliance".

We recall the second event, pridelessly — the ignominious withdrawal of American and Allied forces from Vietnam in 1974-75, an event that signalled the commencement of a significant drawdown of US forces from the Asia/Pacific region. One of the most immediate consequences of these events was to jar the Japanese political leadership into initiating its first serious examination of its self defence

needs, and to be willing to subject the general public to a defence discussion, which has resulted in the now familiar annual Defence White Paper.

In 1979 another geopolitical milestone was crossed with the declared Carter Doctrine, following the Soviet invasion of Afghanistan and America's deep concern regarding Soviet intentions in Iran and the Gulf region. It is one of the few bipartisan policies to endure the transition of the 1979 presidential election, leading ultimately to the formation of the US Mid East "central command", the rapid deployment force and now the pre-positioning of some 16 ships in the Indian Ocean as a part of that force — highly pertinent factors to your westward oriented interests.

Fourth, an event of considerably more geostrategic importance than it is receiving from Asian Governments, is the emergence of a Soviet nuclear threat east of the Urals, with the implantation of over 135 SS-20 global ballistic missiles directed elsewhere than at NATO. While they are unarguably out of the threat range to Australia for the moment, there can be little debate but that their presence imposes a new dimension on the balance of power in the Pacific Basin, especially in North West Asia.

And, lastly, throughout all of this period, has been the monumental growth of Soviet military power in Siberia and East Asia — a build-up of first line forces that exceed, by any measure of professional judgment, that which the Soviets might consider necessary for defence of the Motherland.

EACH of these factors has a vital relevance to our overall understanding of the strategic policies to be considered by the United States and Australia — for that matter, by New Zealand as well. In the aggregate, they must be integrated into any objective assessment of "vital interests", "self reliance", or "regional deterrence".

Now there is one more concept that must not be overlooked, given that the focus of each of these factors is related to security — each is related to defence — and each points a damning finger at the same ubiquitous adversary.

The concept is "correlation of force". It is a Soviet term. It is most useful for our consideration because it is unambiguous to the Russians and relates directly to their perception of their "deterrence", which is what deterrence is all about anyway — the adversary's perception.

While I would be quick to acknowledge the very relevant importance of economic and ideological factors to the "correlation of forces" equation, neither dimension can give the Soviets much comfort in this region. Their economic penetration has been minimal and their Marxist-Leninist ideology is seen as bankrupt and no longer relevant. We are left then with the military dimension to be concerned with — no small dimension — especially since we know that it is here where the Soviets have concentrated their priorities and are able to confront us with unwanted major challenges.

Examining the military factor then, let's start far in the north with Korea and work our way south to Australia. It would be difficult to expect more of the Koreans. Their investment in defence is heavy. Readiness of their forces is extraordinarily impressive. Their commitment is unambiguous.

One cannot say the same for Japan. For well over a decade, the United States has been searching for an effective way to persuade Japanese leadership to meet its self anointed, self defence responsibilities. While I would staunchly defend those who argue that the Japanese defence investment has not been minimal the past decade or so, still any reasonably professional accounting of the Japanese self defence force would question its ability to defend Japan adequately against air attacks of the sophistication that can be presented by their northern adversary, or to control their sealanes to the degree necessary to complement the not in considerable demands on the US Seventh Fleet. Few countries are more crucial to the "deterrence posture" of the western alliance in North East Asia. **Japan can and must do more.**

Mainland China is an altogether different factor in the deterrence equation. The 50-plus Soviet divisions, the steady increase in modern air power, and the threatening imposition of SS20 nuclear ballistic missiles constitute adequate evidence of the importance the Soviets place on China's role in the correlation of forces opposing it on its eastern flank. This situation generally prevailed even before "normalisation", let me suggest that the most important air term leverage which China can pose vis-a-vis the Soviet Union is to achieve balanced economic growth under its new experiment with a market related free enterprise system, and a liberalisation of its education and information systems. I am not surprised to find myself confronted on frequent occasions by our friends in Asia during my travels when they question US initiatives to hasten the re-arming of China. With regret, I will quickly skip past Taiwan, the Republic of China. I emphasise "the regret" in that our lack of strategic vision has caused us to lose sight of its strategic significance vis-a-vis the Soviet Union. Even China will come to know and appreciate the need to rectify this situation in the days ahead.

As for ASEAN, we find a mixed bag of factors that contribute to the correlation of forces in Asia.

Clearly, for the most part, ASEAN is a fledgling success story that ought not to fail to sustain its momentum. We must assure that it does not. On the other hand, one can scarcely overlook the cancerous situation in Cambodia and growing Soviet presence in Vietnam. There seems little reason to hope that a Cambodian solution is near at hand, given the level of success which Vietnam has enjoyed in this past dry season. As for the Russians, I believe we have only begun to feel the effects of the Soviet influence within Indo China and South-East Asia. I don't believe we have the vaguest notion as to how to persuade them to go home. Nor have we thought through the consequences of their enduring presence.

Which leads me to highlight a major concern I hold regarding the decaying situation in the Philippines. While one can undoubtedly argue that third party countries should not get involved in the affairs of others, including the Philippines, I must urge you to consider the strategic consequences to Australia and all South-East Asia if the United States is required, through one form of coercion or another to vacate its strategic presence at Clark Field and Subic Bay. What happens to the correlation of forces

at that point? What cracks emerge in our deterrence shield if the vacuum left by US withdrawal is filled gradually by a crafty opportunist Soviet policy? I suggest the geostrategic consequences to ASEAN and Australia are substantial.

WHICH brings me to the real bottom line — Australia's role in this geopolitical matrix. I have been attempting to construct. At this point, I would much prefer to turn the podium over to one of the several strategic giants here in the audience. Your perspective would surely be far more credible than mine. But that would be a true cop out. So, let me give you one American's perspective for you to shoot at, beginning by casting a few perorative questions your way.

Am I correct in suggesting that the reassessment of Australia's defence policy now ongoing, which has been a natural adjunct to the change in Government leadership, leads one to the conclusion that the policy of "self reliance" is taking on a connotation that is much more "defensively" oriented and more inwardly directed to your national security objectives — with all of the troublesome implications that might have on force structure decisions?

Or is it more appropriate for one to interpret "self reliance" in its broadest regional context, connoting a greater desire to deal independently with security issues in the vital areas to north and east, as well as the Indian Ocean?

Am I right or wrong in my reading into the statements of senior Government officials, a new movement in a direction away from support of the policy of "deterrence" and the context of regional security to more emphasis on continental defence?

I hope I am wrong, for a "Fortress Australia" policy is no more relevant to the current state of regional affairs than "Fortress America" would be for the United States. While acknowledging absolutely the legitimate right of any nation to concern itself foremost with its vital interests at home, from an American's perspective key among the vital requirements of the nations committed to the western persuasion must be a visible capability to play a meaningful role on the deterrence front. A viable alliance must project first and foremost the perception of cohesion of purpose, the melding of vital interests, while confronting all adversaries on all fronts with a



Peter Ballestry, President NSW Division of the Navy League; Admiral Thomas B. Hayward, USN, Rear Admiral Andrew Robertson, RAN (Retd), Federal Vice President of the Navy League and Rear Admiral David Martin, Flag Officer, Naval Support Command at the Sydney Symposium.

correlation of forces which will always lead them to the conclusion that military adventurism is dangerous and imprudent. Little wonder then that the US is deeply concerned with the recent breakdown of the ANZUS alliance by the breakdown in New Zealand's commitment. Australia's efforts to show the breach had been helpful and appreciated.

AS AN American with great affinity to a traditional friend "down under", I urge that as you undertake this important, ongoing reassessment of your national goals, and that as you grapple with the trying task of balancing national priorities in times of real physical stress and strain, you never flag from your position of leadership throughout the archipelagic region to your north and your vital influence in the South West Pacific Islands, and you look beyond these nearby horizons, on into the Indian Ocean, westward to South West Asia and Africa, and northward to the South China Sea, appreciating our critically important geostrategic role is to regional long-term stability, and balance.

Within this strategic framework, it seems to me that a strong maritime strategy is especially applicable. I hasten to clarify that I did not say Naval strategy, but maritime. My definition of a maritime force explicitly

includes full utilisation of all land-based assets of the RAAF, including the surveillance systems available nationally and internationally.

I would suggest that it does not take much analysis to arrive at the conclusion that a capable, flexible, highly mobile maritime force, possessing substantial offensive characteristics not only meets the imperative defence of the continent in the remote possibility of a serious attempt by any adversary to mount an assault on your homeland, but also (and most importantly) provides you confidence in your ability to control the sealanes, sea approaches, and choke points, as well as supporting directly, your vital interests and alliance challenges regionally which you have traditionally demonstrated so ably in the past.

The United States, Japan and Australia — and ultimately China — bear a unique and vital obligation in maintaining an atmosphere of co-operation, common purpose, and confidence building, that will not only block the Soviet adventurism in the Asia/Pacific region but will permit steady, mature growth of the economic and political systems of all nations large and small within the region.

Given this kind of commitment, strategic vision and continued acceptance of regional responsibility, there is great hope for us all. Thank you.

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## ALLIED LANDING CRAFT OF WORLD WAR II

### LANDING SHIP, MEDIUM LSM

Introduction by A. D. BAKER III Published by ARMS & ARMOUR PRESS  
Review Copy From United States Naval Institute

**Operational use** An oceangoing tank landing ship designed to operate with LCI (L's).

**Description** A new design, derived from a combination of the LST and LCT (6), and formerly designated LCT (7).

**Capacity** 5 medium or 3 heavy tanks; or 6 LVT or 9 DUKW's (150 max load to maintain landing draft.) Troops 2 officers, 52 men.

**Endurance** 3,500 mile radius at 12 knots (estimated).

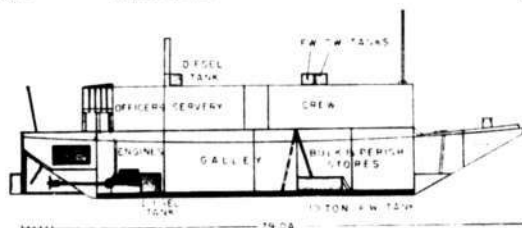
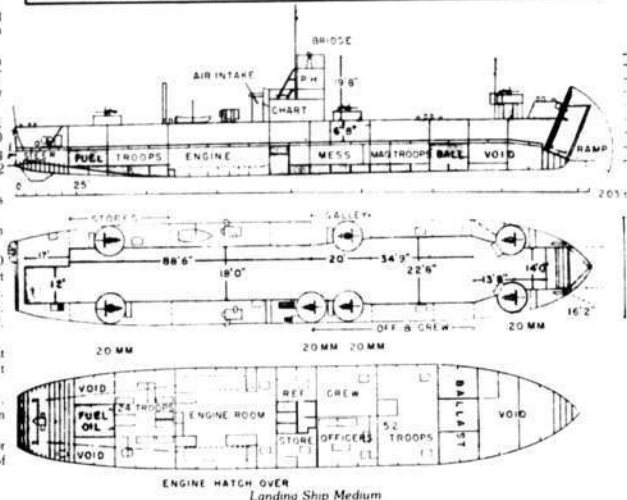
**Speed** 13.3 knots at 720 rpm (designed).

**Displacement** Seagoing (full load), 900 tons. Draft, 4' 5" aft, 7' 11" 1/2. Landing (full load), 741 tons. Draft, 4' 3" aft, 6' 11" 1/4. Seagoing (light), 513 tons.

**Dimensions** Tons per inch immersion at landing displ., 14.10, at oceangoing displ., 14.3. Length, 203' 6" oa. Beam, 34' 0". Armament, 6 20mm mounts.

**Armour** 10lb STS, splinter shield for 20mm guns and sides of pilothouse.

**Crew** 4 officers, 48 men.



**Propulsion** Fairbanks-Morse Diesel or General Motors Cleveland Diesel direct drive 2,800 hp at 720 rpm.

### LANDING BARGE KITCHEN LBK

**Operational use** To serve as floating kitchen to groups of landing craft.

**Description** Converted from steel swim barges, similar to the LBE, LBO.

**Capacity** Storage and issuing space for enough provisions to feed 900 men for one week.

**Dimensions** 79' oa x 21' x 3' 6" draft (estimated).

**Armament** None.

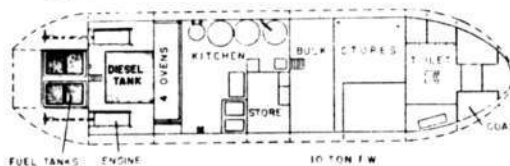
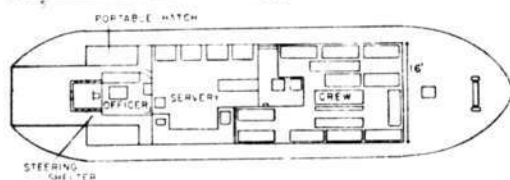
**Armour** 2 1/2" plastic to diesel tanks, engines, steering shelter.

**Crew** 1 officer, 24 men.

**Endurance** 300 miles at 5 knots (estimated).

**Propulsion** 2 Chrysler engines.

**Fuel** 600 gallons gasoline.

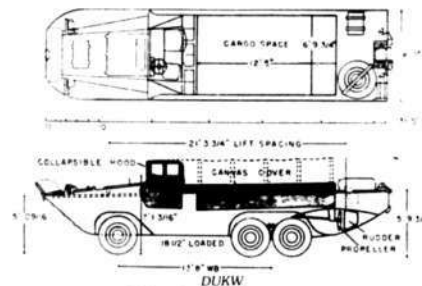


Landing Barge, Kitchen

### DUKW

**Operational use** Amphibious Army truck for ship-to-shore transport, capable of operating in a moderate sea and surf.

**Description** 6-wheeled truck with a boat hull, propeller in tunnel, and small rudder. Hold may be covered by portable canvas and litters; cockpit has collapsible hood.



### Capacity

### Endurance

### Speed

### Displacement

### Propulsion

### Crew

### M29C CARGO CARRIER "WEASEL"

**Operational use** To carry a small number of troops or cargo across calm waters - principally rivers and swamps.

**Description** A small tracked vehicle originally designed for work in snow and mud. A variation is fitted with pontoons for use in water. The carrier is propelled by tracks both on land and in water, where it is steered by two rear rudders drawing shows amphibious type.

### Capacity

### Dimensions

### Weight

### Endurance

### Speed

### Propulsion

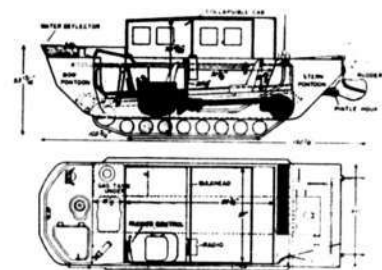
### Fuel

### LANDING SHIP, MEDIUM (ROCKET) LSM (R)

**LSM (R) 188 Class**

Twelve LSM's have been converted to serve as rocket support ships for amphibious operations. LSM 188-195 were fitted with aircraft-type launcher rails, while 196-199 were fitted with the improved hopper type. Main deck plans of groups are shown.

**Operational use** To clear the beach with close



### M29C 'Weasel'

### Armament

### Dimensions

### Displacement

### Capacity

### Endurance

### Speed

### Propulsion

### Crew

One 5"/38 DP, two 40mm and three 20mm singles, nos 188-195 have seventy-five, 4-rail Mk 36 and thirty 6-rail Mk 30 rocket launchers. Nos 196-199 have eighty-five Mk 51 rocket launchers (automatic type).

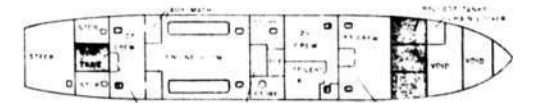
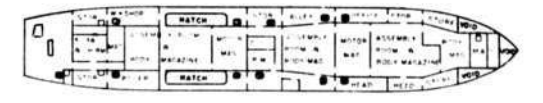
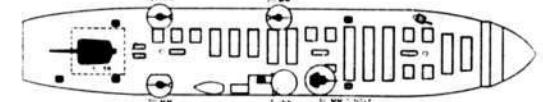
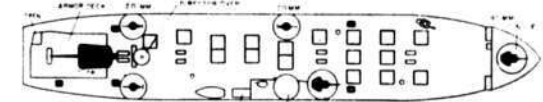
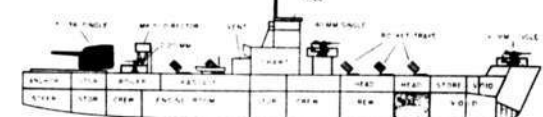
10lb STS splinter shield to gun mounts, pilothouse and conning position.

4,900 miles at 12 kts (loaded).

13.2 kts (max, loaded).

2 GM 1440 BHP at 720 rpm (each) diesels, non-reversing with flex clutch and direct drive, twin screws.

5 officers, 76 men.



Landing Ship, Medium (Rocket)



# DOENITZ

by CAPTAIN G. E. HUNT,  
DSO\*, DSC\*, RANEM

War is viewed by many people in quite different ways and moral issues abound. When gunpowder was first invented people thought it heralded the end of the world.

Protests today are directed mainly against nuclear missiles, but we must not overlook the fact that the "conventional" weapons with which we fought World War II are just as lethal now as they were then — only more sophisticated.

A whole post World War II generation can only learn about war by reading or hearing about it and unfortunately the readers' values are often influenced by the views of the particular writer — thus, the Germans are frequently portrayed as having U-Boats which were rather "underhand", whereas the Allies had submarines which were, of course, alright!

In World War I the Germans calculated that the quickest way to win the war was to cut off Britain's supplies. This gave rise to much pious indignation and many people protested that sinking ships without warning (particularly innocent merchant ships) was a barbarous act.

However, Admiral of the Fleet Lord Fisher (then First Sea Lord) was more realistic and he explained to Churchill and others that (despite International Law &c) submarines were simply doing what everyone knew they had been



U 532 Korvettenkapitan Helmut Junker

She operated in a group of six U-Boats between South Africa and Western Australia, replenishing at sea from the German tanker Brake. The Brake was eventually sunk by HMS ROEBUCK after which U 532, having expended all her torpedoes, proceeded to Penang where she loaded vital supplies for Germany. She was on her way home when Germany capitulated and she is shown here arriving in Liverpool under escort after six months continuously at sea. She had onboard 100 tons of tin, 60 tons of rubber, 8 tons of wolfram and 5 tons of molybdenum. Her gun had been landed in Penang so that she could carry more cargo.

specifically designed to do, which was to sink ships and he went on "the essence of war is violence; moderation in war is imbecility!" Furthermore, he pointed out that mines were being freely laid by both sides, sinking many ships without warning and yet this measure had long been accepted as yet another hazard of war.

So we come to the closing stages of World War I when a certain Lieutenant Karl Doenitz in command of UB-68 was in the Mediterranean. Doenitz had been born in September 1891, son of an Engineer and heir to large estates in Berlin-Grunow. After matriculating in 1910 he joined the Imperial German Navy and the outbreak of World War I found him in the Mediterranean as a Sub-Lieutenant in the Cruiser Breslau. Early in 1916 he joined submarines and in due course he was appointed in command of UB-68. While attacking a convoy bound for Malta on 4th October, 1918, he was sighted and sunk by an alert HMS SNAPDRAGON. Fortunately for him, he was rescued and taken prisoner and then in July, 1919, he was released and sent home, where he returned to duty with the German Navy.

AFTER World War I, the Peace Treaty signed at Versailles in 1919 prohibited Germany from resurrecting their submarine service. Later, some of the restrictions were modified in the Washington Naval Treaty of 1922 and the London Conference of 1931. However, Germany

managed to circumvent these restraints by secretly arranging for submarines to be built as "a private venture" in Finland and clandestine training of German Personnel was carried out in these boats between 1931 and 1936.

The Anglo-German Naval Agreement signed on 20th June, 1935, finally allowed Germany to build submarines up to 45% of Britain's submarine strength, which was at that time 59 boats. The Commander in Chief of the German Fleet, Admiral Raeder, immediately appointed Doenitz (then a Captain) to construct, train and command a new submarine arm. Thus in July, 1935, the German U-Boat Fleet was officially reborn and Karl Doenitz was to remain its "Father" and "Chief Architect" for ten years until, finally, as a Grand Admiral and Head of State, following Hitler's suicide, he signed the instrument of surrender in May, 1945, on behalf of the German Nation.

Doenitz knew that ASDICs existed, but he did not believe (as many people in Britain did) that it meant the end of submarines and, being the leader he was, he set about convincing his U-Boat crews that they could compete with it.

Furthermore, he believed that the key to any future war with Britain lay in countering the convoy system and in cutting off her supplies, as had been attempted in World War I. Thus he devised what he called "wolf pack" attacks by means of which he reasoned that he could outnumber the convoy escorts and thus swamp the defence. In essence this meant locating and shadowing a convoy and homing in several other U-Boats and then, generally at night and



U 552 Kapitänleutnant Erich Topp

She has surfaced to administer the coup de grace to the SS BEACON GRANGE (10,160 tons) on 27 April, 1941. Note the lifeboats with survivors. Topp was reckoned to be the third most successful German Submarine CO with 193,684 tons to his credit.

on the surface, these boats would try and attack simultaneously. On completion, rather than restrict their mobility by diving, they often attempted to use their speed to escape on the surface. Training before the war therefore concentrated on this method of attack and by 1937/38 "wolf pack" exercises were commonplace and the technique was perfected.

DESPITE the Munich Agreement signed in September, 1938, it appeared to be obvious to Hitler that one day there would have to be a "showdown" between Britain and Germany and accordingly he ordered a naval expansion programme aimed at going to war with the United Kingdom about 1945.

However, events moved much faster than Hitler had foreseen, with the result that by the outbreak of war in September, 1939, Germany had built only 56 U-Boats. At the same time Britain had 58 submarines, France 77, Italy 150, Japan 94, America 112 and Russia (secretive as ever) was believed to have over 200.

Britain and Germany had both signed the London Submarine Agreement in 1936, reinforcing existing International Law and outlawing unrestricted submarine warfare. The observance of International Law was, however, short-lived and by November, 1939, U-Boats were waging total and unrestricted warfare in accordance with the belief held by Doenitz that the destruction of commerce was the quickest way to end the war. British and French submarines, however, were deployed initially only against enemy warships and were not given freedom of manoeuvre until April, 1940, (during the German invasion of Norway), when "sink at sight" zones were established.

This policy of trying to cut off Britain's supplies meant, of course, that the majority of German U-Boats were concentrated on the Atlantic Convoy routes, although some boats worked farther afield, in the Mediterranean, Indian Ocean and other areas. Doenitz's "wolf pack" tactics in what became known as the

Battle of the Atlantic, proved to be devastating and Allied shipping was being sunk at an alarming rate. At the same time, as the Battle progressed and as the Allies gradually gained the ascendancy, U-Boat losses mounted and from the beginning of the war until 1943, when the campaign against shipping in the Atlantic was virtually defeated, the Germans had thrown over 650 U-Boats into the fray and had lost more than 250 of them!

Operating these vast numbers of U-Boats was an enormous undertaking and of course it necessitated a great deal of "chatter" on the wireless, which could often be monitored and D/F'd to the advantage of the Allies. Doenitz himself was quite tireless and took complete charge of every aspect of his beloved service, particularly including the maintenance of morale which became more and more important as his losses mounted.

The Allied campaign in the Mediterranean absorbed a large proportion of Britain's submarine strength for more than three years. Over that period the Royal Navy sent more than 100 boats to the Mediterranean and they were assisted by 24 Allied boats (10 French, 8 Greek, 4 Dutch and 2 Polish).

BY the middle of 1941 the Germans were extremely worried about the viability of Axis operations in North Africa and in particular the support of the Afrika Korps, because their supplies were being severely disrupted by Allied submarines. The intense campaign against the Axis supply routes to North Africa was a joint operation between submarines and aircraft which resulted on occasions in up to three-quarters of the traffic being sunk.

Although Italy employed 136 submarines in the area during this period, they were not considered a force to be reckoned with because it was felt they were wrongly employed and I suspect that the Germans had similar misgivings. At any rate Doenitz decided to send 95 U-Boats to the Mediterranean to reinforce the Italians and, as he put it, "to clean up the viper's nest of British boats", in doing so he

denuded his "anti convoy wolf packs" in the Atlantic, which must have given some (if only temporary) relief to our hard-pressed Convoys and Escorts.

It is interesting to follow the fate of these 95 U-Boats. It speaks volumes for our Anti-submarine Forces that 5 were sunk in the Atlantic enroute to the Mediterranean. Six were sunk trying to penetrate the Straits of Gibraltar and 22 turned back for various reasons. Sixty-two finally entered the Mediterranean and there is no doubt they were extremely successful, sinking a Battleship, 2 Aircraft Carriers, 3 Cruisers and a Submarine Depot Ship. Nevertheless, the Allied Anti-Submarine measures were intense and in due course all 62 were sunk! Incidentally, Allied submarines sank 21 German and Italian U-Boats in the Mediterranean and only one of our submarines was sunk by a U-Boat there.

This is perhaps a good point at which to pause and consider the different operating techniques of the Allied and German submarines. In the Atlantic, one or more U-Boats might meet up with and attack a convoy of say 40 ships escorted by perhaps half a dozen escorts using the "wolf pack" tactics described earlier.

By contrast in the Mediterranean, Allied submarines normally maintained solitary submerged patrols close inshore off Port, Headlands and focal points and attacked individual ships, often heavily escorted. I spent over three years in the Mediterranean and in that time the largest enemy convoy I saw consisted of 4 ships and the heaviest escort I encountered was 9 miscellaneous warships escorting one tanker under tow. For Allied submarines therefore it was quite a different ball game.

There is little point in going into great detail, but some idea of the Allied submarine effort in the Mediterranean may be gained by considering that British submarines sank well over half the entire total of all shipping available to the Axis Powers in the Mediterranean.

SOME people have compared Doenitz with Admiral Sir Max Horton. As a Lieutenant Commander in World War I, Max Horton commanded HMS E.9 and proved to be a most capable and successful CO. Years later, shortly after the outbreak of World War II, Horton, by then a Vice Admiral, commanded the British Submarine Service for nearly three years (from 1940 to 1942). Thus he was, in a sense, the "opposite number" to Admiral Doenitz. In November, 1942, however, Max Horton was appointed Commander-in-Chief, Western Approaches, which put him in control of the Atlantic Convoy and escort organisation and in direct opposition to Karl Doenitz and his U-Boats.

It is now a matter of history that thanks to the dogged determination and courage of the Merchant Service, together with the expertise of the Escorts, Support Groups, Aircraft and Shore Staffs, we won through in the end, but it was a close run thing.

In 1943 Doenitz was appointed Commander-in-Chief of the German Navy in succession to Grand Admiral Raeder, who had resigned (largely in protest, because Hitler had decided that large capital ships were useless and should be scrapped!). Meanwhile, Doenitz had turned over command of the submarine arm to Admiral von Friedberg (although of course he



Grand Admiral Karl Doenitz



continued to keep a "fatherly eye" on his beloved U-Boats)

Hitler committed suicide on 30th April, 1945, but before doing so he wrote a note appointing Grand Admiral Karl Doenitz as his successor as Head of State. Herman Goering, as Reich-Marshal, would have been the natural successor, but Hitler accused him of treachery and cowardice and had ordered the SS to arrest him!

Thus Doenitz found himself suddenly and unexpectedly pitchforked into the unenviable position of heading up a Government which knew it had but a few days in which to try and negotiate peace terms with its enemies to the East and to the West.

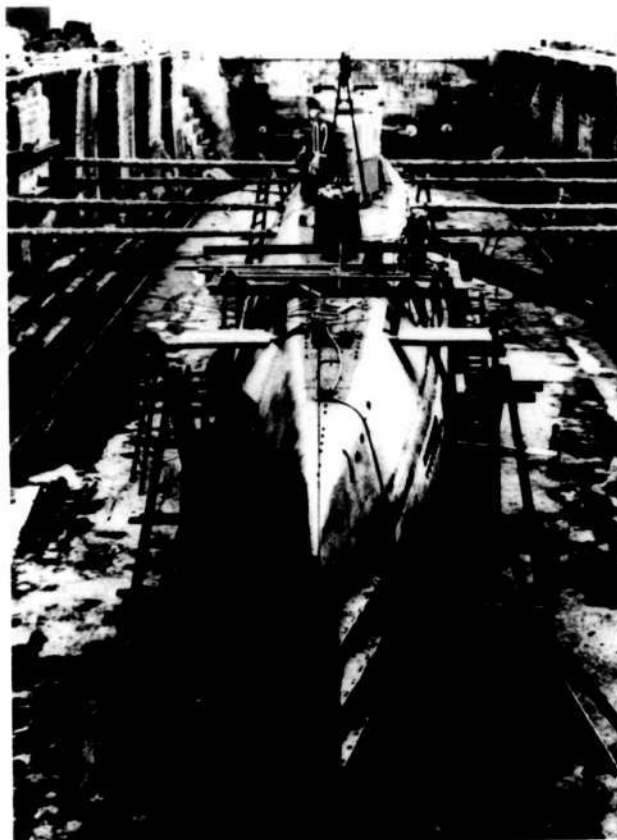
It is a matter of history now that the Allies, in no mood to negotiate, demanded nothing less than total capitulation - and that is what happened.

**O**F the 377 U-Boats still in commission, 156 surrendered in strict accordance with the terms of the cease fire agreement. The majority of the remaining 221 crews scuttled their boats in a final gesture of defiance to the Allies, whilst a very few attempted "escape voyages" to the Argentine and elsewhere.

When Germany was over-run, a number of new and improved and some experimental U-Boats fell into Allied hands intact, mute testimony to the forward thinking and imagination of Doenitz and his staff. It is just as well that these boats, such as the Type XXI, were not brought into operational use against us.

Doenitz, in common with many senior officers and Government Officials, was subsequently tried at Nuremberg and eventually sentenced to ten years in Spandau Prison. His was one of the lighter sentences. He was subsequently released at the age of 65 and he died just a year or two ago. In Marlis G. Steinert's book on The Capitulation of Germany, he says of Doenitz - "Many of his ex-enemies have long since forgiven him and paid tribute to his professional achievements. To him Germany owes the fact that the destruction of the country was not even greater and that it was not involved in a final senseless battle. Furthermore, he saved many soldiers and a great many civilian families from years of Soviet captivity in the East."

I have been asked whether as a submarine Commanding Officer in World War II, I would have liked to have had Doenitz as my Admiral. That is a difficult question to answer with a



Construction of one of the first of the new fast Type XXI boats with which Doenitz hoped to regain the ascendancy over the Allies. Fortunately, these submarines did not become operational before Germany capitulated.



Oberleutnant Siegfried Kotschka. He was at one time the CO of U 616. U 616 was eventually sunk after the longest continuous hunt of the war, three days by 8 Allied destroyers and a squadron of Wellington aircraft in the Mediterranean.

simple "yes" or "no". However, I undertook a NATO Course in 1958 and there I met, as fellow students, three ex World War II U-Boat COs, who, of course, had served under Doenitz and a British Officer who had met him. Naturally, we discussed Doenitz, Horton, "wolf

packs" and submarines generally and I got the very strong impression that, for the German Navy, Doenitz was the right man in the right place at the right time. I believe the same could be said for Sir Max Horton so far as the Royal Navy was concerned.

Doenitz cared very much for the welfare and morale of his crews, but he was (like Horton) a strict disciplinarian and he came down like a ton of bricks on any CO who didn't toe the line. There seems to be little doubt that he was a very dedicated Naval Officer who was respected by his U-Boat crews. He used to go to endless trouble to meet boats coming in from patrol, particularly if they had been successful and, on Hitler's behalf, he often held mini-investitures to give on the spot awards to crews.

His fertile brain was constantly churning round with ideas for improvements in tactics, the design of boats, habitability, weapons and of course morale, which was always uppermost in his mind.

He used to go to great pains to check the veracity of claims and any so called "atrocity" was rigorously investigated. He disliked misleading and untruthful propaganda and he fought a bitter running battle with Goebbels on that score. He did not get on with Herman Goering, whom he accused of withholding support when he most needed the co-operation of the long range reconnaissance aircraft of the German Air Force to spot convoys.

This brief pen picture of Karl Doenitz is in no way intended to suggest that he was "pure as the driven snow." I suppose most great men have their critics and power often goes to their head, but no one can argue with the fact that

Karl Doenitz did his best for the German submarine arm and he welded it into a formidable weapon which made the Allies think very hard indeed! He proved, for the second time in a generation (if indeed proof were needed!) that submarines are a very serious threat to any nation which is dependent on seaborne supplies. Let us pray that the lesson does not have to be learned a third time.

## TAILPIECE

Almost 30,000 officers and men were lost in U-Boats in World War II, or ten times the number of submarines lost in both the RN and USN combined. In addition, about 5000 were taken prisoner. Despite these staggering losses, Doenitz maintained morale among the U-Boat crews by the sheer force of his personality and leadership.

Perhaps I might end by quoting part of an Order of the Day issued by Grand Admiral Karl Doenitz on 4th May, 1945, when he signalled his boats to cease hostilities.

"My U-Boat men, six years of U-Boat warfare lie behind us. You have fought like lions the continuation of the struggle is no longer possible from the bases which remain to us. Unbroken in your warlike courage, you are laying down your arms after an historic fight."

In reverent memory we think of our comrades who have died.

Comrades, maintain in the future your U-Boat spirit with which you have fought most bravely during the long years.

Whatever prejudices and memories remain, it would surely be difficult for seamen of any nationality to take exception to the spirit of that final message.

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# REPORT TO THE CONGRESS

## — Excerpts from Fiscal Year 1986

### The Navy Is Ready

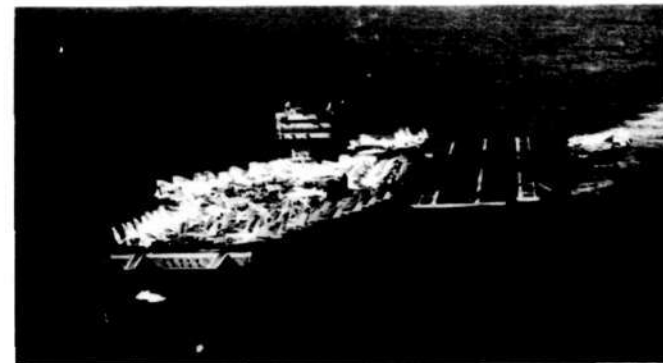
The course to re-establish our maritime superiority set four years ago has not wavered. Momentum has continued to keep us on schedule. We have achieved an effective balance between building for the future and making the fleet we have today a maximum ready fighting force. These results have already added enormously to our ability to deter Soviet adventurism and to stabilise the peace. The fleet and the Fleet Marine Force are more ready to go in harm's way than at any time in postwar history. Our friends and adversaries alike know this.

**Sea Based Nuclear Deterrent** — The modernisation of our sea-based leg of the strategic deterrent is proceeding well. We have added five Trident SSBNs to the fleet since 1981, with seven others authorised and building. The latest addition to the fleet was HENRY M. JACKSON (SSBN 730), commissioned in October 1984. During sea trials, Trident submarines have met or exceeded all of their design specifications.

The first eight Trident SSBNs are outfitted with the Trident I (C-4) missile, joining 12 Poseidon SSBNs equipped with the Trident I. Over the past four years the development schedule of the Trident II (D-5) was begun and then accelerated to an initial operational capability (IOC) of 1989. In addition, we have greatly strengthened command and control of our strategic forces, including construction of the Extremely Low Frequency (ELF) communications system, and have begun deployment of a follow-on TACAMO command and control aircraft. Last year we began deploying Tomahawk sea-launched cruise missiles equipped with nuclear warheads for theatre nuclear deterrence. They are now operationally capable on our attack submarines, destroyers and reactivated battleships. This highly reliable, accurate, low cost weapons system is a tremendous force multiplier that adds a new and very stabilising dimension to our deterrent posture.

**Shipbuilding** — Four years ago the President set a goal of doubling the naval shipbuilding programme. We have maintained that ambitious goal despite continuing cuts from the original budget estimates. We have brought dramatic new efficiency and discipline to the management of Navy shipbuilding, increasing the percentage of the shipbuilding budget awarded competitively from 15.7% in FY 1980 to 84.3% in FY 1985.

From the 479 battle force ships in the fleet when President Reagan took office, the fleet has grown to 530 ships today and 545 by the end of the fiscal year, reaching 600 by the end of 1989. There are currently 103 naval ships now under construction, conversion or reactivation, at 21 different yards throughout the United States. By cancelling the Carter Administration plans to retire the aircraft carriers CORAL SEA (CV 43) and MIDWAY (CV 41) and the DDG 2 and DDG 37 class destroyers, and by reactivating the battleships, we have been able to expand the fleet rapidly over the past four years without sacrificing investment in new construction for the 90s and the next century.



USS KITTY HAWK

### 600-Ship Navy

With the bipartisan support of the past two Congresses, we are well on our way toward attainment of a balanced 600 ship Navy by 1989 including 15 carriers, increased amphibious lift, recommissioned and modernised Iowa class battleships, Ticonderoga class cruisers, Arleigh Burke class destroyers, 100 nuclear-powered attack submarines, and a strengthened leg of the strategic triad in the Ohio class submarine and Trident II missiles. This past year witnessed the addition of 19 ships to the fleet. The battleship IOWA (BB 61) was recommissioned, the second of Ticonderoga class cruisers YORKTOWN (CG 48), was commissioned as was one Trident submarine, five attack submarines, eight Oliver Hazard Perry class frigates, and two TAGOS surveillance towed array ships.

Qualitative as well as the quantitative aspects of this growth are very important. We are building the right ships to counter the Soviet Navy's numerical advantage. Such qualitative superiority is obvious in our nuclear-powered aircraft carriers and embarked air wings. The improved 688 class submarines being authorised and built today are twice as effective as the original SSN 688 class submarine. We have revolutionised surface combatant anti-aircraft warfare capabilities with the Aegis system in Ticonderoga class cruisers. This system's ability to engage large numbers of air threats simultaneously is a major step in countering cruise missile saturation raids. Many of our battleships, cruisers, destroyers and submarines are being armed with Tomahawk cruise missiles, capable of flying long distances and attacking targets at sea or on land. Its broad compatibility with our combatants distributes offensive power as never before, greatly compounding the enemy's targeting problem. Tomahawk complements the power of the carrier air wing and multiplies the effectiveness of the force at sea. Additionally, Tomahawk opens the way for deploying battle forces without carriers when carriers

are not available or not appropriate to the threat.

Ohio class SSBNs represent a key element in our strategic triad and substantially increase our deterrent posture. Any attempted Soviet first strike would leave the Trident force on station, ready to respond, and capable of inflicting unacceptable retaliatory damage. The continued invulnerability of our strategic submarines is crucial to our national security. To this end the Extremely Low Frequency (ELF) system adds a significant new dimension to SSBN communications, enabling commanders to communicate reliably with strategic submarines operating at deep depth and standard speeds. Further, our SSBN security programme continually reviews technologies which conceivably could be relevant to future survivability of the SSBN force, including actual or potential breakthroughs. Although most scientific phenomena are well understood, healthy scepticism and vigilant search for new ideas must be maintained as technologies continue to improve. Because of this programme, which stays on the leading edge of science and has the best technical support in the country, our best estimates indicate that there is no credible threat today, or in the foreseeable future, to our SSBN force. The situation is dynamic, and we must continue our vigorous efforts to ensure we remain ahead of the threat.

Recent fleet experiences, especially the Royal Navy's Falkland Islands combat experience, highlight the importance of ship survivability. We must build ships that can go in harm's way, take battle damage, survive, and remain operationally capable. We have made significant progress, and I am dedicated to continue improving our survivability posture. We intend to expedite survivability improvements into the fleet to ensure maximum readiness and war-fighting sustainability during peacetime and combat operations.

Results of shock tests conducted this past summer on YORKTOWN, second of the Ticon-

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USS OHIO

deroga class cruisers, point to the success of our passive survivability program. YORKTOWN experienced four significant percussion shocks from nearby explosions simulating the effect of battle conditions. Even during the most severe shock, the ship did not go dead in the water. Her main engines were not damaged. Her combat systems were partially impaired, but were restored in short order.

Improving ship survivability is an important element in our programme to build a 600-ship Navy. I am encouraged by our progress to date and, with your continued support, we will make further headway on this important problem.

Of course, 15 deployable aircraft carriers remain key to an effective, balanced 600-ship navy. We will achieve that goal by building the three new carriers authorised and funded, and by modernising eight of our older carriers in the Service Life Extension Programme (SLEP). SARATOGA (CV 60), the first carrier to be SLEP'd, just completed her first post-SLEP deployment in outstanding fashion. Prior to deploying, SARATOGA passed a comprehensive and rigorous Operational Propulsion Plant Examination (OPPE) conducted by a special inspection team from the staff of CinCLantFt and then achieved high grades on Operational Readiness Evaluation (ORE) and Preventive Maintenance System (PMS) inspections. After passing these important inspections, SARATOGA deployed to the Mediterranean for six months and performed brilliantly. After successful full power trials, SARATOGA had no boiler problems during 2,400 steaming hours per boiler. Finally, the carrier's air wing averaged 78.3% mission capable during the last four months of deployment.

Lessons learned during SARATOGA's trailblazing SLEP are being applied to the FORRESTAL (CV 59) and INDEPENDENCE's SLEPs. SARATOGA's record this past year clearly reaffirms the wisdom of SLEP. SLEP extends the service life of our aircraft carriers from 30 to 45 years, provides a cost-effective alternative to new construction, and ensures that the National Command Authority will have the flexibility of a deployable 15 aircraft carrier battle group force.

Our program to maintain aircraft inventories with the proper mix and in the right numbers to support the growing navy was sustained in 1984. A total of 281 new aircraft entered the fleet including the F-14A, F/A-18A, A-6E, FA-5B, E-2C and P-3C. I am particularly pleased to report our experience with the F/A-18 Hornet now appearing in the fleet.

The F/A-18 is the first entirely new tactical aircraft to become operational with the US Navy in the past 12 years. CONSTELLATION (CV 64), the first carrier to receive F/A-18 air-

craft, is operating today in the Pacific Ocean with twice the fleet air warfare capability she had before bringing aboard two Hornet Strike Fighter (VFA) squadrons. Recent reports from CONSTELLATION have been extremely positive, with the Hornet displaying launching and boarding rates far exceeding all expectations. The F/A-18 is proving to be three times as reliable as any aircraft in the fleet, requiring only half the maintenance man-hours of other navy aircraft. As it approaches 100,000 cumulative flight hours, the F/A-18's safety record exceeds those of comparable Navy aircraft by 50 to 80 percent. The carriers CORAL SEA (CV 43) and MIDWAY (CV 41) will deploy with the F/A-18 in 1985 and 1986, respectively, further exorcising the capability and flexibility of the fleet.

Because of the integral role of the Reserve in today's Navy, I want to highlight some initiatives, mention our progress and point out plans for the future.

## Naval Reserve

This past year witnessed a remarkable expansion in the size and capability of the Naval Reserve. Drilling Selected Reservists increased to more than 102,400 by the end of FY 84, with the number of reservists on full-time duty for Training and Administration of the Reserve (TAR) at more than 13,300.

Reserve personnel goals are indeed challenging and we have responded with programmes designed to offer new and enhanced incentives and improve retention. The new Sea Air Mariner (SAM) program has been remarkably successful in providing junior enlisted personnel for the Selected Reserve. We recruited the full quota of 10,000 non-prior service personnel last fiscal year, and are well on our way to accessing the same number this year.

In the Naval Surface Reserve Force, two more FFG 7 class frigates will join the Naval Reserve in FY 1985. When added to three FFG 7s and the six FF 1052s now in place, the Naval Reserve frigate force will increase to 11. Six Craft of Opportunity Programmes (COOP) units will join the Naval Reserve Force in FY 1985. In FY 1986 we will add four more FFG 7s, thereby passing the halfway mark in this ambitious programme of transitioning 26 ASW ships to the Naval Reserve Force, 18 FFG 7s and eight FF 1052s. Six COOP units and three ARS class ships will join the Naval Reserve Force in FY 1986. Moreover, two new Seabee battalions as well as a Mobile Inshore Undersea Warfare (MIUW) unit will stand up in FY 1986. This trend of NRF growth will continue beyond FY 1989 as AO 177 class oilers, eight Mine Countermeasures Ships (MCM 1) and 17 Minesweeper Hunter (MSH 1) class ships transition to the Naval Reserve Force.



USS NEW JERSEY

## Strategic Sealift

The successful deployment and support of forces in executing military strategy in both war and peace depends heavily on Strategic Sealift. Increasing emphasis on mobility force readiness coupled with a precipitous decline in the US Merchant Marine has brought the Strategic Sealift role into sharp focus. Recognising the criticality of this role, in March 1984 the Navy formalised Strategic Sealift as a distinct Navy function. Congressional support of related programmes has enabled us to move rapidly toward our sealift and cargo movement objectives. The Ready Reserve Force (RRF), which would be activated in time of crisis, is expanding toward the current goal of 61 dry cargo ships and 16 tankers. Next year, we will commence our Sealift Enhancement Features (SEF) programme to increase the military utility of commercial merchant ships.

The completion of several ship conversion programs in FY 1986 will dramatically increase our mobility capability. The last of eight Fast Sealift Ships (SL 7) will be delivered in FY 1986, providing a sealift capability able to deliver combat equipment at speeds in excess of 30 knots. They will be strategically berthed near designated Army embarkation ports, ready for full operational service within four days of notification.

The last of 13 MPS' will deliver and form the third MPS squadron. This squadron will provide forward deployment of equipment for three Marine Amphibious Brigades and combat support for 30 days, thereby expanding the rapid global response capability of the Marine Corps. These MPS squadrons will be prepositioned in the Eastern Atlantic, Western Pacific and Indian Ocean. This concept combines the responsiveness of airlifted troops with an equally responsive sealift delivery of prepositioned combat equipment as a major improvement in our ability to form a rapid credible forward defence. Funding of the second aviation maintenance support ship (TAVB) this year will augment the MPS squadron deployments. We also will see the delivery of the first hospital ship (TAH) in 1986, providing much needed medical care.

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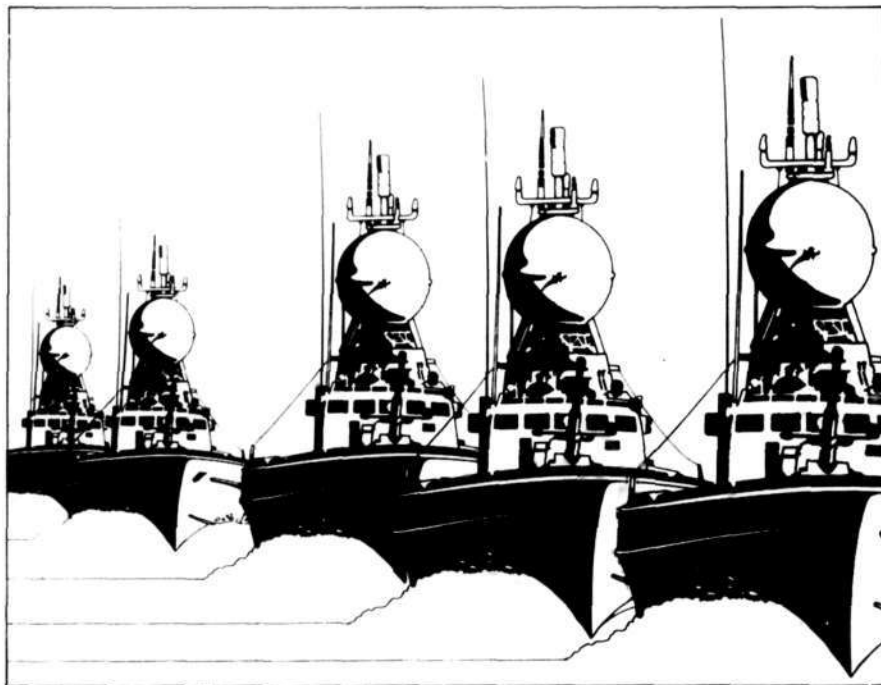
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Page Thirty

THE NAVY

## THE DUTCH NAVY IN THE SOUTH-WEST PACIFIC AREA

MARCH 1942-AUGUST 1945

by JONATHAN M. FORD

**W**HEN Hitler's armies overran The Netherlands in 1940, the major Dutch contribution to the allied cause was to come from the oil-rich Netherlands East Indies.

The Royal Netherlands Navy maintained a small but highly efficient naval squadron. It consisted of the light cruisers TROMP, DE RUYTER and JAVA, the destroyers VAN GHENT, KORTENAER, PIET HEIN, BANCKERT, VAN NES EVERTSEN, WITTE DE WITH, 12 submarines, and aircraft (including Dornier 24-T flying boats) of the Netherlands East Indies Naval Air Service. The RNN squadron was all but obliterated in the desperate defence of the Netherlands East Indies which ceased with the surrender of the Dutch attempted to send their van Starckenborgh-Stachouwer on 9th March 1942.

During the last few days before the NEI surrender the Dutch attempted to send their remaining warships and merchantmen out of the path of the advancing Japanese. The two major escape routes were either via Lombok Strait and then through to Australia, or through Sunda Strait and then onto Ceylon. Fremantle saw the arrival of the RNN submarines K IX, K XI and K XII, the troopship GENERAL VERSPYCK, steamers TAWALIE (8178 tons), TJMANOEK (5628 tons) and the minesweeper ABRAHAM CRUIJSSEN. The minesweeper had camouflaged itself with foliage so as to resemble an island and escape detection from spotter aircraft. The Dutch naval commander Admiral Helfrich took command of these vessels, as well as the TROMP which had been

sent to Australia for repairs after it took 10 shell hits from the cruiser ARASHIO during the Battle of Lombok Strait. Of the planes of the Naval Air Service, 4 RNN Dorniers and 4 RNN Catalina flying boats were destroyed in the Japanese raid on Broome (3/3/44). Another 5 RNN Catalinas and 6 RNN Dorniers were assembled with other surviving Dutch aircraft at Rathmines NSW. All but one of the Catalinas were purchased by the Royal Australian Air Force. The remaining Catalina was given to the Netherlands East Indies Intelligence Service, (NEFIS).

**T**HE Royal Netherlands Navy established its headquarters at Melbourne where it was to establish an effective liaison system with the Australian Defence Department in St Kilda Road. The RNN Depots were established at St Kilda Road and Middle Park in Melbourne. A RNN base was established on the Swan River at Fremantle. The strength of the Royal Netherlands Naval forces in Australia as at 10th June 1942 totalled 1353 men comprising 207 officers 4 midshipmen 18 warrant officers 241 NCOs 739 ratings

When on 7th April 1942, Admiral Helfrich was appointed as the Commander-in-Chief of all Dutch and NEI forces in the Far East, the

RNN command in Australia was reorganised. Helfrich moved to Washington and his replacement in the SWPA was Rear-Admiral F. W. Coester. Coester's warships were placed under the direction of the Naval commander of the SWPA — Admiral Leary. Leary's forces were nicknamed "MacArthur's Navy", with the RNN providing a welcome addition to his cruiser, minesweeping and underwater forces.

The TROMP was the first Dutch warship to be called into action when on 16th May she was ordered out from Sydney to search for a Japanese submarine which had attacked the Russian steamer WELLEN. This submarine was part of Admiral Ishizaki's 8th Submarine Squadron (I22, I24, I27, I29, I21), which was sent to eastern Australian waters, where they were to attack Australia's merchant shipping. After unsuccessful searching for WELLEN's attacker, TROMP was ordered to escort convoy "ZK8" to Port Moresby. This important convoy was carrying the first substantial reinforcements to New Guinea and was very much a Dutch affair, as the 4th AIF Brigade was carried in the Dutch merchantmen BANTAM (3332 tons), BONTEKOE (5033 tons), VAN HEEMSKERK (2996 tons), and the VAN HEUTSZ (4552 tons).

The Australian destroyer ARUNTA and TROMP left with the convoy on 18th May and arrived at Port Moresby safely, after the expected enemy submarine attack never materialised. This was because Ishizaki's submarines were preparing to launch a midjet submarine raid on the shipping in Sydney harbour. The submarines K IX and K XII together with ABRAHAM CRUIJSSEN were sent from Fremantle to Sydney because the US submarine commander Rear Admiral Charles Lockwood considered both submarines to be obsolete by US standards. Thus when the Japanese midjet submarines attacked on the night of 31st May 1942, the K IX was berthed alongside the RAN depotship KUTTABUL in Sydney Harbour. When KUTTABUL was sunk by MIDGET SUBMARINE A, the K IX also suffered the breakage of its storage battery jars.

In September 1942 Leary asked for reinforcements for his SWPA command and the Americans pressed the British to send the British Eastern Fleet to the Pacific. But the British were only able to send three RNN ships — the anti-aircraft cruiser JACOB VAN HEEMSKERK and the destroyers VAN GALEN and THERK HEDDES. These warships had served with the Eastern Fleet during the Japanese raid on Ceylon in April, when the Dutch lost three merchantmen, the BATAVIA, VAN DE CAPELLAN and BANJUEWANGI. After participating in the British occupation of Madagascar the three RNN warships sailed for Fremantle where they arrived on 25th October 1942. TROMP joined them soon after. This was to be the only chance the Dutch were to have in forming their own national surface squadron from the remaining RNN warships. The RNN warships were to be involved in the boring and uneventful task of convoy escort in the Indian Ocean from October 1942 until January 1944.



October, 1985

THE NAVY

Page Thirty-one



# TOWARDS A MORE SECURE AUSTRALIA.

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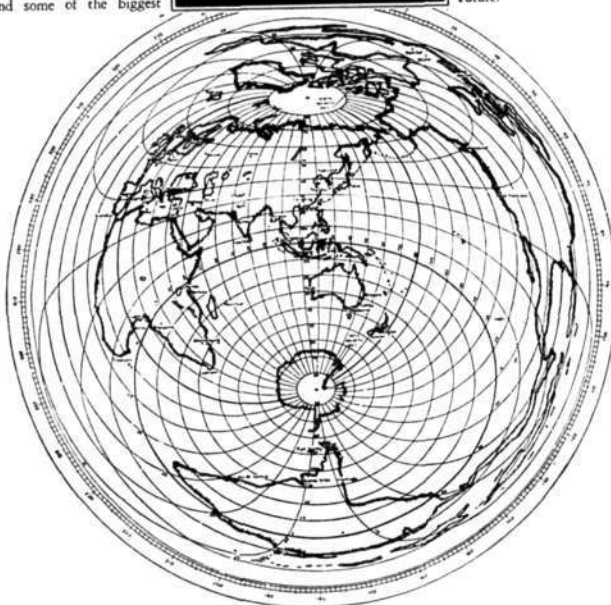
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JMA/02/1147

But even so, they were to be involved in some important missions which were allotted to Rear Admiral Lockwood's West Australian command.

ON 24th November 1942, JACOB VAN HEEMSKERK and the cruiser HMAS ADELAIDE left Fremantle on escort duty with Convoy OVI which included the Dutch vessel TARAKAN (8183 tons). At 2.16 pm on the following day ADELAIDE sighted the German vessel RAMSES (7983 tons). JACOB VAN HEEMSKERK and ADELAIDE fired on the blockade runner and caused her to sink at the stern. A total of 78 German and 10 Norwegian survivors were rescued after this action.

An important part of the convoy traffic, which the RNN warships were expected to protect, was the flow of oil tankers between Australia and the Middle East. The majority of the tankers were Dutch vessels belonging to the NV Nederlands Indische Tankstoomboot Maatschappij, the Petroleum Maatschappij La Corona, and the Nederlandsch Nieuw of Royal Dutch Shell. These tankers included the GADILA (8068 tons) and the OLIVIA (6307 tons) which was sunk by the German merchant raider THOR on 14th June 1942. Another loss occurred when the GENOTA (7987 tons) was captured by Japanese merchant raiders on 9th May 1942. These raiders were to have a totally different encounter with a Dutch tanker on 11th November 1942. On that day the ONDINA (6431 tons) was being escorted by the corvette HMS BENGAL when they were attacked by the armed merchant raiders the HOKUKU MARU and the AIKOKU MARU. The Ondina's sole 4 inch gun managed to score five hits on the HOKUKU MARU's bridge and midship structure, as well as blowing off her stern and sinking the raider. The gallant tanker had suffered two torpedo hits to Number 2 and 3 holds and her captain was killed when the bridge took a direct hit. But after AIKOKU MARU sailed off, the tanker was able to limp back to Fremantle.

As a result of this action Coster transferred the tanker to his command, where she acted as the RNN depotship in Western Australia. She moved to the submarine base at Exmouth Gulf and it was there she played a part in "Operation



HMAS Abraham Crispien

Jaywick" — the allied commando raid on Singapore. When the commandos arrived in their vessel KRAIT, on 1st September 1943, they obtained oil and water supplies from the ONDINA.

COSTER's surface forces were directed by the Australians for use in two similar operations which were to have far different results. On 4th May 1942, six Dutch soldiers together with eleven Australians escaped from Ambon to Darwin in the Dutch lugger GRIFFOEN. They reported that 800 Australians and 200 Dutch prisoners-of-war were held under light guard at Tan Toy on Ambon Island. The Director of Plans of the Australian Navy Office proposed that TROMP and the destroyer HMAS ARUNTA be used to transport a commando force which would rescue the Allied POWs. Although Coster accepted this plan with some reservations, Admiral Leary believed the mission would end in failure and refused to grant permission for the attack. Dutch and Australian guerrillas had been operating on Timor since February 1942.

When HMAS ARMIDALE was sunk while carrying Dutch reinforcements to Timor, the TJERK HIDDES was sent from Fremantle to Darwin to help search for survivors. Then on 9th December 1942, the RNN destroyer ferried 49 sick and wounded guerrillas, 64 members of the Australian 2/2nd Independent Company, 192 Dutch troops and 87 Portuguese civilians from Timor to Darwin. Between 10th and 19th December the TJERK HIDDES successfully

evacuated 950 people in three trips and subsequently her captain, Lt Cdr W. J. Kruijs was recommended for an American Legion of Merit award.

The most important task assigned to the Dutch surface warships was the escorting of the "Pamphlet" convoy, which carried the Australian 9th Division from the Middle East to Australia. The TROMP and JACOB VAN HEEMSKERK took over the escort for the convoy from a British naval squadron and then led it to Fremantle on the 18th February 1943. The two Dutch warships then formed part of the escort for that part of the convoy which sailed to Melbourne. After completing this task, the JACOB VAN HEEMSKERK strengthened the escort for the remainder of the convoy which reached Sydney without incident on 27th February 1943. The RNN warships had been assigned to strengthen the convoy's escort so as to alleviate the fears that were felt for the vital convoy's safety by the Australian government.

THE other Dutch surface warship in Australia, the ABRAHAM CRISPIEN was to have a chequered career. After May 1942 the minesweeper was held at Melbourne until a suitable fate could be decided for her. Being equipped for both minelaying and minesweeping she was of interest to the RAN which acquired the minesweeper on loan from the Dutch on 28th September 1942. She was used for escort duties and was handed over for British operational command on 20th August 1943. In April 1945 she was again under Dutch command and she was sent to Darwin to act as depot ship for the RNN motor torpedo boats MTB 26 and MTB 33. She was the only RNN warship to participate in a Japanese surrender, when on 7th September 1945 she was part of the Allied force sent to accept the surrender on Timor.

The Dutch submarine force maintained its presence in the South-West Pacific Area up until the end of the Pacific War. The K IX was ordered to be decommissioned on 15th July 1942. She was transferred to the RAN for use in anti-submarine training on 27th September. Having spent more time in dry-dock under repair than at sea, the K IX transferred back to the RNN on 31st March 1944. It was decided to convert her to an oil hulk, and she was ordered to Darwin to service the RNN warships stationed there. But before reaching Darwin, the K IX broke her tow, and ran ashore where she was abandoned as a wreck.

The K XII was placed at the disposal of the Netherlands Indies Forces Intelligence Services (NEFIS), which used her for 4 patrols until mid-



K9



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*Abraham Crijnsen camouflaged*

June 1943. These patrols involved the landing of Allied agents on Java. During one such patrol in November 1942 the submarine was approaching Fremantle when she was mistakenly attacked by an American aircraft, but suffered no damage. The K XII was transferred to Vice-Admiral Lockwood's Task Force 71 (submarines) and took part in asdic exercises with Allied aircraft and surface warships. On 12th April 1944 the K XII was decommissioned and was sold to Luna Park in Sydney.

layer ITUKUSHIMA (1970 tons) and damaged her sistership the WAKATAKA with a torpedo. On 18th February 1943 she damaged an unknown Japanese merchantman and this was to be the Dutch submarine's final "big kill" in the Pacific. In May 1945 she sailed from Fremantle to Dundee in Britain.

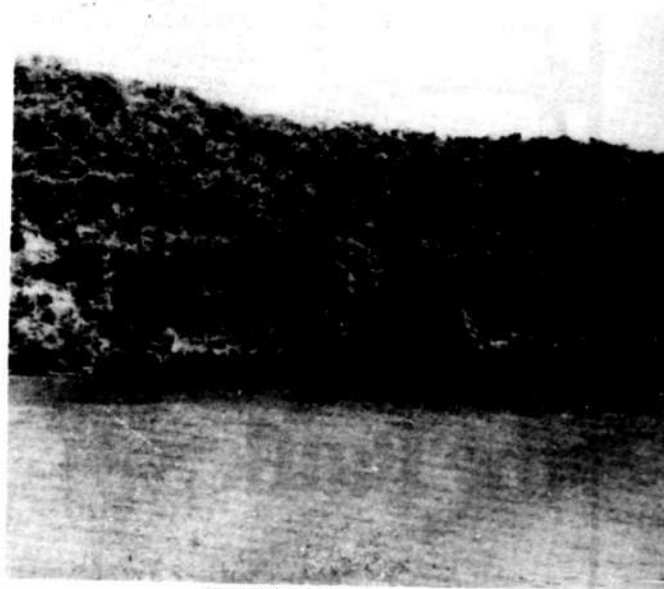
The 0.19 scored her first success on 16th November 1944, when she sank the Japanese coastal vessel KAISHIN MARU No 2 (150 tons) by gunfire. The submarine then proceeded to lay a minefield in Bantam Bay (north of Java) where another Japanese merchantman was claimed. The 0.19 suffered a severe depth charge attack after this incident, but she managed to limp back to Fremantle for repairs. On 9th January 1945 the 0.19 sank the converted gunboat SHINKO MARU (934 tons) by torpedoes. The Dutch submarine claimed the Japanese tanker the HOSEI MARU (896 tons) on 9th January 1945. On 22nd April she was accredited with damaging by torpedoes the Japanese heavy cruiser ASHIGARA (12,000 tons). But fate was against the 0.19 and on 8th July 1945 she sank after striking a reef in the South China Sea. Her crew were saved by the USN submarine COD which was patrolling the area at the time.

The 0.19, K XII and the ZWAARCHVISCH all participated in NEFIS patrols which included gathering information from captured fishermen. For example, on 23rd June 1944, the prahoe DOENIA BAROE was sunk near Pasi Iph by the K XII and the 4 crew members were taken on board for questioning in Australia.

**F**OUR other RNN submarines were to arrive in Australia before the cessation of hostilities. In April 1944 the K XIV arrived in Fremantle for use in NEFIS

**B**y August 1944, the British Eastern Fleet had far more submarines than could be fully employed in their operational area (normally the Malacca Straits). The British proposed therefore, that their submarines could be sent to operate from a base in Western Australia, and from there attack the South China and Java Sea areas. Thus the 8th Submarine Flotilla including the Dutch submarines ZWAARDVISCH (Swordfish) and 0.19 transferred to Fremantle at the end of their August/September patrols. The ZWAARDVISCH arrived at Fremantle on 7th September 1944 and the 0.19 arrived on 18th September. The ZWAARDVISCH operated in the Java Sea, South China Sea, and Malacca Strait and claimed its first victim on 4th October when it sank a 500 ton Japanese coastal tanker. On the same patrol on 6th October, the ZWAARDVISCH obtained its most notable success when it sank the German submarine U-168 in the Java Sea. The survivors were taken on board the Dutch submarine but conditions became so cramped, that it was decided to transfer 22 Germans to a passing native fishing boat which took them to Penang Island. The German captain Helmut Aich, his three officers and an injured sailor were taken back to Fremantle.

The Dutch submarines divided their patrols thus: ZWAARDVISCH patrolled the South China Sea while the 0.19 operated in the Java and Flores Sea as well as their old hunting ground of the Malacca Strait. ZWAARDVISCH sank the Japanese motorship KOEI MARU (19 tons) on 10th October 1944, and 5 days later she sank the KAIYO MARU No 2 (143 tons). On 17th October she sank the Japanese mine-



*Abraham Crijnsen camouflaged.*

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patrols. She damaged the Japanese minelayer TSUGARU (4400 tons) on 21st June, but the enemy warship was finished off by the US submarine DARTER on 29th June. On 25th June the K XIV sank a Japanese landing craft by gunfire near Samana in the Moluccas. The K XI arrived in Fremantle from Bombay in April 1945. As the British were supplying newer submarines to the Dutch, the K XI was decommissioned on 11th April. In February 1945 the K XV was based at Ceylon under US operational patrol. She was used in NEFIS patrols leaving from Darwin and Exmouth Gulf, and she continued this work until the war's end. The TIGERHAAL (Tigershark) arrived in Fremantle in August 1945 but undertook no patrols before the Japanese surrender.

The Naval Air Service of the Royal Netherlands Navy continued to operate in 1942, using its sole remaining Dornier Flyingboat. This aircraft was used to maintain contact with Lt de Brume's guerrillas in Dutch New Guinea. In October this aircraft, the sole reminder of the old two-tiered system of Dutch airpower, was disposed of when it was lent to the RAAF.

The contribution of the Royal Netherlands Navy to the war in the South-West Pacific Area was limited by the small number of RNN warships involved and the limited tasks they were assigned. It should be remembered that when the now famous US 7th Fleet was formed in 1943, one-third of its cruiser force was Dutch, while it also included two Dutch destroyers and a RNN minesweeper. The Dutch vessels had provided the bulk of Vice-Admiral Lockwood's surface forces in Western Australia (two-thirds of his cruisers and destroyers), and after the loss of HMAS VOYAGER during the Timor

evacuation, the VAN GALEN and TIGERHIDE were the only destroyers remaining under his command. Indeed it was ironic that the Dutch navy should be called upon to defend the very shores where 300 years before, their ships had been driven into the reefs, therefore contributing the first pieces of knowledge about this continent.

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0.19 minelaying submarine. 1536 tons, complement 55. 1 x 3.5" gun, 2 x 40mm AA, 1 x 12.7mm AA, 8 x 21" torpedo tubes (4 bow, 2 stern, 2 amidships). 40 mines.

K IX submarine. 712 tons, complement 31. 1 x 3.5" gun, 1 x 12.7mm AA, 4 x 17.7" torpedo tubes (2 bow, 2 stern).

K XI & K XII submarines. 815 tons, complement 31. 1 x 3.5" gun, 1 x 12.7mm AA, 2 x 21" torpedo tubes, 4 x 17.7 inch torpedo tubes (4 bow, 2 stern).

K XIV & K XV submarines. 1000 tons, complement 38. 1 x 3.5" gun, 2 x 40mm AA, 8 x 21" torpedo tubes (4 bow, 2 stern and 2 at midships).

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# BOOK REVIEWS

## RIVERINE

### A Pictorial History of the Brown Water War in Vietnam

By Jim Mesko

Published by Squadron Signal Publications

Review: Copy from Thomas C. Lathan

11 Munro St, Port Melbourne, Vic 3207

Reviewed by Ross Gillett

Since the end of the Vietnam War many books have been published describing the air and land operations of that conflict. However, a most important phase of the overall military effort, the riverine conflict, has been sadly neglected.

To meet the challenge on the rivers of South Vietnam, a vast array of small craft, few of which were ocean-going, satisfied a variety of tasks along the coast and into the rivers and canals which dissected the war-ravaged countryside.

According to the author, the type of warfare waged on the inland and coastal waters of Vietnam was last practised by the USA during the Civil War, almost 100 years earlier. As a result, many of the tactics were based on the earlier experiences of the French Union Forces or were developed through trial and error.

After a comprehensive description of the French river forces employed after the Second World War, the author progresses through chapters detailing the early years of the Vietnamese Navy and the USN's Brown Water Fleet. Specific mentions are made of Market Time, Harbour Defence and the role of the US Coast Guard.

Throughout the book, the narrative is supported by a large number of black and white and colour illustrations, each meticulously captioned. The variety of craft employed during the war ranged from STABs (SEAL Team Assault Boats), to MSBs (Non-Magnetic Minesweeping Boats), to PCFs (Swiftboat/Inshore Patrol Craft).

As well as built-for-the-purpose craft, the US developed a large number of riverine craft converted from landing craft. These included ATCs (Armoured Troop Carriers), CCBs (Command Communications Boats) and River Monitors, armed with a 40mm cannon, 20mm and 50 calibre guns, some were even modified as rocket boats and others with small helicopter flight decks!

At only \$15.95, 'Riverine' is strongly recommended to readers whose interest is the USN, small craft or the Vietnam War.

## "THE COMPLETE ENCYCLOPEDIA OF BATTLESHIPS AND BATTLECRUISERS"

By Tony Gibbons

Published by Salamander Books Limited, London

Available in Australia from Hodder & Stoughton Ltd, Lane Cove

Price \$29.95

Reviewed by Vic Jeffery

"The Complete Encyclopedia of Battleships and Battlecruisers" is a technical directory of all the world's capital ships from 1860 to the present day.

In this superlative volume, Tony Gibbons has recorded the history of every class of battleship and battlecruiser that were designed between the introduction of the first ironclad — the French "GLOIRE" of 1860 — and the appearance of the Soviet Union's battlecruiser "KIROV" in 1980. In that expanse of time 324 classes of battleship and battlecruiser were designed and they are all here in this 272 page volume.

This unique work of reference is divided into ten sections, 1860-1869, 1870-1879, 1880-1889, 1890-1899, 1900s pre-Dreadnoughts, 1900s Dreadnoughts, 1910-1919, 1920-1929, 1930-1939 and 1940 onwards. Each section is prefaced by an introduction that examines the technological developments of the period and the factors influencing naval policy.

Each entry includes tabular data on launch and completion dates, dimensions, armament, engines and performance, armour, other ships of the class and complement. Service careers, refits and conversions are also included.

Superbly illustrated, this book includes 130 photographs, 15 line

drawings, four paintings, 322 comparison silhouettes and an amazing 496 painted representatives of every major class in immaculate detail. Each of these having been painstakingly prepared by the author, most in full colour.

This volume is further enhanced by excellent layouts and its easy to read format. One would generally expect to pay much more for a work of this type. Tony Gibbons is to be congratulated on the thousands of countless hours he has dedicated to this magnificent book. One of the finest books ever produced on battleships and battlecruisers. A must for every naval enthusiast. Most highly recommended.

## CONWAY'S ALL THE WORLD'S FIGHTING SHIPS, 1906-21

Published by Conway Maritime Press

Edited by Randal Gray

Reviewed by Ross Gillett

At long last the final volume of Conway's impressive series of the World's Fighting Ships has been published. It was back in 1979 that the first volume, 1860-1905 was released.

Since then, readers have enjoyed the 1922-46 and 1947-82 periods. Because the current volume covers only a 16-year period in over 425 pages, much more emphasis has been given, especially in the Great Britain section, to the individual careers of the battleships, cruisers, monitors and aircraft carriers.

Each country is preceded by an historical account describing the important political and technical developments, concluding with a statement of the Fleet Strength in 1906.

The quality of photographs is, as usual, up to the high standard set by Conway in their earlier volumes, with most being seen for the first time. However, I wish much the same could be said of the layout. For instance, on page 59 there is a photograph of HMS CONCORD under the listing for the Cambrian class light cruisers, but the entry for CONCORD is on page 60. The photograph of the German battleship BADEN appears on page 150, two entries distant from its associated table and narrative.

For the RAN, many of its ships from the mid-war period are described under their original Royal Navy groups, such as the V and W class destroyers, which appear as three distinct groups: V class Flotilla Leader (VAMPIRE), V class Destroyer (VENDETTA) and W class destroyers (VOYAGER and WATERHEN).

Supporting the hundreds of photographs are numerous, specially-prepared line drawings, showing the original or as completed profiles. From Great Britain to Zanzibar, the naval historian should look no further than Conways for a bright and intelligent description of the navies of the world. Strongly recommended.

## BRITISH WARSHIPS & AUXILIARIES (1985-86 Edition)

By Mike Critchley

Published by Maritime Books

Reviewed by Ross Gillett

As an instant ready-reference to the Royal Navy and Royal Fleet Auxiliary, I found "British Warships & Auxiliaries" a most entertaining publication.

The book is over 110 pages in length and includes a half-page photograph of all classes of vessels currently in service. The table and adjacent narrative provide the basic facts and figures to this handy reference work. Small sections are also devoted to the Fleet Air Arm and Army vessels, as well as a list of pendant numbers divided into ship types.

In his foreword to the book, Mike Critchley examines the Royal Navy in 1985 and then discusses both its merits and the problems now being encountered. A small colour section is included, however, I wish the book designer had kept all the horizontal photographs facing the same way. The colour photograph of RFA RELIANT, the new aviation support ship, is very interesting. Surely the RAN could do the same!

The final page of "British Warships & Auxiliaries" is devoted to ships at the end of the line and those awaiting sale or scrapping. Well worth the investment.

# BOOK REVIEWS

## BALTIC ASSIGNMENT: BRITISH SUBMARINERS IN RUSSIA, 1914-1919

By Michael Wilson

Published by Leo Cooper in association with Secker & Warburg

Reviewed by Peter Farr

In October, 1914, Roger Keyes despatched three E-class submarines to operate in the Baltic against the Germans. His move was one of the first offensive deployments in the First World War and was a clear demonstration of Keyes' 'offensive spirit' which so appealed to Churchill in the Second World War that he made Keyes Director of Combined Operations long after Keyes had retired. The three submariners that Keyes chose were the elite of the Royal Navy's submarine service. Each was to rise to command that service. Martin Nasmith, who did not manage to reach the Baltic, was later awarded the VC for submarine operations in the sea of Marmora. Max Horton, C-in-C Western Approaches in a later war, and Noel Laurence, who did make the perilous passage into the Baltic, became the first RN commander (other than Charles Lucas) to operate in that most perilous of seas, since Saumarez took VICTORY into the Baltic in 1807. Both were signally successful and were to be promoted and awarded the DSO. For some time the Baltic was known as 'Horton's Sea' and Laurence was known, after torpedoing the German battleship MOLTKE, as the 'Saviour of Riga'. These two officers and a third, Francis Cromie, were to become the scourge of the Germans in the Baltic.

This book, then, is the account of those operations. The author Michael Wilson joins a long line of RN officers who became naval historians. Included among them are Reginald Bacon, who wrote a life of his patron, Lord Fisher; Jellicoe himself, Cunningham, who through 'A Sailor's Odyssey' brought home the reality of war in the Mediterranean; Donald McIntyre, Peter Kemp, and that doyen of naval historians who were former serving officers, Stephen Roskill.

Alas, Michael Wilson is no Stephen Roskill. The book is interesting because the story is interesting. The style of Wilson is disjointed and grating and the substance of the book concentrates too much on Cromie to the detriment of others. The selection of photographs is poor, given the fact that Wilson had access to the RN Submarine Museum at Gosport. For example, there are no photographs of either Kennedy or Laurence, despite the fact that there are good ones of these Officers in those archives. Referencing is non-existent and Wilson cannot decide if he wants to write pop history or serious history. We have had the pop history with 'A Damned Un-English Weapon' and 'By Guess and by God'. It is now time for a serious history in the Marder fashion. This book is not it.

Despite these misgivings, I must recommend Wilson's book as the most complete account of RN submarine operations in the Baltic yet published.



HMAS SYDNEY, light cruiser, 1913-28.

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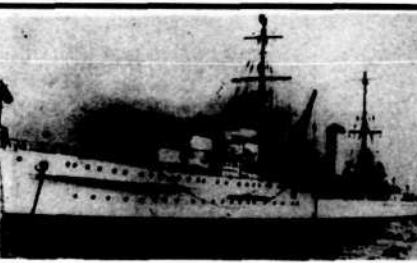
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HMAS AUSTRALIA, heavy cruiser, 1928-55.



HMAS SYDNEY, light cruiser, 1935-41.



# NAVY LEAGUE and CADET NEWS



Dear Sir,  
I am writing on behalf of the above Committee to ask for support in our fundraising efforts, designed to raise money to build a Headquarters and Training facility on the banks of the Nepean River at Penrith. Specifically, we are asking for support with our BUY A BRICK CAMPAIGN.

The Building will require 41,000 bricks, and the opportunity to donate money for their purchase for the Project at \$1 per brick is offered to persons or organisations wishing to assist the Unit in its objectives.

All donations to the NRC Building Fund — Penrith, are deductible for tax purposes, and as a member of the League, I would appreciate the circulation of our cause and needs to your membership.

Yours faithfully,

Frank J. Syranamual, Secretary.

## SPONSORSHIP APPLICATION FORM

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Please make all cheques payable to:  
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and post to:

Secretary  
Unit Committee, TS NEPEAN  
PO Box 695  
PENRITH, NSW 2750

## BACKGROUND NOTES

TS NEPEAN Naval Reserve Cadet Unit, based in Penrith was originally begun in 1979 by members of the Nepean Blue Mountains Sub Section of the Naval Association of Australia.

The Unit was officially recognised by the Naval Reserve on February 1, 1981, and was then based at the Kingswood Armament Depot until June 1982, when it was moved to its present location on MWS&DB land in Memorial Avenue, Penrith.

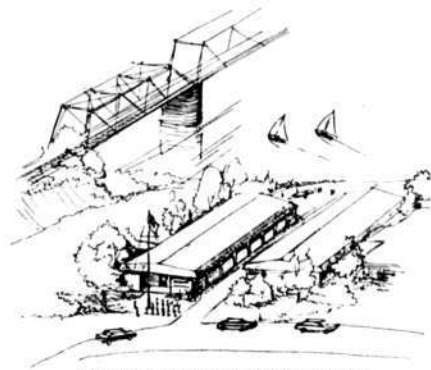
On August 4, 1983, the Unit's building and contents were destroyed in a fire lit by vandals. The fire destroyed many valuable training materials and historical items which had been donated over the years.

In October 1983, the Unit Committee (P&C) Building Committee submitted a comprehensive application for a CEP grant to build a New Headquarters and Training facility on land granted to it in the Weir Reserve, Penrith. In August 1984, the Committee contracted for the concrete slab to be laid to assist in the Grant application which was subsequently rejected. The total expenditure to date on the Project by the Committee, is \$41,000.

The Building Committee now is hoping to raise the necessary funds to complete and open the building in time for the 75th Anniversary of the RAN in July 1986. The immediate requirement is for an estimated \$55,000 for the steelwork and roofing so that voluntary assistance can be used for brickwork, exterior and interior.

The Building when completed will bring to the Weir Reserve and Penrith, an attractive and needed asset, providing a positive and viable alternative for the Training and Development of the youth of the District.

The Unit currently has a complement of 35 male cadets, and 10 female cadets with six officers and instructors. This is currently under pressure with a waiting list of young people wanting to join. The new facility will provide accommodation for up to 100 cadets, plus staff.



Proposed new headquarters and training facilities.



HMAS BRISBANE, light cruiser, 1916-35.



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