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AUSTRALIAN NAVAL INSTITUTE

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b. to provide a forum for the exchange of ideas concerning subjects related to the Navy and the Maritime profession.

c. to publish a journal.

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The front cover shows HMAS *FREMANTLE* photographed from Sydney Harbour Bridge, 16 January 1981.

— by courtesy John Mortimer

Correspondence

LAST ANI JOURNAL

Dear Sir,

Just a few comments on the excellent articles in the February 1981 ANI Journal for which I thank you very much.

I enjoyed the article regarding US Fleet Admirals and would like to see articles on Admirals past and present of the RN and RAN. These would be very interesting so that's an idea for the writers.

Regarding the article on the 'Early Days of Australian Naval Aviation', I would like to direct member's attention to the articles by Group Captain Keith Isaacs AFC which appeared in four parts in the 1974 NAVAL HISTORICAL REVIEW, published by the Naval Historical Society of Australia. For anyone interested in buying these back number of the REVIEW, they can be obtained from Mrs. Denise Alsop, Honorary Secretary, Naval Historical Society, P.O. Box 320, Carlingford, NSW, 2118.

Sub-lieutenant Leschen's article, 'Ice Patrol Ship Operations in the Antarctic', is another of those articles which have appeared in the Journal, giving one a very good understanding of the men, the ships and the work involved, plus hardships encountered in the Antarctic. About the *ENDURANCE*, I think we could very well do with a ship like her of our own, but modified to suit Australian conditions.

Congratulations to the winners of the ANI awards! I think the system of awards is very good. It encourages and shows appreciation for the time-consuming work of writing the excellent articles which we all enjoy and gain so much knowledge from. Best wishes to all who are willing to have a go at writing something for the Journal.

Yours faithfully,

ERIC JEHAN

'Nirvana'
71 Railway Parade,
Mortdale, NSW. 2223

ORAL HISTORY

Dear Sir,

Anzac Day 1981 clearly indicated the way in which death has taken a savage toll amongst the men who served during WW1. Considering that WW1 occurred soon after the formation of the RAN, it is obvious that those men who served in the RAN at its beginning must now be few in number. This being the case I believe that it is important that the personal accounts of these remaining men should not be lost forever but recorded for all future members of the RAN and for history.

I therefore ask whether it would be possible for the ANI and its chapters to attempt firstly, to locate those men who served during the early years of the RAN and secondly, to record on tape their accounts of service life in the early RAN.

I myself know one such member who served in HMAS *AUSTRALIA* during WW1 and who is still of sound mind though in his late 80's. I would certainly be prepared to interview him provided that my work formed part of a properly structured and clearly defined programme. I ask therefore the ANI, its chapters and members, to consider my question and its implications and the way in which it could be carried out. I need not stress the fact that this matter should be treated as one of some urgency.

Yours faithfully,

KERRY CLANCY
Lieutenant RAN

Department of Defence
RUSSELL A.C.T.

NOM DE PLUMES

Dear Sir,

Thank you for your footnote to my letter in the November 1980 issue.

It may well be the prerogative of the author to be anonymous but it is more certainly the prerogative of the editor to lay down his own policy about what he prints. (Shades of *Delane* and *The Thunderer.)*

I have searched through the USNI Proceedings, RUSI Journal, Mariners Mirror and others of their ilk, and can find no **NOMS** de PLUME.

Come clean 'Master Ned' and tell the world who you are or for ever hold your peace.

Yours faithfully,

R.J. BASSETT
Commander RAN (Rtd)

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Albrighton
Nt. Wolverhampton
UK WV7 3ED

FROM THE SECRETARY'S DESK

The SEAPOWER 81 Seminar is now over and the Council is well pleased with the way in which it has advanced the aims of the Institute. The Seminar was sold out, and the quality of the speakers ensured that the key speeches received wide publicity. Speaking personally, I felt that everybody from industry and government, as well as members, received excellent value for their money.

Should any member wish to purchase copies of the Proceedings, they can order a copy through me for $12.00. I commend the speeches to all members.

I have received two letters from members complaining that they have not received **any** Journals. If anyone else is in this unfortunate position, please let me know and the situation will be corrected immediately.

FROM THE EDITOR

The Australian Naval Institute's second National Seminar, SEAPOWER 81, held in Canberra on 10-11 April 1981, was a great success with nearly four hundred ANI members, distinguished visitors, defence industrialists, leaders of the Australian defence community and other interested persons packing the H.C. Coombs Theatre at the Australian National University for each session of the Seminar. Full marks must go to the Seminar Director and his team for their impeccable organisation.

All in all, SEAPOWER 81 was another important milestone in the development of the Australian Naval Institute. It will be a hard act to follow for the organisers of the third National Seminar!

Leading the major articles in this Journal is an account of the loss of the first HMAS *VOYAGER* by a former Chief of Naval Staff, Vice Admiral Sir Henry Burrell KBE CB. Admiral Burrell adds his personal experience as a specialist navigator to new historical research to give a gripping account of this hitherto little known incident of Australian World War II naval history. There is some lesson in this story for all with an interest in the naval profession. One cannot help but be struck by the narrow dividing line which can exist in war between on the one hand, success, honour and glory, and on the other, failure and bitter personal disgrace. The story of the loss of the first *VOYAGER,* and the personal sequel for her Commanding Officer, leave behind the nagging doubt that all is not fair in love and war.

Other major articles include the case for an Australian Offshore Patrol Vessel prepared by the late Alan Payne, not long before his death last year, and an account of the design development of the US Coastguard's 'Famous' Class cutters (sometimes known as the WMEC-270s). The latter article makes interesting reading in conjunction with the two articles by Ken Hope on destroyer design considerations in the ANI Journals of November 1979 and August 1980.

Finally, I would like to draw the attention of readers to the notices in this journal for ANI insignia, journal binders and back copies of the Journal. New stocks of crests, cuff-links and binders have been obtained. Several back numbers of the Journal are now out-of-stock but copies of the reprinted Volume 1 Number 1 are available at $7.00 per copy. This higher price is necessary because only a small re-run of 50 copies was made of this original journal.

A *LUTA* Class destroyer during the Chinese ICBM Firings in the South Pacific, May 1980
— Defence Public Relations photograph

COLLECTIVE SECURITY — A VIEW FROM WASHINGTON

by Tom A. Friedmann

Australia is one of the few nations thoroughly familiar with both the theory and practice of what has come to be known as *collective security*. As one of the 'Old Dominions' of the British Empire and later through multinational treaties, particularly the ANZUS Pact, the Commonwealth has recognized that her limited human and material resources were insufficient to defend the continent. She has fought, with honour and distinction, mutual enemies lurking in the North Sea, in the skies over Europe, in the deserts of Arabia, and the jungles of the South Pacific. At the same time these foreign foes were being soundly handled on the field of battle, Australia's governments and senior military officers became adept jousters in a form of fierce combat well known to smaller powers, namely to preserve the identity and integrity of the Australian Armed Forces.

Since the Second World War, however, the western democracies have been lulled into a sense of false security. The threat to the state and its alliances has resumed its old garb, namely lethargy. Although Korea, Malaya, Vietnam, and numerous other conflicts put into question the term 'peacetime', the world has still escaped a major conflagration. It is this lack of major hostilities that has caused the West to ignore its defences. Not until the Soviet invasion of Afghanistan did some of the democracies, in particular the ANZUS nations, realize that an increased military posture was necessary.[1]

Australia has begun the long and expensive process of improving her armed forces, thereby acknowledging the need to be better able to defend herself[2] and to assume a more active role in the defence of the South Pacific. Naturally, these improvements provide more strength to the forces bound by treaty, such as ANZUS, with the concurrent benefit to Australia of giving her a stronger voice in alliance councils.

While all three of the armed services in Australia are to be upgraded, particular attention will be paid to the Royal Australian Navy, a most important, if belated, consideration for a country as reliant on the oceans for trade and security as is Australia.[3]

Australia's acknowledgment that she must be better able to defend herself and her acknowledgment of regional responsibilities does not mean she is adopting a 'go it alone' policy.[4] The reliance on the United States remains a cornerstone of her defence policy and cooperation between the two nations is probably closer now than at any time since the Vietnam War.[5] This cooperation has been outwardly manifested in many ways beyond staff exchanges and joint exercises.

Australia has consented to allow U.S. Air Force B-52 bombers to land in Darwin after missions over the Indian Ocean, broadening previous policy of only allowing such aircraft to fly over Northern Australia during training flights from Guam.[6] The United States is being allowed to upgrade the capabilities of the Harold E. Holt Communication Station at North West Cape, already 'the most powerful of three main stations commanding America's worldwide submarine force.'[7] But perhaps most interestingly, and certainly the element of cooperation with the most far reaching implications for both nations, is the proposal to expand the base facilities of HMAS *STIRLING* at Cockburn Sound in Western Australia to enable it to act as a home port for at least one U.S. Navy aircraft carrier to be stationed in the Indian Ocean.

Prime Minister Fraser's suggested use of the base, while still in the talking stages, would require major commitments by both sides. The points to consider are numerous for a project that would be many years from completion, even if construction commenced today.

HMAS *STIRLING*, surveyed by eight USN officers in April, 1980, can currently service four

THE AUTHOR

Tom Friedmann is an American lawyer with a keen interest in military and naval affairs and U.S. defence policy. He is a graduate of Indiana University and the Washburn University School of Law. He is now employed by a Washington law firm whilst working part-time toward the degree of Master of Laws in Taxation at Georgetown University. He is a member of the Australian Naval Institute.

destroyers and smaller vessels, far from the total number of American and Australian ships that could be expected to use the facility if it becomes an American home port. Extensive dredging as well as workshop construction would be required. Although Australia has indicated a willingness to share some of the expenses, the United States is looking at the possible expenditure of hundreds of millions of dollar at a time when the new Reagan Administration is making drastic cuts in the national budget. Procurement of such large sums for overseas investment, despite increased awareness of the need for improved defence capabilities throughout the nation as a whole and in the Congress, might prove to be extremely difficult to procure, if not totally impossible.

The potential impact on Western Australia must be considered. Perth, capital of Western Australia and always a favourite USN liberty port, is 30 miles from Cockburn Sound. Rough figures approximate that at least 10,000 American servicemen and their dependents would be attached to the base. Western Australians are apparently not adverse to having an American fleet aid in their defence. However, great care will have to be taken to protect the ecology, culture, and identity of the State from the obvious problems that will be caused by injecting such a tremendous number of foreigners into a sparsely populated area where friction with the South Eastern States of the Commonwealth is not unknown. Being a good neighbour will take time, patience, consideration, and a great deal of effort on both sides.

The benefit of home porting U.S. naval vessels overseas is the desire to save at least 25% of the time required to reach their stations at sea. The major alternative bases, whether a new American fleet is activated for the Indian Ocean or ships continue to be assigned to the Mediterranean or Pacific Fleets, are Rota, Spain; Subic Bay, The Philippines; and Yokosuka, Japan.[8] Except for Yokosuka, the bases are remarkably similar in distance to projected trouble spots off the Persian Gulf. However, there are other problems.

Yokosuka is already overcrowded and serves as a home port for one American carrier force. The political problems of stationing more forces in Japan at a time when the Japanese Government is considering, despite the nation's anti-war constitution, increased military expenditures makes such a proposal untenable. The extra distance from the Indian Ocean, when compared to other alternatives, however, remains the primary drawback from this proposal.

Opposition to the Marcos dictatorship in the Philippines, that government's increasing demands for higher payment for present American facilities, and, again, base overcrowding, make Subic Bay a dubious place for the U.S. to spend more money to increase and modernize facilities and a particularly questionable location in which to locate more American civilian personnel and military families.

The most persuasive point in favour of Cockburn Sound regards the transit of ships from their base to the Indian Ocean. Ships moving from Yokosuka, Subic, and Rota would be required to transit the narrow and highly travelled waters of the South China Sea and Mediterranean to reach station. All share an even more important obstacle of passage through restricted entry passages, the former via the Strait of Malacca and the latter through the even more vulnerable Suez Canal.

Cockburn Sound provides for open transit to the projected target area. It provides facilities in a democratic country with a stable government and long military tradition. Only the fact that little if any mileage is to be saved in travel time from already established American bases argues against HMAS STIRLING.

The major obstacle to home porting an American carrier in Australia at this time appears to be that the USN is currently suffering from an acute shortage of active carriers. Our commitments to NATO and Japan are straining our carrier force to its limits. Various proposals have been made to remedy the situation.

Over the long term, the Reagan Administration is pledged to a major increase in the size of the USN.[9] The Administration has already requested funds for another *NIMITZ* class carrier and more will probably be funded in the future. However, even if those ships were laid down today, they would not enter the fleet until 1988 at current building rates.

More immediately, the carrier *ORISKANY* is scheduled to be reactivated. The ship's aircraft complement is not yet finalized but it might include Harriers. If this aircraft can prove itself as versatile to the USN as it has to other navies, opposition to V/STOL aircraft in the USN could be overcome. This in itself might allow for the recommissioning of at least one more of the remaining *HANCOCK*-class ships.[10] But recommissioning such old vessels is merely a necessary stop-gap made harder to accept by the almost $500 million price tag placed on the recommissioning of the *ORISKANY*. An older, less modernized, vessel would undoubtedly take more funds urgently needed for new construction. It is in the area of new construction that Australia could be of enormous help to those who acknowledge the need for a rapid expansion of the American fleet.

The RAN is entering the critical decision making period regarding the replacement of HMAS *MELBOURNE*.[11] Australia's selection of an American company to build its carrier could give small carrier proponents in the United States a strong position from which to argue, namely that

our ship yards are again familiar with the technique of building small carriers and we should capitalise on that experience. Australia could be of further assistance in promoting the small carrier concept for the USN by persuading other smaller naval powers to replace their carriers, to become carrier powers for the first time, or to re-enter the carrier field, through the purchase of American ships, basing her argument on the RAN's previous experience with American built ships. It is an axiom of the shipbuilding industry that the more ships constructed to a single plan, the lower the per unit cost; a point surely not lost on the planners in Canberra.

The implications of the changed defence relationship between Australia and the United States are tremendous for both sides. Australia will have to make decisions that will affect her sovereignty and territorial integrity. If agreement on the use of Cockburn Sound could be reached with the United States, it will be the first time that an extended permanent base has been available to any nation in peacetime.[12] Debate has already reached to the highest political levels with Parliamentary Labor Leader, Bill Hayden, arguing that if Cockburn Sound becomes a base for U.S. nuclear-powered ships that it would make Perth a prime target in the event of a nuclear war,[13] an argument already advanced regarding the communication facility at the North West Cape. As much as possible in Australia's political system, a unified political consensus should be sought for any proposed base so that development of HMAS *STIRLING* will be able to proceed at a steady pace backed by a stable base of support.

A relationship that goes beyond any other 'special relationship' that the United States has with any other country links this country with Australia, New Zealand, Canada, and the United Kingdom. Common language merely provides the mortar that supports common democratic institutions and history. It is our shared institutions and history that stand as a beacon for others to follow. Politicians in the Dominions and the U.K. must be forced to face what should be obvious to them. Those nations will not be spared in the event of a nuclear war between the U.S. and any potential adversary. Even if they escape physical destruction from such a holocaust, no potential adversary of the U.S. will allow the U.K. and the Dominions those common institutions to continue. To put it another way, there could be life but life without freedom. The question is, would this be a life worth living? Our common history tells us it would not.

Cockburn Sound is another in a series of joint actions in peace and war that Australia and the United States have taken to protect their common heritage. Hopefully this mutual sharing of resources in peace will keep us from ever having to use them again in war.

NOTES

1. See, generally, *Communique of the Twenty-ninth ANZUS Council Meeting*, Washington, D.C., Feb. 26-27, 1980.
2. *Report of the Delegation to the Pacific Theater of the Committee on Armed Services*, 96th Congress 2d Session, pp. 14-23 (hereinafter *Report*); Warner, D., "Australia Strengthens its Defences and U.S. Ties," *Business Week*, Apr. 7, 1980, p. 50 (hereinafter "Australia Strengthens").
3. See 'The Importance of Defence in Australia's Maritime Affairs,' a speech given by Vice Admiral G.J. Willis, AO, RAN, Chief of Naval Staff, delivered for the Committee for the Establishment of an Australian Center for Maritime Studies, dated 29 July 1980.
4. *Report*, op. cit., p. 15.
5. Armstrong, D., 'Re-thinking Australia's Defence,' *The Bulletin*, Oct. 21, 1980, p. 35.
6. 'Australians Will Allow Landings by U.S. B-52's,' *The New York Times*, Sept. 10, 1980, p. 10.
7. Shaw, John, 'Australia's Reluctant Role in U.S. Security Network,' *The Los Angeles Times*, Dec. 12, 1978; *Report* at 15.
8. The approximate distances from the proposed bases to an arbitrary point in the Arabian Sea at 20°N, 60°E are: Yokosuka 7,600 miles; Rota 5,800 miles; Subic Bay 5,200 miles; Cockburn Sound 6,000 miles.
9. 'Reagan Asks 16% Boost in Spending for Defence,' *The Washington Post*, Mar. 5, 1981, p. A 1.
10. Probably the *Bon Homme Richard*, would be the other vessel brought back. See 'Interview With the Secretary of the Navy,' *Sea Power*, March, 1981.
11. See, e.g., *Report* at 22-23 and Evans, Cdr. G., RANR, 'America's Ally "Down Under,"' *United States Naval Institute Proceedings*, March, 1981, p. 84.
12. Warner, *op. cit.*, p. 52.
13. *Id.* This point was apparently made recently by the Soviet Ambassador to Canberra in a highly unusual press briefing. It is worth noting that this questionable diplomatic manoeuver could not have been reciprocated in Moscow, even if Australia's ambassador had been so moved. See "Soviet Envoy Criticizes Australia for Offering base for U.S. Bombers," *The Washington Post*, Mar. 5, 1981, p. A 26.

THE LOSS OF THE FIRST VOYAGER

by Vice Admiral Sir Henry Burrell, KBE, CB

On the night of 23 September, 1942, the destroyer, HMAS *VOYAGER*, grounded broadside on to a beach in southern Timor while attempting to land troop reinforcements and stores to Allied forces, carrying out guerilla warfare in Japanese held territory. *VOYAGER* could not be refloated and she was later blown up by her own ship's company to avoid her falling into enemy hands.

The Timor operation was particularly hazardous and its consequences, particularly the personal ones for her Captain, have worried me over the years. Now that the '30 year Rule' enables secret documents to be scrutinised, the full circumstances of the loss of the *VOYAGER* can be made known.

The *VOYAGER's* Captain, Lieutenant-Commander R.C.Robison, RAN, was not courtmartialled but did incur the displeasure of the Naval Board in that

'(a) he anchored too close to the shore,
(b) failed to veer sufficient cable, and
(c) failed to take immediate action for the safety of his ship when it became apparent the ship was being set bodily ashore.'

I can now examine the operation and its consequences, in the absence of war-time pressures and with the advantage of hindsight.

Circumstances of Grounding

VOYAGER arrived in Darwin, from Fremantle, at 0100 local time Monday, 21 September 1942. Later that day she received her Operation Orders for the reinforcement of *SPARROW FORCE* in Timor, requiring her to sail the following evening. Having completed with oil fuel, she embarked eight army collapsible barges and landed her motor skiff. Her own motor boat, damaged previously, had not been replaced. A 14 foot motor skiff was supplied and she had her whaler, powered by oars. Unnecessary Confidential Books and Publications were to be landed. The ship was ordered to arrive at Betano beach in southern Timor half an hour before sunset on Wednesday 23 September, land 250 Australian Army reinforcements and 13 tons of stores and then embark a small number of personnel for return to Darwin.

On the day of sailing, Tuesday 22 September, the troops and stores were embarked. It is clear that Robison visited the Naval Staff office in Darwin to discuss the operation. A Commander on the Staff informed him that there was comfortable swinging room to anchor in Betano Bay and that there was deep water right up to the beach. Attached to the Operation Orders was an Army reconnaissance report on the suitability of Betano as a supply port. It was recognised that the waters were uncharted. However, a Sub-Lieutenant RANR (S) with local knowledge would accompany *VOYAGER* with his information about depths and other hydrographic data. It had been arranged for three fires to be lit ashore to mark the beach which strongly suggests a night approach was thought to be feasible.

THE AUTHOR

Admiral Burrell retired as Chief of Naval Staff in February, 1962, after a career in the Royal Australian Navy spanning forty-four years. He is a RAN College graduate and a Navigator by specialisation. During World War II, he commanded the destroyers, HMA Ships *NORMAN* and *BATAAN*, and had two postings in the Plans area of Navy Office. In 1941, he was the first Australian Naval Attache to be posted to Washington. After the war, Admiral Burrell commanded HMA Ships *AUSTRALIA* and *VENGEANCE*, and served as DCNS at Navy Office and as Assistant Defence Representative in London before being promoted to Rear Admiral in 1955. He was Flag Officer Commanding HMA Fleet on two occasions and 2nd Naval Member before becoming CNS in February, 1959.
Admiral Burrell now lives in retirement in Red Hill, Canberra and on his farm on the banks of the Shoalhaven River near Braidwood, NSW.

VOYAGER'S personnel position was far from satisfactory. That was not known or realised by the shore authority. Her First Lieutenant was 'sick onboard', his duties being carried out by a Sub-Lieutenant RAN. The Gunner (normally in charge on the quarter deck) and the Coxswain (the senior rating in the ship and the Quartermaster at the wheel entering and leaving harbour) were both sick in Darwin Hospital. Otherwise on the seaman side, Robison had only a Lieutenant RANR (S) as his 'unqualified' navigator and a Sub-Lieutenant RANVR who is only mentioned as Confidential Books Officer.

VOYAGER, drawing 13 feet 10 inches, sailed at 1800 local time on Tuesday, 22 September. The Captain had been very busy and now had time to study the navigational problem and work out a disembarkation programme. No doubt he was alarmed by the lack of hydrographic information, but it is presumed that that was allayed by the tone of the Operation Orders, the assurance of the Staff Commander and the presence of a Sub-Lieutenant with local knowledge. The troops were to be landed in the army barges. Being ordered to arrive half an hour before sunset naturally assumed the ship would be safely at anchor while boat work proceeded during the night. Robison was entitled to feel confident that he could carry out his appointed task.

The ocean passage was uneventful. The following extract from *VOYAGER'S* Report of Proceedings dated 26 September 1942 will help to describe the vital half hour on Wednesday, 23rd September, between the time of approach to Betano Bay and the grounding:

'1800 Altered course 280^0 and courses then adjusted to keep ship 2 miles to seaward of the land. Speed 22½ knots. Sub-Lieutenant RANR(S) gave information that Betano anchorage lay 4 miles to the westward and that deep water extended 400 yards to seaward from the shore. No sounding by echo sounding machine could be obtained.

1820 Reduced speed to 16 knots shortly before a *small reef came abeam to starboard.*

1822 Reduced speed to 12 knots.

1823 Slow both and altered course to northward into Betano Bay. The first sounding by echo was then called 128 fathoms followed closely by 25 fathoms. The ship was then about ¾ mile off shore. Chains were manned and called soundings. No bottom at 10. An additional leadsman had been placed in the eyes of the ship.

1825 Sounding 17 fathoms. Stopped both engines.

1828 16 fathoms was called from the echo sounding machine. Both engines were put astern and starboard anchor let go and cable run out till 2½ shackles were on the water line. The brake was then put on the capstan. *Cable was growing out on the starboard quarter to seaward.* Ship appeared to be 2½ cables (500 yards) from the beach and there appeared to be swinging room and that the *ship had her cable.* I therefore gave the order to hoist out all boats and carry on disembarking troops.'

Using hindsight, this order was premature and was one of the main factors contributing to the disaster. A ship does not 'have her cable' until she has swung to the wind and tidal stream, when all forces are in equilibrium and the anchor can be proved to be holding. The order to disembark should not have been given until these criteria had been satisfied.

In the Merchant Navy, the custom is to let go the anchor with slight sternway and lay out the cable, thereby avoiding a bunch over the anchor or at some intermediate stage. In the RN and RAN, the custom was to let go the anchor with head way on the ship, thereby laying out the cable until the way is taken off when the required amount of cable has been run out. As explained earlier, time is required for all forces to play their parts. For example, if a ship anchors head to wind and current, she will have to drift astern twice the length of the cable. Only then will she 'have her cable'. If a ship has to anchor downwind, the cable on the bottom doesn't move but the ship has to swing 180^0, before lying head to wind. Then by taking bearings of some object onshore, or watching a suitable transit (e.g. a palm tree and a hill top) one can be assured the anchor is holding.

There was a technical factor affecting *VOYAGER.* In the good old days, ships' anchors were provided with a 'stock' — a bar of circular section in a plane at right angles to that of the flukes of the anchor. The effect of the pull on the cable (probably cable laid rope, made up of three strands of rope) would ensure that one or other of the flukes was deeply embedded in the sea floor. Such anchors were difficult to stow in the eyes of the ship. With the advent of steamships, the stockless anchor was invented. It could be stowed in a hawse-pipe with the flukes reasonably flush with the ship's side close to the bow. A stockless anchor is designed so that when the strain comes on, a tripping palm on each fluke mechanism exerts a pivoting action and forces the flukes into the sea-bed. Such anchor is far from efficient. Unless the pull on the anchor is horizontal, the fluke mechanism will be inefficient. To make up

for this, the accepted practice is to lay out sufficient heavy steel cable so that the ship is held by the weight of the cable on the bottom. The anchor's poor holding power is not put to the test. It acts as a pivoting point as the ship swings to the dictates of wind and tidal stream.

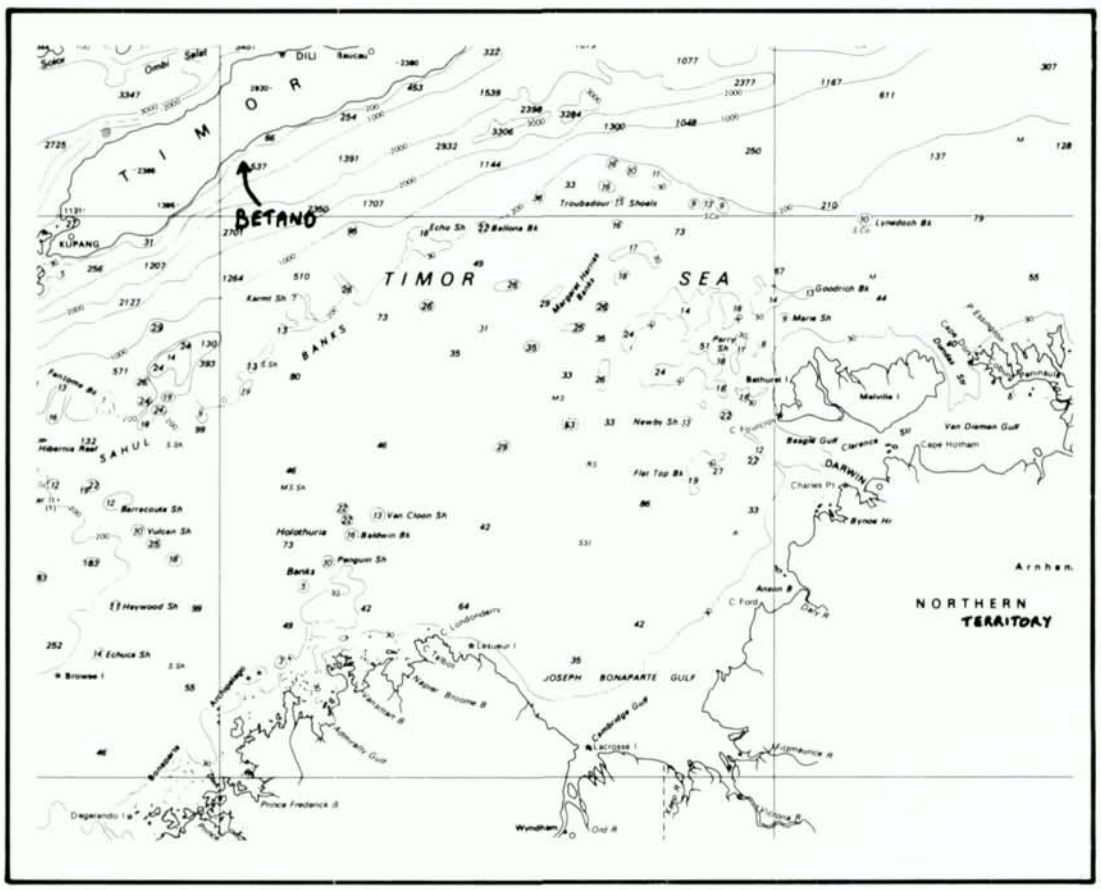
When anchoring in deep water with little cable veered, the chances of the anchor not biting into the bottom are very high. In *VOYAGER'S* case, in about 100 feet of water with only 190 feet of cable out, it was over optimistic to expect the anchor to hold. Furthermore, 'the cable was growing out on the starboard quarter to seaward'. The forces involved were not yet balanced.

The premature order having been given for the disembarkation to proceed, the Captain took the precautionary measure in sending his Navigating Officer away in the whaler to take soundings to confirm there was sufficient water for the ship to swing to her anchor. The soundings were signalled back. To my mind, to send away even an unqualified navigator to take soundings was to lose a valuable assistant. Any seaman can take a sounding. The navigator should have been behind the pelorus (gyro compass), confirming continuously by observing bearings of suitable objects ashore that the ship was not drifting.

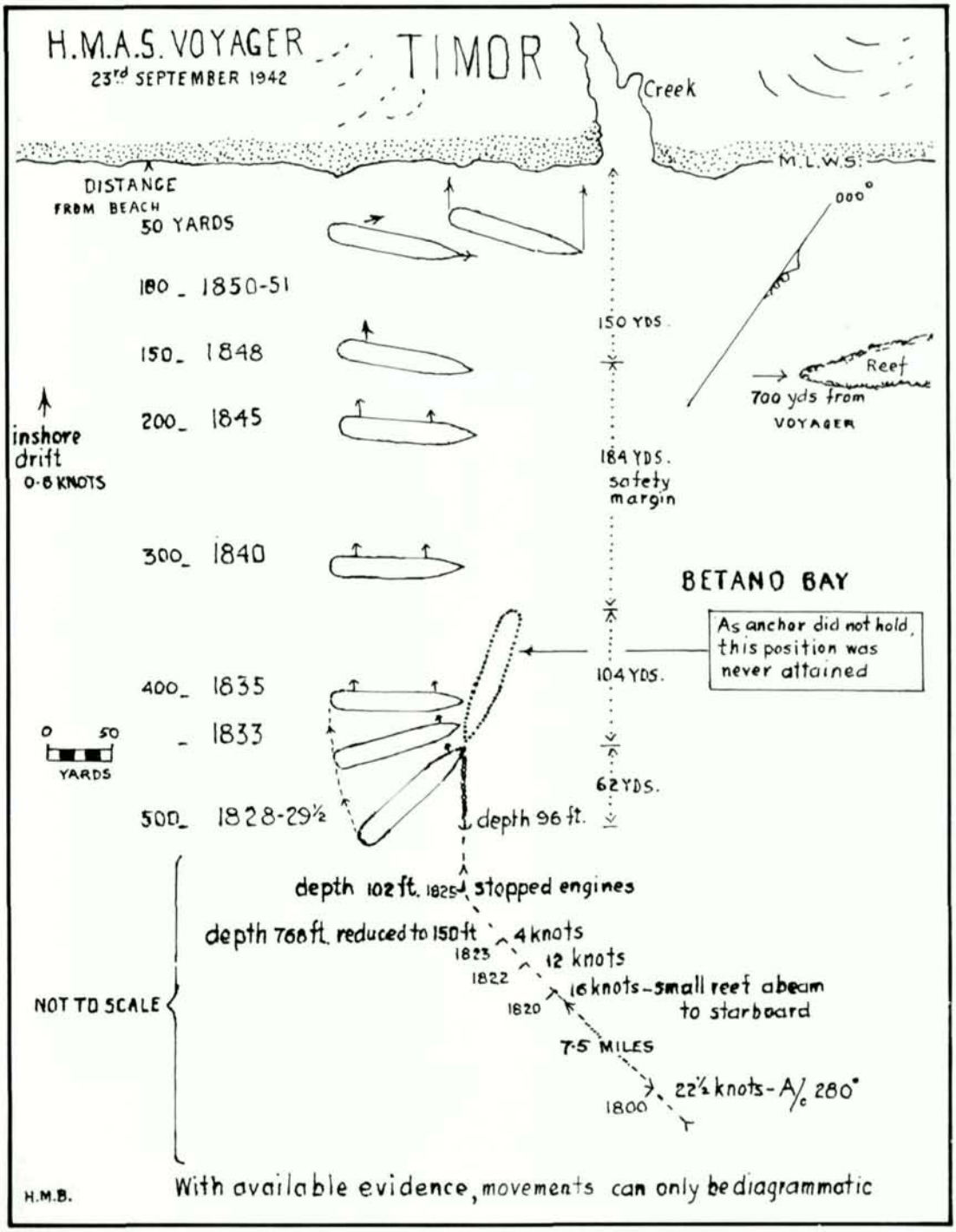
For some specious reason, the Sub-Lieutenant (the ill-informed so-called local pilot) went ashore in the motor skiff with the O.C. troops. The Captain was the only officer on the bridge and the disembarkation programme was turning into a shambles.

The Report of Proceedings notes that by 1829 'the ship had swung parallel to the beach'. This was so; she had swung broadside on to the wind. The anchor was bouncing along the bottom while, according to my reconstruction, the wind was carrying the ship broadside towards the inhospitable beach at about 0.6 knots. The Captain soon realised this and his Report of Proceedings records:

> '1829½ After anchoring, the ship's stern commenced to swing quickly round to port and it was realised that a very strong tide to the westward of from 1½ to 2 knots and the wind, also on the starboard beam, seemed to be taking the ship bodily to port towards the beach. I had at first not



— by courtesy Hydrographer RAN



The author's reconstruction of the grounding of HMAS *VOYAGER* (not to scale).

noticed the force of the spring tide. Being anchored on the shelf of the relatively shallow water of 16 fathoms, with 128 fathoms not many yards to seaward, greatly increased the force of the water bearing the ship inshore.'

Many, many things were happening at this time. However, when I first read in the report that the ship was only 2½ cables (500 yards) from the shore on anchoring, it brought a shudder to an old seaman. Irrespective of whether there was deep water right up to the beach (quite incorrect), 500 yards is no distance at all as viewed from the bridge of a ship. Assuming the anchor was holding and the ship had swung to the wind and tidal stream (i.e. with her stern in shore), the safety margin is simple arithmetic. Add 2½ shackles of cable (25 yards to the shackle) or 62 yards to the length of the ship (104 yards) and assume (dangerously) that there is deep water to within 150 yards of the beach; this leaves a safety margin of 184 yards with only 2½ shackles of cable out. If a further 1½ shackles (37 yards) were veered to give some increase in safety from the ground holding aspect, the margin would be reduced to 147 yards. The only possible conclusion is that it was impracticable and hazardous in the extreme for a ship of *VOYAGER'S* size to anchor in Betano Bay.

Robison knew that he was in a tricky situation. He kept the cable party on the forecastle and steam for full power on the main engines. He now knew his anchor was not holding. His report reads:—

'1833 I realised the ship appeared to be closing the beach bodily to port and I considered it advisable to weigh and proceed out to sea in deep water. I gave the order to weigh. The barges had been lowered and Army personnel were disembarking. Two army barges half full of troops were immediately over the port propellor. By going astern on this engine and ahead on the starboard to get the stern out to deep water, I should have upset these boats and Army personnel. I therefore decided to turn the ship and proceed ahead. The starboard propellor was clear and I decided to head the ship clear of the reef by moving that engine 'slow astern' *(author's comment — that would kick the stern close to the beach).* Through my megaphone I passed the order aft "Get the Barges clear of the ship's side, I am about to move the engines". No notice was taken of my orders. I called Sub-Lieutenant — (acting First Lieutenant) on the forecastle to speak to me and ordered him aft to clear the ship's side as I was about to move the engines and warned that the boats would be capsized. The last of this series of orders was "Soldiers sit down in the barges and get clear of the ship's side". There was a considerable amount of loud talking, cat-calling etc. and I found it extremely difficult to get my orders through and obeyed. I gave warnings to clear the ship's side of barges at least four times. The ship had been turned and was now heading clear of the reef, by using the starboard engine only. *(Author's comment — the ship by this time was dangerously close to shallow water).*

1850¼ (about) I proceeded half speed ahead both engines and ordered "Starboard 20". I then thought half speed ahead might swing the stern in too quickly.

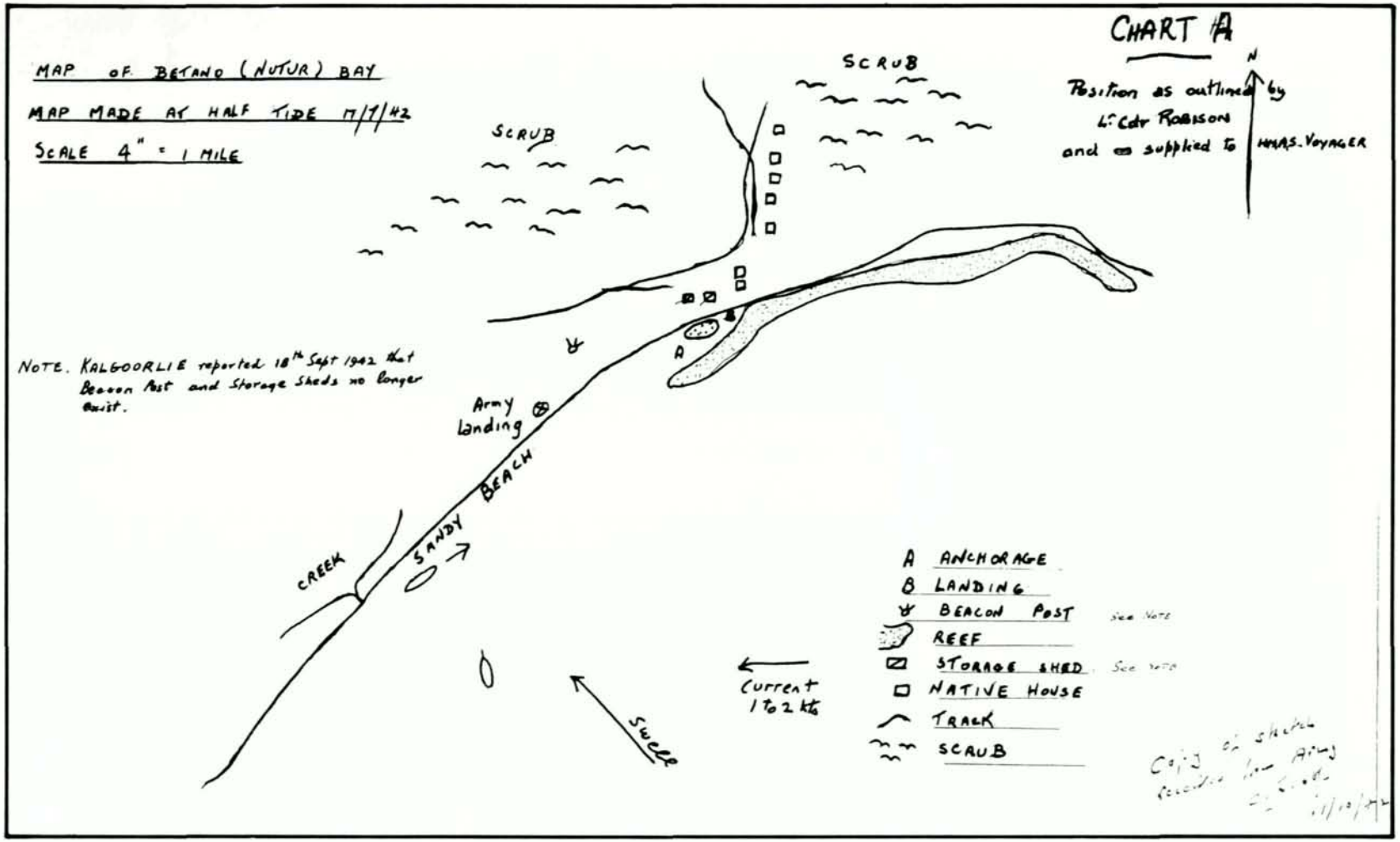
1850½ Stopped both.

1850¾ Increased to half speed ahead both as I thought the stern was clearing. The ship then grounded, I felt her bump and increased speed to 20 knots in the hope of clearing. Movement stopped.

1851 Stopped both. Lieutenant (E) (the Engineer Officer) then informed me by phone that the starboard propellor was foul and movement on the port propellor sluggish.

1851¼ Let go starboard anchor with 1½ shackles of cable. Soundings were at once taken aft and reported as 2 fathoms (12 feet) starboard side over propellor and ¼ less 2 (10½ feet) on the port side. I then sent for Lieutenant — (on the sick list) and ordered him, with the assistance of the acting First Lieutenant to lay out the kedge anchor with 2½"wire. Cleared lower deck of seamen and I informed them that the kedge anchor was to be laid out with the utmost speed. I assisted with this evolution aft.

1915 The kedge anchor was laid out in 17 fathoms of water in line with the stern. These operations were hampered greatly by Army personnel who were cat-calling to friends on the beach, were keen to get ashore and showed little regard for the plight the ship was in. Barges were upsetting in the surf.'



The rough sketch plan of Betano Bay which was supplied to *VOYAGER* for her last operation. The notations re swell and current and the two ship positions were probably added at the time of the Board of Inquiry, possibly by Lieutenant Commander Robison.

Immediate Aftermath

Immediately after the grounding, a horrific ordeal followed for the Captain and his crew. It lasted forty eight hours. Robison did everything humanly possible, trying to haul his ship off the beach by kedge and bower anchor. Both efforts failed. Until high water at 0130 the next day (Thursday), the ship was being driven further up the beach. Activity went on all night. The ship's company landed with their effects and slept on the beach. When the tide had fallen, the ship became high and dry.

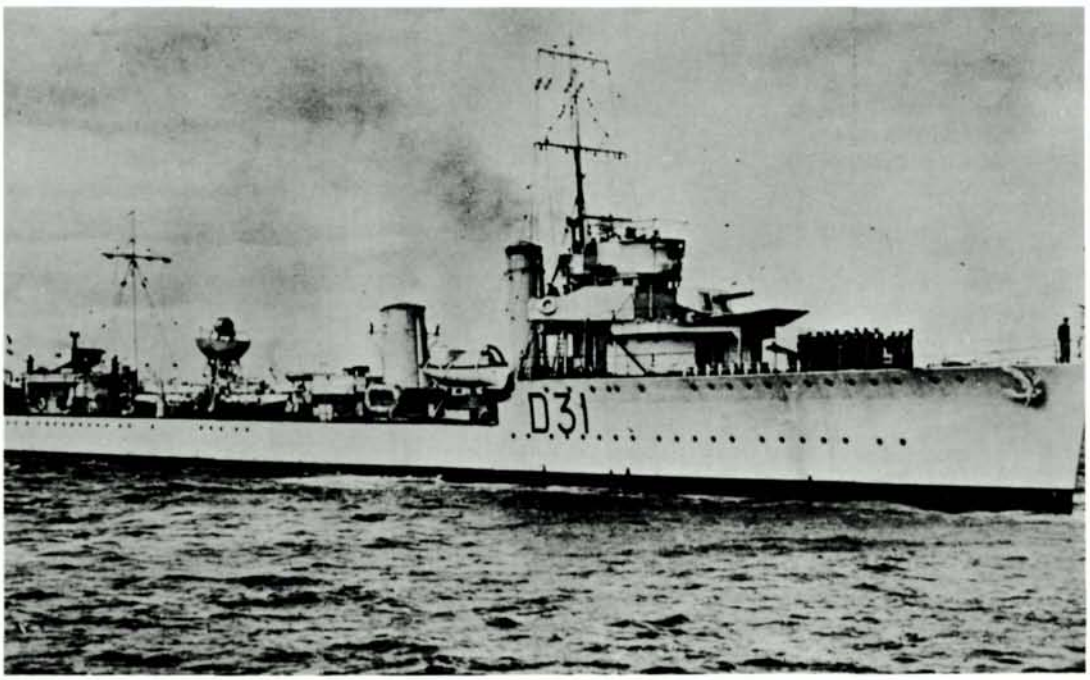
The gutting of a ship is not a pleasant story. I will not go into the details. However, at 1330 on the Thursday, the ship was attacked by a Japanese twin engine aircraft which was shot down. With no chance of salvage, orders to wreck the ship were given. This was assisted at 1600 by the arrival of four Japanese bombers. About 60 bombs were dropped scoring one hit and many near misses. The general area was sprayed by machine guns. Robison was wounded in the leg by shrapnel. Despite this, he did everything possible to destroy his command so that nothing of value would be left to the enemy. This continued on the Friday when at 2100 he and his ship's company were rescued by HMA Ships *KALGOORLIE* and *WARRNAMBOOL*.

It is surprising to me that these two corvettes, despite their light draught of 8½ feet, should have been required to operate after dark in these dangerous waters. I think their Captains deserve congratulations on their efforts but I consider only good luck prevented a triple disaster.

Possible Courses of Action

In the critical seventeen minutes between 1833 and 1850 on Wednesday 23 September 1942, Lieutenant Commander Robison had a number of courses of action available to him to avoid the loss of his ship. The first involved going ahead and turning out to sea and avoiding a reef visible 700 yards to the northward but this became progressively unseamanlike as the safe distance from the beach decreased. The risk to the troops disembarking would not have been great if taken slowly initially. The safety of his ship is a captain's main preoccupation and that is achieved at least by keeping the propellors in safe water.

Secondly, he could have turned the ship and made a sternboard into deeper water. This was the intended course of action (as recounted by Robison) and would have met the requirement to get the propellors rapidly into deeper water. He felt forced to discard this as he considered it could have cost the lives of the troops alongside in the army barges. He was in a dilemma which you would not wish on any man, particularly his first command. The value of human-lives in war has to be coldly calculated but Robison had no time to weigh up the pros and cons. I guess that he



Particulars of *VOYAGER* were — displacement 1100 tons, length 312 feet, 4 x 4 inch guns, 6 x 21 inch torpedo tubes, speed 34 knots and complement 134. Additional light AA guns were added during World War II.

— Australian War Memorial negative No. 65305

thought he could avoid risking lives and still save his ship, trusting to the advice he had received that there was deep water right up to the beach. He possibly overestimated the risk to human life. An initial slow head/slow astern, before resorting to high power, might well have washed the craft clear of the stern without great danger to the occupants.

The last course of action involved turning the ship preparatory to making a sternboard, but accepting that the ship's bow would ground temporarily during the process. This was the last practical course available to *VOYAGER* when disaster was staring her in the face. Full power was available on the main engines. Full astern on the port engine and half ahead on the starboard (varying the revolutions as necessary) would produce a powerful turning effect. The grounding of the bow in the process would be almost incidental. Admittedly the risk to boat personnel would be high. Once the ship had turned about forty degrees, safety would have been assured.

I had had an experience of this nature in HMAS *CANBERRA* at Lagos, Nigeria in 1928. Lagos is at the mouth of the River Ogon. The river was too narrow for a ship of *CANBERRA's* length to turn so we embarked a pilot to advise us how best to solve the problem. The answer was to delay sailing until the flood tide then, deliberately run the ship into the thick reeds so that, while the bow was held, the incoming stream would swing the ship's stern up river. It was then only a matter of moving astern out of the reeds, turning some 30^0 in the centre of the channel and so off into the Bight of Benin. Unfortunately a similar course of action did not occur to Robison. Backed by the assurances of deep water right up to the beach, the first course remained his choice to the tragic end.

Operation Orders

The Operation Orders come up for some comments. *VOYAGER* was required to arrive at Betano half an hour before sunset. This presupposes a safe anchorage could be found before dark. This reduced the chance of an enemy air attack but could be a disadvantage if a safe anchorage could not be found.

A paragraph of the Orders read, 'If, for any reason, HMAS *VOYAGER* has not arrived before dark, three fires close together will be lighted in the vicinity of the landing place'. This suggests a night approach was practical and so could have lulled Robison into feeling that the navigation difficulties would be small. A night approach into

The wreck of *VOYAGER* on the beach at Betano Bay.
— Australian War Memorial negative No. 157242

uncharted waters!! The only suggestion that some risk existed was contained in the statement that 'Surplus Signal Publications and other Confidential Books and Publications are to be landed before sailing vide C.A.F.O. . . .'. Another paragraph read, 'Sub Lieutenant — RANR(S) will join *VOYAGER* for the operation. This officer has visited Betano and other portions of the south coast of Timor by sea on several occasions and has carried out reconnaissance by air'. This too lulled the Captain of *VOYAGER* into false confidence that he would have a knowledgeable local pilot at hand.

Another paragraph of the Operation Orders read, 'Prior to sailing eight folding boats are to be embarked in HMAS *VOYAGER* to supplement ship's boats and thus enable the disembarkation to be carried out at high speed'.

The boat transport situation is confusing. *VOYAGER* had her whaler and a borrowed 14 foot motor skiff and eight army barges. The task was to land, possibly in a surf, 250 soldiers and 13 tons of stores 'at high speed'. Allowing 64 soldiers in the eight barges and perhaps eight in the whaler, 72 could be landed in one echelon. Three or four trips by each craft would be required. Each barge, after paddling in shore, had to land in the surf, unload the troops, and, with two man paddle power, return to the ship. Then 13 tons of stores had to be landed. A whaler could only carry a few hundredweight. The motor skiff was unsuitable for towing. The whole sea transport operation sounds a very difficult task. A miniature rehearsal at Darwin before sailing would have thrown light on the difficulties. So far as *VOYAGER* was concerned, the operation was ordered in a hurry and Robison had little time to study the operational details before sailing.

The Board of Inquiry

The Board of Inquiry duly sat in Darwin. It had the Captain's report of the loss of his ship and the Operation Orders to work on. Some additional information came to light during the Inquiry.

When *VOYAGER* anchored 500 yards from the beach, 'there was a reef visible 700 yards to the northwards and about 500 yards from the beach'.

The time lag from the 'first order to clear the ship's side of barges and when you could first use your engines with safety to the barges' was 'at least 12 to 14 minutes'.

A Petty Officer stated:

> 'I had lowered the boats and the Naval crew got into the boats immediately. There was trouble with the soldiers in the boats as nobody seemed to be in charge of them. It was not until I gave the order myself to the soldiers to get down into the boats that they did so. Even then they seemed very slow in climbing down the nets into the boats. Once they got in the boats, they did not seem to know what to do. The Naval Coxswain took charge of the boats and attempted to get the soldiers to get the paddles out. It was then that I heard the order to get all the boats clear aft. The after boat was full but the forward boat was only half full. The repeated order came from the bridge to get the boats away from aft at the same time as we were helping the boats to get away from the ship's side. When the boats did get clear from the ship's side to approximately 6 feet, the soldiers appeared to be paddling around in circles and paddling back to the ship's side . . .'.

In his evidence, the Sub-Lieutenant RANR(S) said the ship was '300 yards from the shore' on anchoring. In anybody's language that, if true, would be a dangerous situation. When asked 'at what distance was she off the beach when she struck', he replied 'About 70 yards — her stern'.

In the final moments before *VOYAGER* ordered engine to go 'half-ahead' to get away, the Captain said, 'I asked Sub-Lieutenant RANR(S) if he thought I had enough depth of water forward to turn the ship to starboard and go out ahead and he said 'Yes'.'

Sub-Lieutenant — (acting First Lieutenant) seemed to be fully occupied on the forecastle and later was trying to clear the barges aft. The ship's approaching predicament was not mentioned by any witness other than the Captain.

The Navigator, in his evidence, contributed little. He did say that when the ship grounded 'there was a continual surge and swell'.

The First Lieutenant, sick on board, was sitting in the after part of the ship during the 'seventeen minutes'. Incredibly he had nothing worth saying to the Board, yet he observed it all. Surely he could have noticed the impending disaster and done something despite being ill. When asked 'When you felt the bump, at what distance was she from the nearest part of the beach', he replied, 'At least 300 yards Sir, though it was hard to say as it was getting dark'. His evidence only took two thirds of a page. It was a surprising performance from an officer who, nominally, was second-in-command.

After the ship had been destroyed, there was some doubt whether a Confidential Book and a Confidential Book Register had been burnt or mislaid. This took up a lot of Lieutenant-Commander Robison's time on the beach while he was wounded and a lot of time at the Inquiry.

The report by the Board of Inquiry was very sketchy and omitted some important considerations during the critical seventeen minutes.

The considered view of the Board was:

'6. We are of the opinion that the information said to have been given to Lieutenant-Commander Robison by Commander —, Senior Staff Officer, Darwin, about the quality of the anchorage at Betano Bay was misleading. Hydrographical information was meagre and inaccurate and the anchorage is a dangerous one. It might have been advantageous to have veered more cable on anchoring but it is considered there is room for opinion on this matter.

7. The behaviour of the Military personnel whilst disembarking left much to be desired, showing lack of disciplinary training and special training for an operation of this type. It is our opinion that Lieutenant —, although on the Sick List, should have taken charge on the quarter deck when he saw that things were going badly. This would seem also to apply to Petty Officer —.

8. We are of the opinion that Lieutenant-Commander Robison should have taken immediate action for the safety of his ship as soon as it became apparent that the ship was being set ashore. As it was, it seems that he deferred action for a period from ten to fifteen minutes because he did not wish to risk the lives of a small number of Military personnel by drowning. This risk he should have accepted and gone astern on his port engine to bring the ship out stern first without delaying to weigh his anchor.

9. In his subsequent action after grounding, it is considered that Lieutenant-Commander Robison did all in his power to move his ship into deep water and his actions in this regard were correct.'

I agree with these views of the Board though I think it could have delved further into the cable situation in its paragraph 6. It is noteworthy that there is no mention of the Captain 'hazarding his ship'.

In commenting upon the Report by the Board of Inquiry, the Naval Officer-in-Charge in Darwin (NOIC Darwin) stated that —

> "It is my belief that all available information was supplied to the Commanding Officer *VOYAGER* before he left and that the difficulties were not unduly minimised. I still see no reason to suppose that an anchorage with comfortable swinging room could not be found . . .".

I disagree with the last sentence. NOIC Darwin also said that '. . . it would seem to have been possible to anchor further out if the shore seemed too close.' This I doubt. As noted earlier, Robison had recorded in his report that he had '128 fathoms not many yards to seaward' and that is too deep for a destroyer to anchor.

A later aerial view of the wreck.

— Australian War Memorial negative No. 106681

The Naval Board Decision

The Naval Board later considered the circumstances of the loss of *VOYAGER* and decided,

> 'that errors of judgment were made by the Commanding Officer, Lieutenant Commander Robert C. Robison, RAN in that he,
>
> (a) anchored too close to the shore
> (b) failed to veer sufficient cable
> (c) failed to take immediate action for the safety of his ship when it became apparent the ship was being set bodily ashore.'

Lieutenant Commander Robison was informed that he had incurred the displeasure of the Naval Board and that his record would be noted accordingly.

The Naval Office file reveals that both the Navigator and Director of Operations on the Naval Staff simply noted on the file, 'Concur NOIC Darwin'. These were the operational experts on the staff. I know only too well the pressure of work on the operational staff but, when a valuable ship has been lost and an officer's reputation and future is at stake, a careful examination seems imperative.

Referring to the errors of judgement noted by the Naval Board —

- re (a) *VOYAGER* 'anchored too close to the shore'. If she was to anchor at all, she was bound to be very close to the shore.
- re (b) *VOYAGER* 'failed to veer sufficient cable'. This is agreed.
- re (c) I fully agree that *VOYAGER* 'failed to take immediate action etc'.

Robison was not given an opportunity to defend himself. I suggest that had he been court-martialled, and so be given time to prepare a defence, a different light might have been shown on the picture. With a navigator for the accused's friend, I make so bold as to suggest that a defence could prove that the operation, using *VOYAGER*, should never have been ordered. At least Robison could have been commended on his efforts to salvage the ship and, when salvage was proved impossible, to ensure that his ship was destroyed completely.

Review of Errors

That Lieutenant Commander Robison made mistakes there is no doubt. He trusted the judgment of a Sub-Lieutenant RANR(S) regarding the presence of a safe anchorage for a ship of *VOYAGER's* draught and the depth of water close to the Betano Beach, when that officer had only visited it in a shallow draft vessel.

Obviously he put too much trust in the assurances regarding the same problem from the Commander on NOIC's staff. A careful review of the task whilst en route from Darwin may have enabled him to better anticipate the difficulties.

He was heading for an anchorage where only light draught vessels had been before. His orders required entering uncharted waters shortly before sunset and remaining at anchor in darkness only 500 yards from shore. After sighting the small reef near the anchorage, a safer alternative may have been to make for safety in the open sea for the night and re-enter the Bay in the early morning to continue unloading.

Robison may well have concluded that the operation could only be carried out with the ship underway. *VOYAGER's* presence might be discovered by enemy reconnaissance planes and bombing attacks could be expected. Radio silence could not be broken to appraise NOIC of the situation that a safe anchorage did not exist for a ship of *VOYAGER's* length and draught and that there would be some delay in landing the troops. In these circumstances, it was better to risk enemy bombs than running aground in enemy waters.

Robison then erred by giving the order prematurely to lower boats and carry on with the disembarkation. He should have waited till his ship properly 'had her cable'. This was an error in seamanship. In the circumstances, *VOYAGER* would never have swung to wind and tidal stream and the Captain would have to think out some other way of carrying out his orders. Anchoring closer in shore was out of the question. Giving the word 'go' when he did, can only be excused to a slight degree. The feeling that the reinforcements must be landed quickly and with last light not far away, the pressure 'to fire the starting gun' was strong.

I have already accepted that he erred in failing to get under way and get out of it despite the risk to valuable lives. I feel sure he overestimated the risk. The engines can be moved slower than the fixed revolutions for 'SLOW' by a telephone call to the engine room.

He didn't help himself by letting his Sub-Lieutenant, the one with the so-called 'local knowledge', go ashore in the motor skiff or by sending his Navigator away in the whaler. He needed someone to watch the compass bearing of some part of the reef directly ahead and to judge the rate of inshore drift.

He erred as I have explained earlier in not trying to turn his ship stern to seaward, if necessary grounding the bow in the process. He erred in attempting to get out of his dire trouble by going ahead. He was aided and abetted in this by listening to his dangerous adviser.

Against these errors by Robison must be weighed those by NOIC Darwin. *VOYAGER* was ordered, at very short notice to carry out an extremely hazardous operation. I seriously doubt if it was practical.

The navigational data on which the plan was based was in error. There was no anchorage in Betano Bay for a ship of *VOYAGER's* length and draught. It would only have been possible to land troops and stores by day with the ship remaining under way at a safe distance from the beach.

The Operation Orders of NOIC gave only one indication of danger in the operation — to land Secret and Confidential Books and documents.

NOIC provided a menace in the Sub-Lieutenant RANR(S) and the Commander on his staff gave out false navigational data.

NOIC had faith in the collapsible army barges. With trained personnel they might have been useful. There was no evidence of any training. I suggest that a limited rehearsal on a beach near Darwin should have been carried out. It would have shown that the troops needed practical paddling experience and the probability that two naval ratings could not paddle the barges back to the ship except in perfect weather and surf conditions.

NOIC or his staff it would seem, did not know that *VOYAGER* had three key personnel (First Lieutenant, Gunner and Coxswain) sick, though they cannot be blamed for that. NOIC did not provide *VOYAGER* with a qualified Navigator for the operation. The difficult task required such an officer. NOIC and his staff could have appreciated that Robison would have insufficient time to digest the Operations Orders and anticipated some of his possible requirements, such as the navigation specialist, the rehearsal near Darwin and additional officers.

In his covering report to the Naval Board, NOIC wrote 'I see no reason to suppose that an anchorage with comfortable swinging room could not be found'. I find this an irresponsible statement of no validity.

Ordering the ship to arrive half an hour before sunset assumed the unloading would take place in the dark. The soldiers had trouble using a paddle in daylight!

Perhaps NOIC could argue that *VOYAGER* should have raised the practicability aspect before sailing. Lieutenant-Commander Robison didn't have any time for doubts. He was being given an exciting operation to carry out and he knew that it had been in the planning stage for sometime in Darwin. Naturally he obeyed orders and assumed that the intelligence was correct and the operation feasible from the navigation aspect.

Conclusion

A lot of the blame for the loss of *VOYAGER* must be placed on NOIC Darwin for his failure to ensure that this ship was adequately prepared for a dangerous operation in uncharted enemy waters. There was much more he could have done to make sure that *VOYAGER* was in all respects ready for her important operational mission and that this mission was in fact achievable.

That Lieutenant-Commander Robison made errors in seamanship and ship handling is accepted. I tend to the conclusion that he was more sinned against than sinning. Certainly he was given a hazardous assignment under the guise of a simple one.

'If I had been censured every time I have run my ship, or fleets under my command, into great danger, I should long ago have been **out** of the Service and never **in** the House of Peers'.

— Nelson: Letter to the Admiralty, March 1805

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IS ADFA ALL BAD?

by Commander Haydn L. Daw RAN

Of one thing we can all be certain and that is that the Australian Defence Force Academy (ADFA), now under construction in Canberra, will not please everyone. Some readers may even ask whether it will please anyone! The purpose of this article will be to discuss some aspects of ADFA which will be of advantage to the Royal Australian Navy and the Defence Force, in the long run.

The sentiment of the first sentence is probably true of every project developed by the Defence Department. All projects are to some extent a compromise among competing interest groups. In the case of ADFA there were many interest groups: the three Services, the Department of Defence, and external academic community and the academic community already serving in the Service academies, to name six groups. These groups were all concerned and, to a greater or lesser extent, have all influenced the evolving concept of the Academy.

It would be presumptious of me to suggest that I could articulate the interests of each group but it is reasonable, I submit, to talk about the interest of Navy in general terms.

In an earlier Journal article[1], I reviewed the development of the ADFA concept and summarized the plan at that time. Since then, the Government has decided to develop the institution as a College of the University of New South Wales (UNSW). This, despite the recommendation of the Public Works Committee that it was '. . . not expedient to proceed with the construction of the proposed works'[2].

Most readers will be aware that there was considerable discussion during the Sixties regarding an Australian Tri-Service Academy. The identified need for a greater proportion of officers to have a University education was the catalyst for such discussion. At the same time that the Martin Committee[3] was established to examine the Tri-Service Academy concept, Army and Navy were individually finalizing arrangements for their officer cadets to undertake degree studies. The RAAF had done so in 1960.

The RAN had established its own arrangements with the UNSW for the tertiary education of General List Officers in 1967. Initially, this was for Science and Engineering degrees with virtually a common first year to be undertaken at the RAN College and subsequent years at the UNSW campus. The arrangement was later extended to include Arts degrees which were initially completed at UNSW. In 1979, the first year of the Arts degree was offered at the College and subsequent years taken at UNSW.

The first year Arts course offered at the College consisted of History and three Science subjects. This was most restrictive and really made a bit of a mockery of the degree title. The reason the decision was taken to have the first year Arts offered at the College, was in order to have all the first year Navy tertiary students in a strong military environment at least for the first year. All three Services are keen on the military environment during the educational phase of Junior Officer development and, of course, it is here that ADFA will meet one of the Services' requirements. The tertiary education at ADFA will be provided in a military environment. ADFA, initially, was conceived to be a university in a military environment or if you like, two things; a university and a military academy.

There has been an argument put forward that you cannot have a liberal university education in a military environment. That is another issue although the Royal Military College (RMC) experience runs counter to this view. If the Services do want their young officers (or potential officers)

THE AUTHOR

Commander Daw joined the RAN as an Instructor Officer. He completed the Long Meteorology Course in 1967 and spent some years forecasting for the FAA. In 1975, he commenced a four year period in the Naval Training and Education Branch in Navy Office. The last 18 months of this posting was as ADFA Project Officer — Navy. Twelve months in the US at Florida State University in Tallahassee preceded his present posting as Officer-in-Charge, RAN School of Training Technology.

educated in a military environment, as they have said they do, then ADFA will meet this requirement.

ADFA will also offer a much broader range of courses to first year degree students than the College could ever hope to do. This will be beneficial to the students and the Navy. It will enable a university education to be offered to a broader range of applicants and will provide the Navy with a more liberally educated group than is now the case with the first year available at the College.

As the project has developed and been refined, Navy has had to give consideration to the number of officers to whom it wishes to offer university education. This has been the reason, in part, for the increasing number of officers attempting degrees over recent years. It has also resulted in planning for more mature officers to commence or complete first degrees and an acceptance that a small number of officers will complete post-graduate studies.

I believe the greatest advantage ADFA has to offer the Services, and particularly Navy, in the longer term is the facility for post-graduate research. Not only will there be the places offered to Naval students to conduct research but there will be the opportunity to sponsor, or perhaps fund, research into specific Navy problems. If properly managed and planned, this activity could provide the RAN with a base of research data and findings which would not otherwise be available. That is, the research could not only be conducted for the Navy but, if required, it could be conducted on the RAN or on a Naval problem. It will be up to the RAN to identify areas where research is needed.

An extension of this post-graduate research benefit will be the facility of ADFA staff to provide short courses, seminars, conferences, workshops and so on, to meet particular RAN requirements or at least Defence requirements. At present, we use other tertiary institutions to provide this service and we have to take what is offered rather than what we would like.

ADFA will also give the Navy an opportunity to state its particular requirements in terms of course content. It will not be able to dictate what should be in a syllabus, but where particular requirements are identified. The RAN has a voice on the ADFA committees to ensure they are at least considered. The best way for these requirements to be presented will be for the three Services to offer a united front where this is possible. An example here might be in the area of management training, where Army[4] has already commenced documenting its particular position on the provision of management courses.

The RAN has also described a particular need it has identified in the area of Engineer education[5] which cannot be met by existing university courses. ADFA may be in a position to solve this problem, at least in part. I am not advocating that the Navy, or the Services as a group, exercise control over the curriculum here but merely suggesting the institution should be receptive to meeting the needs of its clients.

Present arrangements have not really allowed serving officers to lecture military students in academic subjects with the exception of first year at the College. I believe there are benefits for the Services if this does occur on a small scale so that students do not see academics as completely on the other side. The military officer lecturer has a foot in both camps and can serve as a link putting points of view to both sides and it provides the academically inclined officer with a posting opportunity which can be personally satisfying. Of course, these postings should be open to all suitably qualified officers of any List or Specialization.

'Master Ned' in an article last year in this journal[6], also makes some of these points. It is refreshing to see him admit that what we must do is make the concept work. I might add that that is what a lot of thinking in Navy Office has been aimed at achieving over recent years. Most of the points made in his article have been recognized and carefully considered by the responsible Navy planners. For example, the large number of mature RAN undergraduate students in the planning numbers have not been plucked out of thin air but is the result of the recognition of the importance of this group at the Academy and the need for non-graduate officers to have an opportunity to complete a degree.

All readers of this article should be under no misconception of ADFA's role. It is to educate not to train. While I have indicated there will be some military training conducted, and it will not be insignificant in terms of time and scope, the major function of the Academy will be to offer a broad and liberal education to 'officer-cadets' of the three Services. I believe that the military staff of the Academy must keep this point in mind. This does not mean that whenever the academic and military interests are competing, the academic interests should win. It does mean that where interests are competing and it can be shown that the student's academic results will suffer then the military interest should take second place. This, of course, does not apply to conducting military training during academic leave periods. Clearly this will have no effect on academic results in most cases and will have considerable motivational and experiential value for officer cadets.

The Academy will be a purpose-designed Academy. Although it will not have the history and tradition of the existing academies, it should have more to offer in terms of quantity and quality of facilities. The scale of the institution, compared with the existing academics will ensure that things are generally 'bigger and better'. For example, I

believe that computer terminals will be sited in accommodation areas for student use at all times.

The location of the Academy in Canberra will not be to everyone's liking but there will be advantages. The prospect of living in Canberra to an eighteen year old would, I imagine, be more attractive to him than living in Jervis Bay. There are many facilities which can be utilized, for example, libraries, theatres and strong sporting competitions. There should be opportunities for lectures from a broad spectrum of experts at little or no cost.

The Academy could become more of a national institution. Australians do not hold the Defence Force in particularly high regard and few would know where HMAS *CRESWELL* is or what it does. If the Academy could be promoted as a national institution and it could be designed to accept visitors, then it could go some way to lifting the status of the military in this country. The fact that the institution is going to be a College of the University of New South Wales will be a loss in this regard, for academic excellence achieved by the Academy will, to some extent, be shared with the University of NSW.

There has been some criticism of the claim that ADFA will bring the Services closer together and increase their understanding of one another. This fact could be argued all day but there is some reason to believe that the larger numbers at ADFA will result in a more broadening experience for those under training. Some aspects of the military training programme being common should also increase the awareness and understanding of the other Services. I wouldn't make too much of this point but 'bull sessions' among students of the three Services should be more interesting and competitive than among those from only one Service.

Well, where does this leave us? The advantages of ADFA that I have mentioned, alone are not really adequate to justify the institution. I have not claimed that they would, not do I at this point. I believe the initial rationale for the institution was predicated on a need for more officers to have a university education. As each Service solved this problem in its own way the rationale changed and the major argument moved away from the increased numbers, although that was still a problem, and became more centred on the argument of economy of scale both on the grounds of increased efficiency and to some extent increased effectiveness.

If you accept the cost per student comparisons between ADFA (projected) and the existing Academies then there is no argument, ADFA will clearly be more efficient in the economic sense. The wider range of courses available at ADFA vis-a-vis the Service Academies could form the basis of an argument claiming that AFDA will be more effective in providing a broad and liberal university education. I have not sought to argue these points but merely to show that there may be other benefits in the new institution — when we finally see it!

NOTES

1. Daw, H.L. 'Casey University — Australian Defence Force Academy' — *Journal of the Australian Naval Institute*, Vol. 4, No. 3, p42-45.
2. Parliamentary Standing Committee on Public Works 'Report Relating to the Proposed Construction of a Defence Force Academy in the Capital Territory', AGPS 1979, p61.
3. *Martin Committee Report*. 1970.
4. Castle, M. *Report on Management Training in the Australian Army*, 1980.
5. CNS described the Navy requirements for Engineer Education to the Parliamentary Standing Committee on Public Works. The full text of his evidence can be found in:— Parliamentary Standing Committee on Public Works 'Minutes of Evidence Relating to the Proposed Construction of a Defence Force Academy in the Australian Capital Territory, Part IV', p1243-1252.
6. Master Ned. 'More Thoughts on ADFA' in *Journal of the Australian Naval Institute*, Vol. 6, No. 3, p32-35.

THE AUSTRALIAN REQUIREMENT FOR AN OFFSHORE PATROL VESSEL

by Alan Payne

The present policy of maritime surveillance covering the 200 mile limit and beyond leaves very much to be desired. It is an *ad hoc* system which utilises aircraft from civilian sources and has no allocated ships, only patrol boats. In an article in *The Australian* of 7th August, 1980, John Spiers claimed that the RAN 'acknowledges .... that there is an obvious gap between the capabilities of its patrol boat-sized craft and the next largest units of its fleets which can be effectively diverted to more than a limited range of tasks'.

First the big gap between the patrol boats and the 2700 ton destroyer escorts has to be bridged and secondly it is evident that a Maritime Surveillance Command will have to be formed. This will not be a Coastguard service in the old sense of the word, although some of the normal coastguard duties will fall to the Command. On no account can the new Command be manned by civilians, because quite apart from the enormous expense, the civilian manned body would not be able to serve the purpose required, which is long range surveillance with anti-submarine capabilities.

In a speech in Canberra on 29July 1980 to the Committee for the Establishment of an Australian Centre for Maritime Studies, the Chief of Naval Staff, Vice Admiral G.J. Willis stated that 'A separate coastguard could be very expensive, especially if paid at merchant service rates and the taxpayers have a right to look for this return for their investment in the Navy. We are also dealing with an activity which presents the RAN as useful, skilful and visible in the eyes of the public and this is important'.

There are many objections to a civilian manned or para-military service quite apart from the expense. Due to very high rates of pay, overtime and long leave, the service would never be fully operational. There is in fact nothing whatever to be said for a civilian manned service.

It will be argued that the ships required will be very expensive, but this is not the case. Two suitable designs of Offshore Patrol Vessels (OPVs) are available — a 17 knot and a 20 knot trawler type, which have long range and are very seaworthy and both are fitted with fin stabilizers. The Royal Navy has completed seven ships of the *ISLAND* class and these have proved most successful. The 1980 price of these ships as built in the United Kingdom are £5½ million each. The cost of the larger and faster OPV Mark II is around £8 million depending on what armament is fitted.

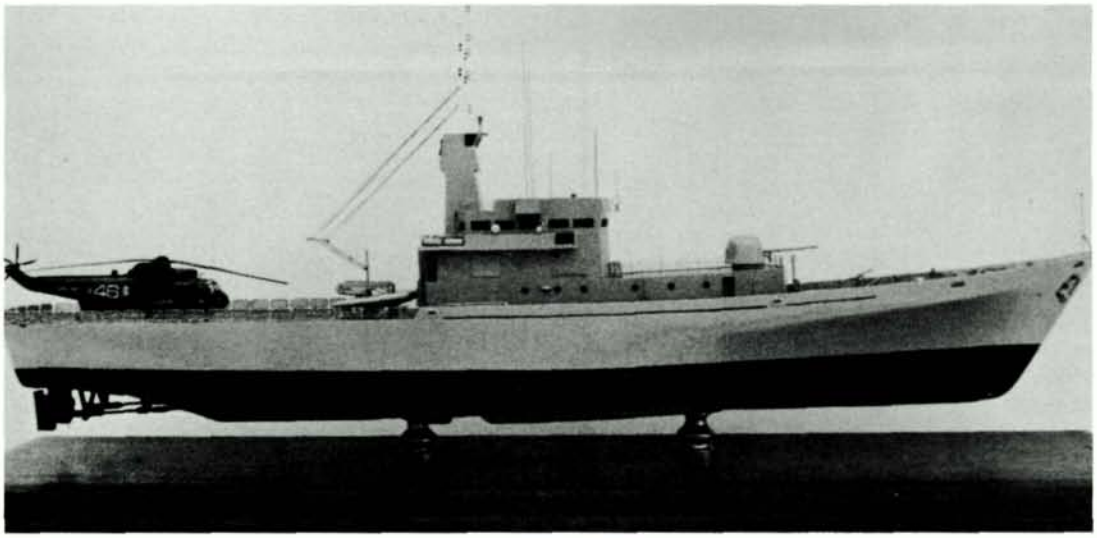
British Shipbuilders are promoting the successor to the *ISLAND* class, the OPV Mark II or *CASTLE* class. Although the design is credited to the builders, Hall Russell of Aberdeen, the design is generally believed to originate in Bath. In actual fact, the designer is a naval constructor at Bath, who is now an Assistant Director of Naval Construction. Mr. Brown is also a noted naval historian and this is the connection between the designer and the writer.

In a letter, Mr. Brown wrote to me, 'Yes, I can tell you quite a lot about OPV II as I designed it (very much my idea and my sketch design). We did a very detailed sketch design and like Isaac Watts, circulated to Industry and said "Do better or quote for building ours". I selected ours as the most cost effective and Hall Russell as lowest cost. They have developed it a little, but all essential parameters and layout are unchanged'.

The OPV II is a remarkable design as it is only 200 tons heavier than the *ISLAND* class and yet the waterline length is increased by 36 per cent with only a six per cent increase in beam. The waterline length is 75 metres and the beam a healthy 11.5 metres. The maximum speed has been raised to 20 knots without any exhorbitant demands on power. Both types of OPV are propelled by diesels, the Mark II being twin screw.

THE AUTHOR

Alan Payne served at the Admiralty as a naval architect for most of World War II. He has written extensively on naval subjects and was the co-founder of the Naval Historical Society of Australia, an Honorary Life Member of that society and the editor of the *Naval Historical Review*. He authored or co-authored several of the histories of RAN ships published by the Naval Historical Society. Unfortunately Alan passed away in October 1980, shortly after writing this article for the ANI Journal. He was a great supporter of the RAN and his death brought a strong sense of loss to those of similar vein.



Model of the Castle Class fitted for the role of offshore patrol.

— by courtesy Hall Russell & Co Ltd.

It is understood that Mr. Brown would have preferred a slightly longer hull for the Mark II and with his approval and co-operation, what amounts to a Mark III has been proposed with a waterline length of 82 metres, but with the same beam and the same lines. A sketch design has been prepared and submitted by me to Navy Office. This new design is in every sense a Light Frigate with A/S capabilities, including a landing platform and hangar. But it also has all the advantages of the OPV — strong construction and built to merchant ship standards as were all frigates built for the British and Dominion navies during the war. The main difference in cost between the Mark II and the III will be the cost of the armament and sensors, the cost of the longer hull and the increased power will be relatively low in comparison.

The submission to Navy Office of the Light Frigate concept was done mainly for possible use as anti-submarine ships and not so much as Offshore Patrol Vessels, but it is evident that due to their relatively low cost, the OPVs are ideal for maritime surveillance.

There are in fact a number of indications now both inside the RAN and outside that the OPV conception is gaining support, particularly as the time draws near for the Government's next review of surveillance. There is of course nothing new in the concept and both the United States and Canada have large Coastguard services. What is new as regards Australia is the idea of a Maritime Surveillance Command with an adequate number of Offshore Patrol Vessels, patrol boats and aircraft to do the job.

A three year program is proposed for the new construction and it is suggested that it include two Mark Is, four Mark IIs and two Light Frigates. It might be decided to increase the number of the smaller ships at the expense of the bigger ones and also as the OPV II design is very flexible, it might be worth examining the prospect of an improved and faster Mark II design. There is no question that the speed of the Mark II can be increased to about 23 knots with more power and also if the hangar is omitted, then the ship will be able to land the largest type of helicopter in service. There is also a requirement to carry a sea-boat, which is not carried in the Mark II, but is in the Mark III.

The first two OPV Mark IIs will commission in 1981 and the first of two of a projected class of twenty six 270 foot medium endurance cutters for the US Coast Guard will also commission in that year. These ships are about the same size as the Light Frigate but are not a very good design because the towed sonar aft dictates the design and the cutters have to have telescopic hangars and a gun right forward. The Light Frigate on the other hand is an excellent design and like the OPV Mark II is very versatile. The Light Frigate is a most seaworthy type of ship capable of going anywhere in the world, including the Antarctic if suitably stiffened forward. All the OPV types are fitted with fin stabilisers and are of strong construction.

Particulars of the OPV Marks I and II and the Coast Guard Cutter are given in Table 1:

TABLE 1.

	OPV II	OPV III	Coast Guard Cutter
Length overall	81.0 m	88.0 m	82.3 m
Length w.l.	75.0 m	82.0 m	—
Beam	11.5 m	11.5 m	11.6 m
Draught	3.4 m	3.6 m	4.1 m
Deep Displacement	1450 tonnes	1600 tonnes	1700 tonnes
Speed	20 knots	24 knots	20 knots
B.H.P.	5,640	16,000	7,000
Endurance	10,000 miles at 12 knots	12,000 miles at 12 knots	8,400 miles at 14 knots

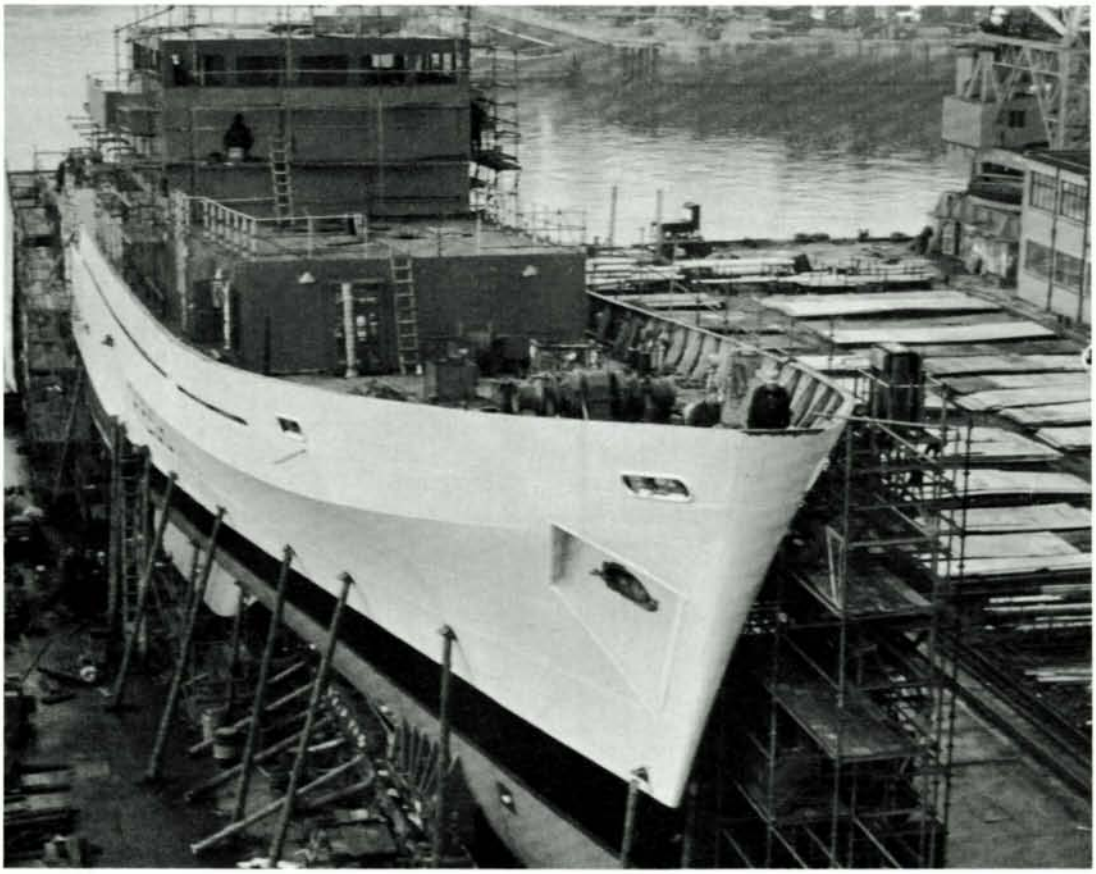
The cost of the OPV I has been stated by the builders to be in excess of £5 million according to 1980 prices, so perhaps it would be wise to call the cost £6 million by 1981 prices. By the same token, the cost of a Coastguard version of the Mark II is estimated to be around £8 million by 1981 prices. The cost of the Mark III or Light Frigate would depend largely on the armament and sensors fitted. The armament proposed for the Light Frigate consists of one 76 mm OTO Melara automatic gun, two triple ASW torpedo tubes, two twin 30 mm Oerlikons, a Lynx helicopter and sonar. The armament of the OPV I consists of one 40 mm Bofors and in the case of the Mark II, this would be increased by two twin 30 mm Oerlikons. Assuming Australian costs are in the case of relatively simple warships in the order of 25 per cent more than British costs, it is estimated that the total cost of the Light Frigate including armament and helicopter would be in the order of 45 million dollars.

It was as long ago as 1962 that Admiral Zumwalt first advanced his theory of the 'High — Low' concept. 'High' was short for high-performance and high cost, while 'Low' was 'short for moderate cost, moderate performance ships and systems that can be turned out in relatively large numbers, they could ensure that the Navy could be in enough places at the same time to get the job done'. The 'Low' concept as far as the RAN was concerned was first proclaimed by Captain John Collins in 1938 when he wrote a staff paper in preparation for war entitled 'A plea for smaller Sloops in greater numbers'. This resulted in the construction of sixty minesweepers, which also served as A/S corvettes. It is difficult to know what the RAN would have done without these small ships during the war.

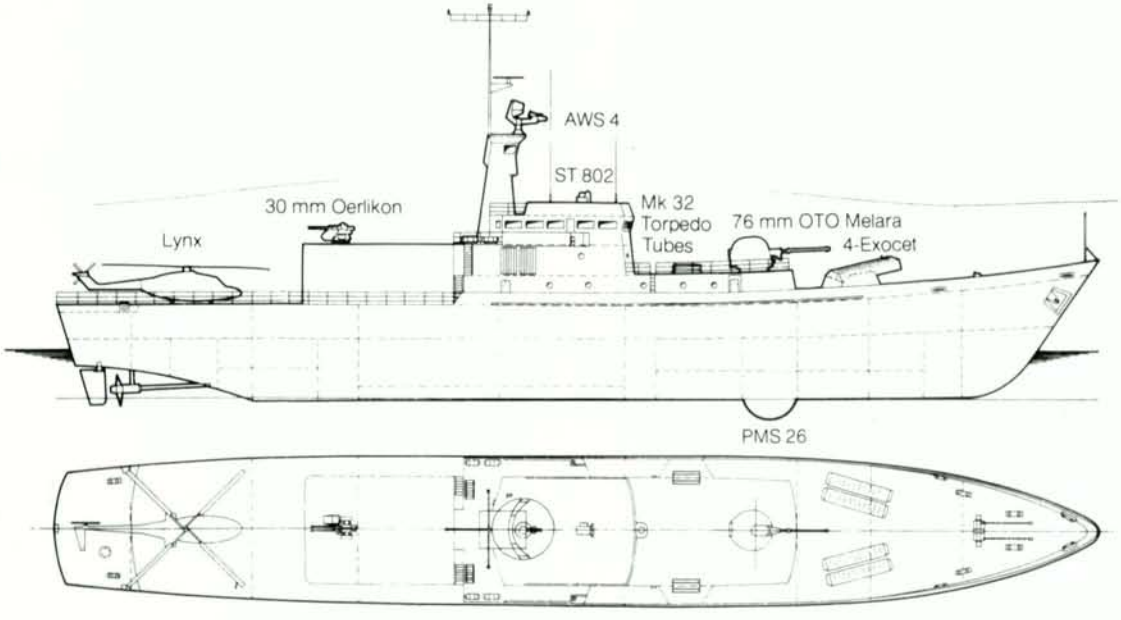
OPVs certainly come under the 'Low' category, but it must not be forgotten that while the FFG is 'Low' for the Americans, for the RAN the FFG is very definitely 'High'. At $250 million per ship, the FFG is very expensive,. But by the same token the OPV, although very 'Low', can have vital improvements on very much more expensive ships. Two examples are that the OPV II is twin screw and the FFG is single screw and also that the Type 12 Destroyer Escorts can not carry helicopters while the OPV Marks II and III can.

Unfortunately the RAN has for many years shown a strong tendency for the 'High' concept and very little for the 'Low' with the result that the vitally needed small ships have been badly neglected. The time has come for better balance in our naval forces.

The Island Class patrol vessel, HMS *ALDERNEY*, on patrol near offshore installations.
— by courtesy Hall Russell & Co Ltd.



The first Castle Class 20 knot OPV ordered by the Royal Navy on the construction berth at Hall Russell, Aberdeen.



The General Purpose concept for the Castle Class.

COALBURNING BULKCARRIERS FOR AUSTRALIA

by J.A. Noble

King Coal will soon make his first trip to sea under the Australian flag. Two 75,000-tonne bulkcarriers are being built in Italy to haul bauxite from Weipa to Gladstone. Bulkships have placed the order; the Australian National Line (ANL) are expected to order two similar ships for the same trade; B.H.P. and Howard Smiths have bigger coalburners on their drawing boards for coal exports.

One boiler is all that is considered necessary for each of the two ships ordered, denoting a marked change in technology in the forty years since King Coal abdicated his seagoing throne.

In 1940 three boilers were standard installations in Britain's coalburning warhorses of 10,000-ton capacity. Design of the prototypes, *EMPIRE LIBERTY* and *OCEAN LIBERTY*, was modified in the United States to mass produce the well documented Liberty ships. Liberty ships, named after these prototypes, were all oil burners which were only considered to need two boilers.

Australian shipbuilders also used a standard design for the thirteen ships ordered for the Commonwealth government during the war. Coal was plentiful, oil more suitable as fuel but expensive and imported. Designers made an each-way bet by fitting each of these ships with a mechanical stoker for coal-firing the two boilers designed to burn oil fuel.

RIVER CLARENCE, launched at Cockatoo Island in 1943, burnt coal while undergoing sea trials but was soon converted to oil. None of her twelve sister-ships ever burnt coal.

These thirteen ships, all named after Australian rivers, became the major units of the Commonwealth-owned fleet which the Government offered to sell to private enterprise in 1956. Australian coasfal shipowners were struggling to compete with land transport. Coalburners or motorships were in favour for the few orders required for their fleet replacements. Nobody needed oilburning steamships.

The Government then created the Australian National Line to operate the Commonwealth-owned ships commercially under the management of the Coastal Shipping Commission.

Fortuitously the 1957 closure of the Suez Canal sent overseas freight rates soaring. ANL was enabled to place its ships profitably on overseas charters. But when freight rates collapsed with the reopening of the canal these ships had to be laid up as they returned home.

At that time the only prospect in coastwise shipping was for bulkcarriers. Vehicle deck ships and containers came later in reply to road hauliers challenge.

By 1979, ANL was operating 35 efficient ships on both overseas and coastal services: some turbine driven oilburners, others motorships. More fractions of crude oil was being used for petro-chemicals, leaving less residue for furnace oil. Cost had skyrocketed. Shipowners went back to the drawing boards seeking an alternative in indigenous coal. Coalfiring equipment would increase initial cost; boilers and bunkers would encroach on cargo space; but the overall saving promised to offset these disadvantages. Millions of tons of Weipa bauxite were needed annually at Gladstone. New aluminium smelters in the pipeline would increase this demand. Gladstone is close to the Callide coalfields. The Weipa to Gladstone bauxite trade was ideally situated as a proving ground for the coalburning comeback.

Bulkships then ordered the world's first big coalfired bulkcarriers. When they are commissioned in 1982 they will take sufficient Callide coal, screened to almond-sized lumps, at Gladstone for the voyage to Weipa and return.

Coalfired power stations ashore have maintained technology for mechanical stoking; oilfired

THE AUTHOR

Captain John Noble retired two years ago from the Port Phillip Pilot Service. Earlier he had considerable experience at sea with the Union Steamship Company of New Zealand, including command of coal-burning vessels, as well as other ships of that company's fleet. Captain Noble has written four books and is a regular contributor to newspapers and magazines, including *The Bulletin*.

marine boilers have improved over the years. Experience in both fields has been combined in the design of the single boiler to be installed in the Bulkships vessels.

Although the ships are being built in Italy, the coal conveying systems are of British origin. More than fifteen hundred landbased systems in thirteen countries have produced a system which will deliver coal to the furnace almost as efficiently as oil or gas can be delivered.

Key to this efficiency is a 'dome' valve which will open automatically to pass a set quantity of coal. This will be conveyed for a distance of 45 metres at the rate of nineteen tonnes an hour. The dome valve, the only moving part in the system, will withstand the constant abrasive friction of the moving coal.

This will be delivered to the ready use bunker within an automated, dust-proof system. Thence it will gravitate into pressure vessels where the dome valve will regulate the quantity. From the pressure vessels, the coal will be blown into a hopper above the furnace by compressed air. Below the hopper revolving blades will throw it into the furnace. Dust particles will be burnt in suspension, lumps will fall on to an endless belt in the form of a chain-grate moving at a speed regulated to ensure complete combustion. Carbon particles in the fly-ash normally emitted from the funnel will be extracted and re-injected into the furnace to provide more heat and less air pollution. Dry ash residue will be stored on board for dumping in deep water or discharging at terminal ports.

If the coalfiring system fails, or the supply of coal is exhausted, a single oil-burning nozzle will maintain steam to 50% of the boilers capacity by burning light fuel used for the ship's diesel auxiliaries. There will also be an emergency take-home motor, independent of steam, capable of propelling the ship at 6½ knots.

Loaded draught of 12.2 metres means departing from Weipa at high tide. Gannet Passage, at the tip of Cape York, will also have to be traversed at a suitable tide level; and there will be a further tidal restriction at Gladstone; situations of minimum bottom clearance that demand positive response to the helm. Oversize rudder and steering mechanisms, and fail-safe back-ups recommended by IMCO in the wake of the *AMOCO CADIZ* disaster, will ensure such response. Service speed of fifteen knots will be obtained from a single screw turbine on an estimated consumption of 200 tons of coal a day.

Bigger coalburning bulkcarriers flying the Australian flag overseas could offset the disadvantages under which Australian ships now operate. They will set a trend for the future as liquid fuels become relatively scarcer and more expensive.

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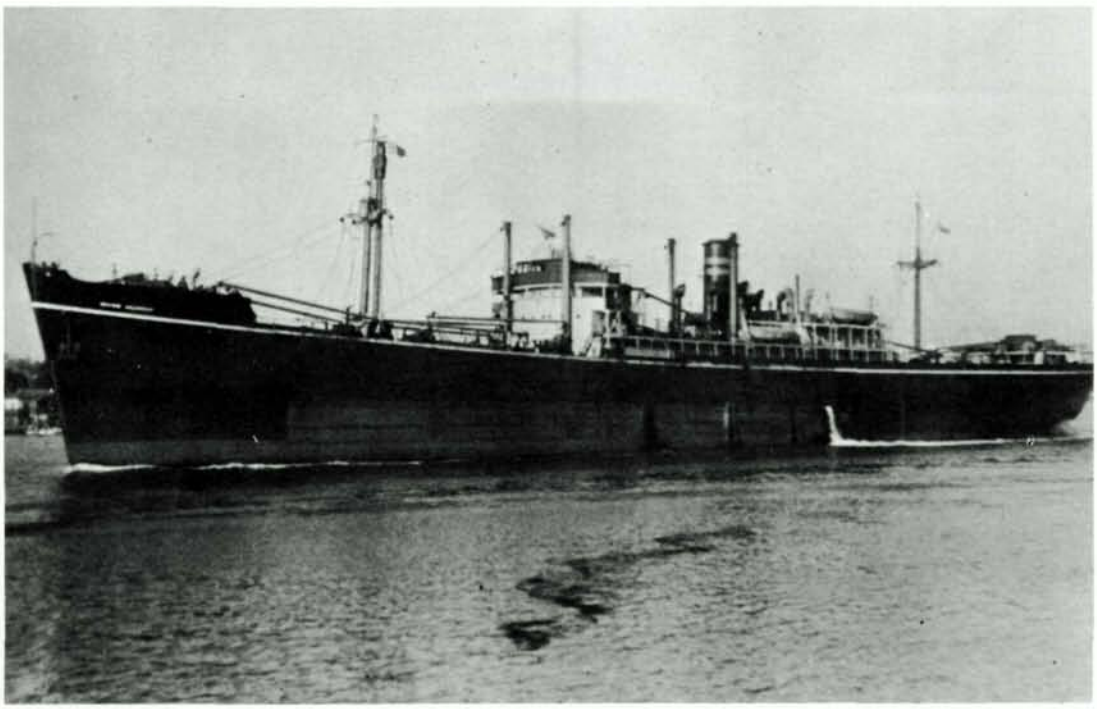
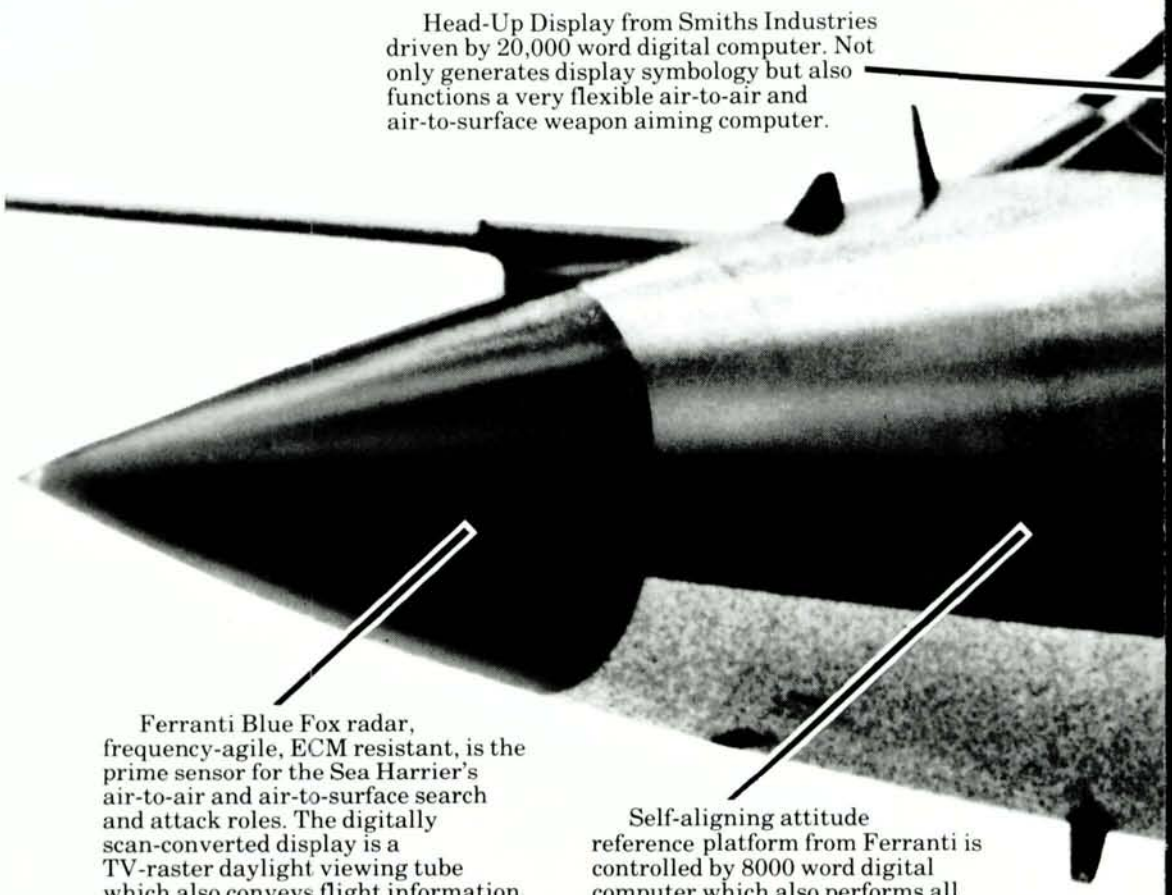


The SS *RIVER MURRAY*, one of the 13 ships of the River Class referred to in this article. These ships were 4900 g.r.t. and were 449ft in length.

WHAT THE ISLAND IS A SEAGOING



Head-Up Display from Smiths Industries driven by 20,000 word digital computer. Not only generates display symbology but also functions a very flexible air-to-air and air-to-surface weapon aiming computer.

Ferranti Blue Fox radar, frequency-agile, ECM resistant, is the prime sensor for the Sea Harrier's air-to-air and air-to-surface search and attack roles. The digitally scan-converted display is a TV-raster daylight viewing tube which also conveys flight information as well as radar data to the pilot.

Self-aligning attitude reference platform from Ferranti is controlled by 8000 word digital computer which also performs all navigation and endurance functions.

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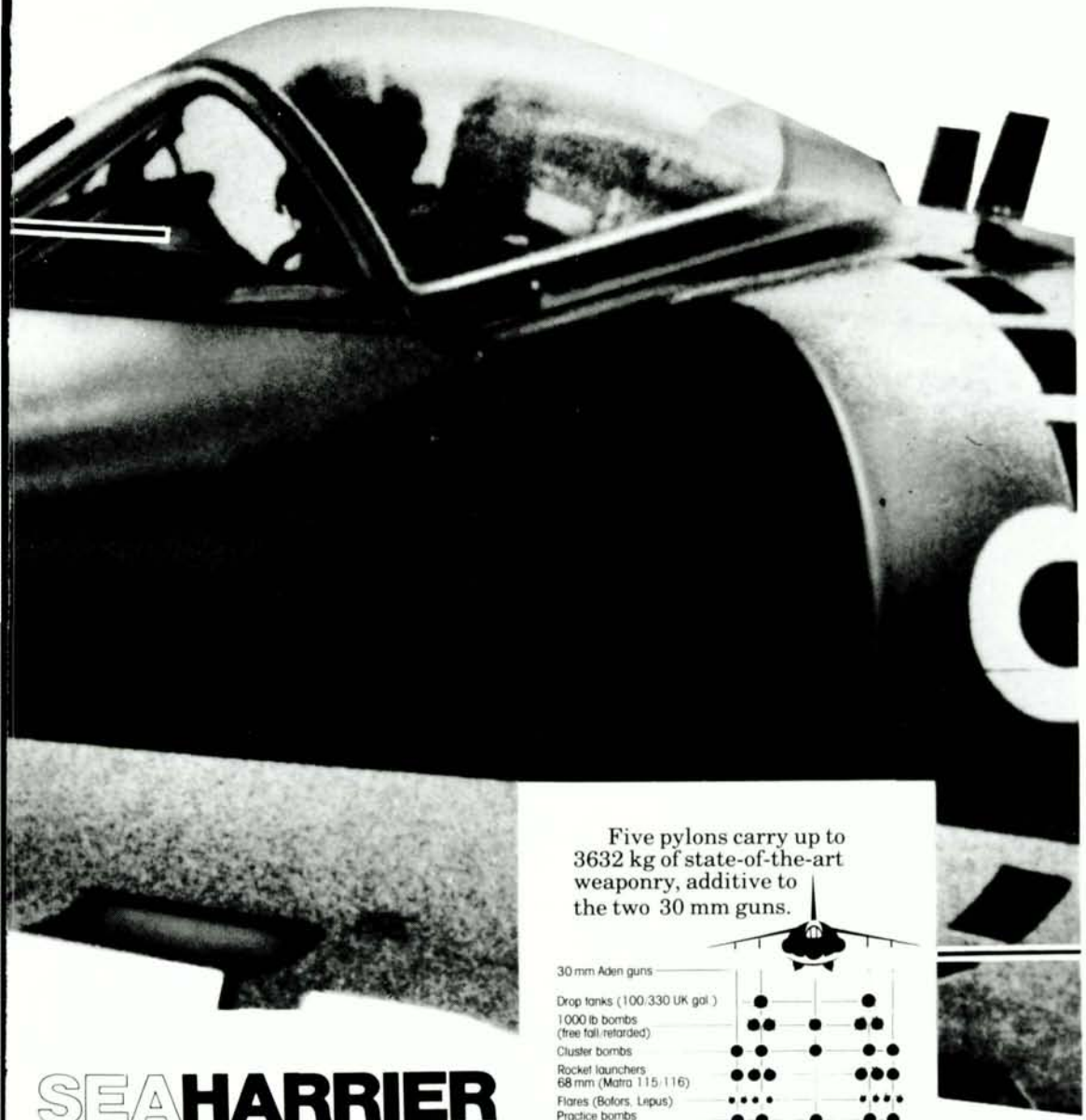
CONTINENT NEEDS WEAPONS SYSTEM



Five pylons carry up to 3632 kg of state-of-the-art weaponry, additive to the two 30 mm guns.

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HOW TO SUCCEED IN THE NAVY — — WITHOUT APPEARING TO TRY

By Sub Lieutenant J.V.P. Goldrick RAN

Introduction

In view of the sudden discovery by the upper echelons of the Navy of the need for 'career planning' for officers and men of the Service, and the consequent frantic efforts by Navy Office to ensure that its minions' careers are planned, rather than organized by the time-honoured 'musical chairs' method, it appears that there exists a distinct requirement to bring career planning into the open.

Many of those ambitious young men entering Her Majesty's Australian Navy as officers suffer from a distinct lack of the knowledge necessary to 'get on' in the Service. Since the ultimate goal is to be possessed of a rather nice flag of St George with two or less balls in the inner cantons, it will be appreciated that there is much that needs to be done between entry and attainment of the goal.

In fact, the situation is something of a 'Catch 22'. It is easy to be wise after the event, and the only people who really know how the system works are those who have, for a variety of reasons, been passed over. To be sure of getting to the top, one must start as early as possible, armed with as much knowledge as possible. It seems as if it can all be summed up by the epigram 'If the young only knew, if the old only could'. It is not proposed in this article to outline a course of action for the early years of the career of an Aspiring Young Officer (which person will henceforth be described as an A.Y.O.) which would cover every eventuality. This would be far too ambitious an undertaking, considering the present state of the art, and the experience available, but it is hoped that the following notes may prove to be of use to all A.Y.O.'s of the Navy, as well as those of the other Services. It is stressed that comments are most welcome and, indeed, are vital for the ultimate success of this ambitious project.

Marriage

A matter which needs to be early settled, or at the least mapped out, is that of marriage. Though our A.Y.O. may have no intention of getting caught until he is at least a Lieutenant Commander, he must be aware of the many traps and the dangerous animals that lurk around warships and wardrooms.

First, and most important, avoid at all costs Admirals' daughters. By the time it matters for an A.Y.O., the old geezer will have retired and left him nothing but enemies. Furthermore, it is far too ostentatious and obvious. It is in very bad taste to have an average of more than 2½ stripes on the sleeves of the arms holding up the arch of swords. Aside from the fact, her Father will be giving our A.Y.O. plenty of completely unwelcome advice until the end of time. (Mother, on the other hand, will not want to know a thing more about the Navy — a pity, she probably knows a great deal more about the subject than her husband!). Daughter will also plague the rest of the A.Y.O.'s career by meeting at each new official function two or more people who took her out when 'Daddy' was F.O.C.E.A. Worse still will be the foreign officers. Does our A.Y.O. remember the great time he had with that U.S.N. Rear Admiral's daughter in Hawaii? These officers are sure to know things about his wife he never even dreamed of.

Our A.Y.O. should avoid, but be pleasant to W.R.A.N. officers. Marriage is out of the question, since half are much smarter than the average A.Y.O., will insist on staying in the Navy, and will have four stripes while Guess Who is still eyeing that brass hat in the outfitter's window. This could be rather embarrassing. The others, conversely, will be delighted with the marriage, deeply in love with our A.Y.O. and insist that he leave the Service 'before you have to go out again on one of those horrible boats'.

A good buy would be the daughter of a young, up-and-coming Captain or Commander. Father — and this is most important — must be popular with his juniors, and the offspring had better be pretty good looking. If either of these conditions is absent, the match will do an A.Y.O. far more harm than good.

THE AUTHOR

Sub Lieutenant Goldrick joined the RAN College in 1974 and graduated from the University of NSW with a Bachelor of Arts degree in 1978. After bridge-watch-keeping training in the RN in HM ships *ALDERNEY* and *SIRIUS*, he returned to Australia late last year and is now serving as XO of the LCH, HMAS *TARAKAN*.

A better selection is the following: Age 21, blonde, blue eyes, 34-22-34, good-looking, Graduate B.Sc. (Avoid any other degree. Medicine, Law and Engineering are too clever. Arts girls are generally very pleasant, but will present our A.Y.O. with 100 reasons why Australia shouldn't have a Defence Force. This would be par for the course these days except that they are good reasons. This can be somewhat trying when her impassioned pleas at the ship's cocktail party in Sydney persuade the entire wardroom to resign on the spot. Even worse when our A.Y.O. is in command. (Try explaining that one to C.N.S.) Father a Permanent Head in the Federal Public Service, aged 43.

The important thing to ensure about 'Daddy' in this case is that he is an ambitious bounder. The Defence Department appears to provide the best opportunities for 'Empire Building' and is naturally much sought after. With any luck, 'Daddy' will get moved there eventually. It goes without saying that 46 is the maximum permissable age of 'Daddy'. This would give our A.Y.O. twenty years to consolidate his position in the Service. 'Daddy' should see our A.Y.O. alright by having him promoted with considerable (but never indecent) haste, and once, as they say, a Flag Officer, always a Flag Officer. (Otherwise known as: 'You can't do a Rear Admiral down'.)

Branches

If an A.Y.O. wishes to get on in H.M.A. Naval Service, the trick is to realize that he must out-'salt' the next man while remaining couth at the same time. In these peaceful days with their few accessible wars, this is not as easy as it used to be — *three rows of medal ribbons being more conducive* than anything else. One can, however, go a long way towards achieving the right effect by choosing the right branch. One must be very careful of one's specialization. There are many traps for the young player, and it is unfortunate, to say the least, to be branded for life by a snap decision made in one's callow youth. Great care must be taken in the selection.

Engineering

Unless one can speak four languages, stand to be selected as a test pilot (or the equivalent) and represent Australia at some sport, an A.Y.O. should avoid this branch. It is far too much like hard work and one starts off at a disadvantage with all concerned. Mechanical engineers tend to smell too much like submariners for anyone to wish to talk to, let alone promote them. Electrical engineers, on the other hand, sport horn-rimmed glasses, pallor and a straggly attempt at a beard and manage to lose their audience on the third

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Besides which, electrical engineers tend to lose their cool when, having finally managed to nab that nice little brunette from the First Lieutenant at the ship's cocktail party, they take her up to the bridge and then spend the next forty minutes trying to remember what sort of power that funny brass nozzle-shaped thing labelled 'Captain's Sea Cabin' runs on. This convinces the brunette that the unfortunate man is not really a naval officer, but someone's younger brother in borrowed clothes. Anyway, if the electrical engineer had more sense he would have taken her to the main switchboard. At least he would have known which switches not to lean on. After all, if an A.Y.O. could speak four languages he wouldn't be in the Navy, would he?

Instructor

This branch is also to be avoided. The golf and the almost continuous shore duty would be delightful, but an A.Y.O. would never get away with it. I.O.'s being better educated than normal seaman officers tend to get more mileage out of less experience. This could cause annoyance among an A.Y.O.'s superiors.

Supply

The duties involved in supply tend to lead the officers concerned in one of two unfortunate directions. Which one the particular supply officer has taken can be discerned by observation of his face and features. To be engaged upon a career in which one is forced to have the keeping of large sums of money with little or no say as to the rules behind its allocation can have a depressing effect upon an officer. It is natural, after a time of guarding money, to begin to regard it as one's own, and *it is therefore extremely galling to have to give it* out to those whom one does not believe to merit such largesse (or, conversely, not to be able to give it out to those who do). The regulations, as regards pay and every other store, only admit of so much manipulation.

The wise supply officer who finally accepts this fact becomes pale, drawn, and generally rather neurotic. The unwise supply officer who does not, whether out of innate kindliness and desire to give other men more of this world's goods, or else pure greed, becomes plump, relaxed and cheerful. Alas! Nemesis is but a few years distant and an otherwise promising career will be swiftly ended as our Friar Tuck is dismissed to durance vile. Those who may indignantly remark that the system is in actual fact capable of successful long-term manipulation must be reminded that those who are capable of doing so, inevitably go into business, or the Public Service, where the opportunities are far greater. Apart from all this, the A.Y.O. must remember the celebrated remark of General the Earl of Cardigan, hero of the Light Brigade.

'Paymaster, paymaster? He is not an officer, Sir! He is in trade'!

Executive

Although it is definitely recommended that our A.Y.O. become a seaman officer, selection of a sub-specialization within that branch is a very involved matter. With research into this difficult subject at its present delicate stage, this analyst intends to concentrate particularly upon why certain sub-specializations should not be selected. As this will, unfortunately, amount to every sub-specialization available, all being a pretty loathsome prospect for any self-respecting A.Y.O., the young man may be in somewhat of a quandary. It is proposed, at the conclusion of this discussion, to submit a new sub-specialization to the critical gaze, a choice which will serve to satisfy the most discriminating A.Y.O.

Communicators

The unfortunate thing with this branch is that good communicators tend to be frustrated weapons electrical people, while bad communicators are soon returned to general service after infuriating their Rear Admiral/Commodore/Commanding Officer by sending that signal meant for the senior officer's Wife/Great and Good Friend/Washer woman in Canberra/Sydney/Melbourne to Manus/Macquarie/Galapagos Islands instead. (Delete those not applicable). Communicators tend to get promoted very late, or not at all, on the principle that one executes the bearer of bad tidings to soothe the feelings of all concerned. (The reverse side of the coin, that the messenger with good news gets promoted, no longer applies, since the last good news anyone in the Australian Navy got was the sinking of the *EMDEN*.)

Submariners

Submariners not only smell, they are mad, bad and dangerous to know. Enough said.

Navigators

Those in this specialization have often been likened to the Bactrian Camel, that animal which alone knows the hundredth name of God and which in consequence, exudes an air of superiority. Your analyst sees more of a similarity with the dinosaurs, since both species passed through an era of unassailed glory, and because navigators will soon be following the dinosaur into extinction. What makes matters worse for the 'navo' is that his end will be extremely undignified. In the fully automated warship of the future, while other officers will be replaced by vast, highly sophisticated systems which will do everything but whistle 'Dixie' on request, all that the Navigator will be able to point to will be a device the size of a matchbox, cunningly placed on the arm of the Captain's chair between the ashtray and the space for the coffee cup.

Gunnery

It is sometimes cruelly remarked of gunnery officers that to enter the specialization they have undergone a frontal lobotomy. This is not true, the state of mind of the average gunnery officer is perfectly natural. The problem with being a gunnery officer is that, although the success rate is high, this stems entirely from the furious energy which gunnery officers display for every evolution — energy which rarely fails to impress successive Flag and Commanding Officers. This, of course, rules out the gunnery branch entirely for any A.Y.O., since it is far too much work.

Surveying/Oceanography

Hardly to be considered, unless our A.Y.O. has a fetish for seeing his name in print at the bottom of charts. Surveyors may be described as the 'enclosed order' of the Navy. Surveyors may not take a vow of silence, but the time they spend ploughing back and forth off some benighted stretch of uninhabitable coast must amount to the next best thing. Whatever the nasty habits of our A.Y.O., he is unlikely to be either a misogynist or a misanthrope.

Torpedo Anti-Submarine

TAS officers are generally very nice people, but they have a distinct tendency to become manic depressives. Their position may be compared with that of the unfortunate Moses after God had lowered the boom and informed him that he would get no more than a glimpse of the Promised Land. After losing the submarine contact in exercise three times in a row, they may be observed in the wardroom leafing desperately through copies of the *USNI Proceedings* and *Navy International* in search of those much-vaunted 3000 ton hovercraft. Excessive acquaintance with the green grenade often has a marked effect upon the complexion of the average TAS officer. That pale man in the corner who looks as though he is being seasick is actually the TASO contemplating suicide. Leave him alone, he may get over it. If not, there is always another available straight off course.

Pilots and Observers

This analyst risks being lynched lumping these specializations together. Pilots are insufferable, with some small reason to be so; observers are even more insufferable for no reason whatsoever. Pilots' standard lines may be summarized as follows:

Age 23: 'Did you see my landing! . . .'
Age 33: 'There I was upside down at 100 feet . . .'
Age 43: 'You young men don't know what flying's about . . .'
Age 53: 'Now you take a Sea Fury under the old system . . .'

Observers tend to be among the group of people who could be labelled "life's passengers'. In fact, they bear the same relationship to pilots that instructor officers do to the seaman branch. Being necessarily possessed of at least the rudiments of reading and writing (how else would they find out that the pilots have lost them?), they can get a great deal of mileage out of their flying, despite the fact that they do very little that anyone, least of all the pilots, would call useful.

Non-Specialist

This branch of the Service has many attractions, however, there are pitfalls. The attitude that an A.Y.O. must broadcast is that one considers specialization to limit one's professional horizons. A combination of learned discussion of A.T. Mahan and other historical pundits, an intimate knowledge of the *Seamanship Manual* and close study of all the 'Warrie' magazines in the wardroom should be sufficient to startle all the keen up-and-coming sub-specialists. The real problem with being a non-specialist is that too many 'salt horses' tend to act like relics from the days of the Spanish Armada. Considering the number of barrel-shaped Lieutenant-Commanders with soup remains in their voluminous beards and beer stains on their cavernous jackets who go about declaring "I'm a seaman!', it is no wonder that the branch has such a bad reputation.

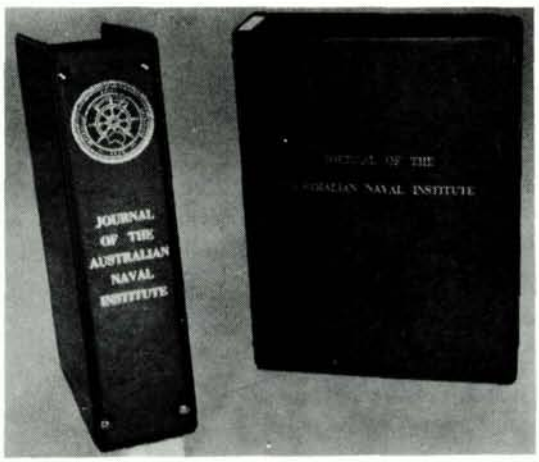
Mind you, if, on reflection, it is possible for our A.Y.O. to turn the image of the 'salt horses' about, then he should be able to do it with any branch. Which makes this last bit of advice rather superfluous.

Conclusion

The way out of this jungle of duties is considered by this analyst to be brilliant in its simplicity. Research has suggested that there may exist an alternative, an untrodden and completely novel yellow brick road to success. In view of the Navy's present enthusiasm for the acquisition of expertise in planning, administration and staff work, why should our A.Y.O. not specialize in Staff Courses?

When one considers that, what with the dazzling variety of courses available, ranging from the R.A.N.'s own "all singing, all dancing" show at HMAS PENGUIN, to the Royal College of Defence Studies in London, an officer can spend 13 years in his studies, followed by a further 13 years on the directing staff of the establishments concerned, what a vista of opportunities opens up! After such a time our A.Y.O. will, having been by default the only officer of his seniority not to run his ship aground, embezzle the cash, or mislay himself in action with the Queen's Enemies, be promoted to Vice-Admiral and Chief of the Naval Staff! What happier prospect could be imagined?

JOURNAL BINDERS



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THE DESIGN OF THE UNITED STATES COAST GUARD 270-FOOT MEDIUM ENDURANCE CUTTER

by Howard A. Chatterton and Thomas Braithwaite

BACKGROUND

The design requirement for a ship of the United States Coast Guard (referred to as a cutter) has its origins in a requirements analysis and planning document known as the Cutter Acquisition Plan. The 1974 edition of this document identified a need for a new high or medium endurance cutter (HEC/MEC) to replace ageing and technologically obsolete cutters in the inventory, and to close the gap between the Coast Guard's present and predicted workload and its afloat resources.

The design objectives for the new cutter were presented in a document titled the 'Designated Task Statement'. Broadly, these called for an economical and reliable cutter for multi-program employment in law enforcement (including fisheries patrol) search and rescue, marine environmental protection, and to contribute to the nation's force in being with ASW capabilities in support of the Navy's sea control mission. Accordingly, the design was to incorporate time-proven hull and machinery systems for reliability with sensor, weapons, and command-control system technologies for service well beyond the 1980s.

DESIGN SEQUENCE

The design of the 270' WMEC proceeded in three phases:

Phase I — a pre-conceptual size and cost estimate

Phase II — a computer-aided conceptual design study

Phase III — preliminary and contract design development.

Phase I

The initial dialogue between the Office of Operations, the user, and the Office of Engineering, the designer, was conducted during the month of December 1974. Sizing studies based upon the existing 210-foot WMEC were conducted to evaluate the impact of providing helicopter hangar facilities and various speed capabilities on ship size and cost. Propulsion options of two or four medium speed diesels, two low speed diesels, a single 18,000 horsepower turbine CODOG plant, and two small twin turbines (also in a CODOG arrangement) were considered.

The design studies at this point were rather rough estimates, utilizing ratiocination for weights, and existing model test data and design lane data for form and powering estimates. Basically the methodology followed that presented in reference 1. The results, even though unrefined, were sufficient to demonstrate to the Commandant of the US Coastguard the costs, risks, and capabilities of various propulsion schemes and their effect on ship size. Specifically, it led to a re-examination of the need for speeds in excess of 20 knots, given that the cutter would be one part of a ship-helicopter team.

Phase II

Phase II studies began immediately following presentation of Phase I results to the Commandant on 20 January 1975. Due to fiscal constraints, the high cost and risk of the CODOG installations, and the small speed gains achieved in going from a two diesel engine to a four engine installation, it was considered desirable to center further studies on a 20 knot, twin engine diesel ship, while developing minimum non-hangar, minimum hangar and alternative propulsion plant options. Concurrent staff studies in the Office of Operations produced the Designated Task Statement (abstracted as Appendix 1) which defined further the design requirements.

A computer program, or design synthesis model, developed in-house, was utilized to calculate weights, centers, and principal dimensions for ships ranging in waterline length from 200 to 260 feet, and in draft from 10 to 15

THE AUTHORS

Howard A. Chatterton and Thomas Braithwaite are representatives of the United States Coast Guard Headquarters, Washington, D.C. This article is an edited version of a paper they presented to the US Society of Naval Architects and Marine Engineers in April, 1978. It is published in the ANI Journal with the permission of that Society.

feet. Using intervals of five feet in length and one foot in draft, the computer identified a spectrum of ships with reasonable form coefficients, and defined minimum beam requirements for stability (Fig. 1). These 'design zone' charts were prepared to show cost, speed, and comparative seakeeping characteristics of all feasible combinations.

Cost predictions for each cutter were developed using an in-house computer program. Speed/power and seakeeping predictions, however, were made utilizing programs developed at the Naval Ship Engineering Center. Powering is based on Taylor series, utilizing a worm curve correction for destroyer type hull forms. Both the cost and powering routines were 'proofed' against data for existing ships and used without modification. The seakeeping calculations estimate the initiation of slamming for a given sea state. Due to the preliminary nature of the estimate, the numbers produced have little absolute meaning, but did demonstrate the expected trends of improved seakeeping with increasing draft and length.

Based on these charts, a 255-foot waterline length, 13-foot draft ship was selected as a baseline because:

- It was the smallest ship exceeding 20 knots with a twin diesel plant.
- It had slightly better calm water speed and improved seakeeping characteristics in comparison with other options in the charts.
- Cost was comparable to other options surrounding it on the chart.

At the time of the Phase II conceptual studies, the design model did not calculate arrangement volumes. It consisted basically of a weights calculation using an empirical data base, and evaluated stability (GM) as a percentage of beam. As the studies evolved, a Design Review Board, consisting of the Chief, Naval Engineering Division, and the Division Branch Chiefs concluded that the new cutter's operating environment demanded ability to meet the 100 knot wind heel criteria versus the 80 knot wind criteria used in the design of the existing 210-foot cutters. Following selection of the baseline, therefore, attention shifted to validation of that baseline.

Hull lines were developed very rapidly using the Navy's computerized hull form generator, which utilizes interactive graphics. Lines generated by this program approach fairness and can be automatically digitized. The resulting card decks can then be processed by Coast Guard computer facilities to generate data for hydrostatic and hydrodynamic studies.

Stability studies for the baseline design indicated that an increase in GM would be required to meet the 100 knot wind criteria with the hangar extended. At this point two sets of lines were developed using interactive graphics — one with a 39 foot beam and conventional transom, and one with 38 foot beam and a wide transom. Both hulls had satisfactory static stability characteristics, and nearly identical seakeeping properties as calculated by YF-17. Studies indicated that the full waterplane option could have improved seakeeping, but that it might be penalized in speed. The design proceeded with the full water plane option, and the issue was resolved during preliminary design by building a styrofoam core, fibreglass model and running a resistance test at the U.S. Naval Academy to verify the resistance characteristics of the 38 foot beam hull.

On the 8th of April, 1975, the Commandant was briefed on the results of the conceptual studies, and presented with 9 alternative designs in the form of a decision tree (Figure 2). The Commandant's selection at that meeting was the

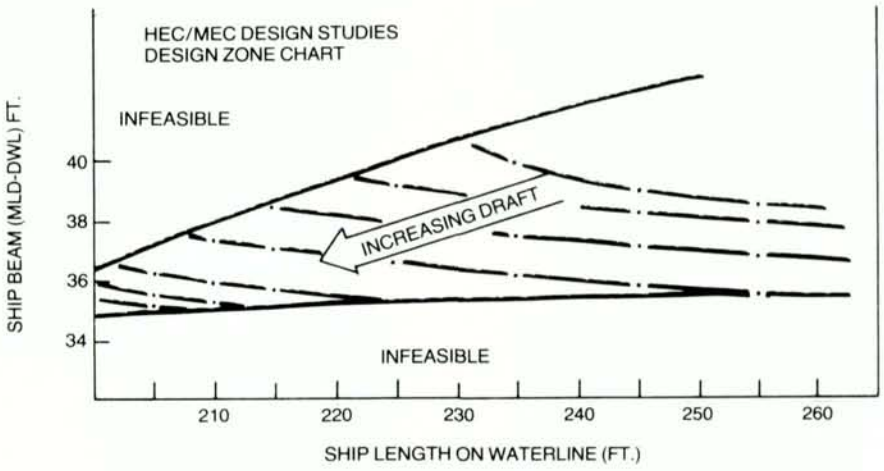

FIGURE 1.

'optimal' design, 77.7 meters (255 ft) waterline length, 81.4 meters (267 ft), with specific direction not to grow beyond 83.8 meters (275 foot) overall without further justification and approval. The prime movers were selected to be two 3500 horsepower diesel engines in one engine room. A helicopter hangar was to be provided, and also the following weapons systems:

MK 75 76 mm Gun Mount
MK 92 Fire Control System
Escort Towed Array Sonar System
Lamps III helicopter capability
SLQ 31/32 passive electronics suite with rapid blooming offboard chaff.

Phase III

The Preliminary Design Phase proceeded on the basis of the Commandant's decisions and an initial crew estimate of 80, including 10 officers. The hull lines were reviewed by personnel at the Naval Ship Engineering Center and David Taylor Naval Ship Research and Development Center, who recommended slight changes to stem and stern rake angle, which increased overall length to 82.3 meters (270 ft). Operational emphasis on a ship/helo team concept led to approval of non-retracting active fin stabilization, and configuration tradeoff studies were begun between flush deck and enclosed focs'l (or 'broken deck') designs. The initial flush deck hull configuration was approved based upon adequate hull volume, utilization of a 'flat front' deckhouse to assure a good structural connection to the transverse bulkhead below, and lower KG and structural weight. The design proceeded with incredibly few problems.

In late July 1975, the results of manning studies conducted by the Office of Operations were received, requiring accommodation for 85 enlisted (including 10 CPO's), 12 officers, 2 fisheries agents, and 4 enlisted data buoy technicians. This manning represented a change in support philosophy from clusters of 2 or 3 ships operating from a single base with shore support, to fully self-sustaining operations with no shore assist. Simultaneously, a major increase in electronics subsystems volume was identified for weapons systems and manning reduction automation. Since ship size and cost had been constrained by the Commandant, the design was in difficulty.

The MOD 1 Design

The MOD 1 configuration of the 270-foot WMEC utilized the same hydrodynamic shape as the baseline design but changed from the 'flush deck' to the broken deck configuration. The 0-1 Level was continued forward to the stem, and sheer removed from the decks below to provide an extra deck level forward (Figure 3). Expansion of electronics spaces forced removal of one boat. Hangar dimensions, accommodating a composite of the Coast Guard HH-52 and projected replacement helicopters, and Navy Lamps candidates required the hangar to be offset slightly to port. This permitted retention of one 26 foot motor surfboat on the starboard side, and a refueling station to port. The torpedo magazine was relocated from its former prime real estate location on the Main Deck to a van, since it would only be needed when a Navy helo was aboard on a combat or training mission. Similarly, vans or modules were proposed for military electronics on the philosophy that it could be located ashore when not needed, or for training and maintenance.

Accommodation for the increased crew size proved troublesome. Outboard (weather) passageways were retained aft of station 9 and officer berthing remained forward on the Main Deck with passage provided around officer's country. Berthing of 10 CPO's in two-man staterooms was accomplished by placing the staterooms forward on the First Platform and adapting a 'modular' berthing concept for the crew.[2] The modular concept provides a compartment containing only berths, 3 high, a separate locker compartment, separate sanitary space, and a recreation area. This concept allowed all functions to be accommodated with an overall space saving, plus providing lounges which can be easily converted for wartime berthing of an augmented crew.

The Mod 1 arrangement was literally designed over a weekend to show the impact of crew size and electronics requirements at a previously scheduled Tuesday morning presentation to the Commandant. The forward location of CPO berthing was clearly undesirable, and 6 alternative arrangements were prepared. Each of these was evaluated by design and maintenance personnel throughout the Naval Engineering Division according to a compilation of various criteria (3,4,5) shown in Appendix 2.

Simultaneously, detailed stability analyses were being conducted which revealed insufficient intact righting moment to meet wind heel conditions for these new, enclosed focs'l designs. Increase in length was not permitted, and increased beam was undesirable from a powering standpoint. The solution therefore, was to enclose the side weather deck passageways, carrying the shell plating and subdivision bulkheads continuous to the 0-1 Level. This decision was a definite trade-off of capabilities. Enclosing the sides was very undesirable for purposes of boat handling, firefighting, and boarding alongside. The primary mission of the cutter as a law enforcement unit however depends on the electronics systems, and on a helicopter, which in turn requires a hangar for protection during deployment. Even if it had been possible to remove the hangar, additional righting moment was required for all MOD 1 designs when the helicopter was aboard.

HEC/MEC DECISION TREE

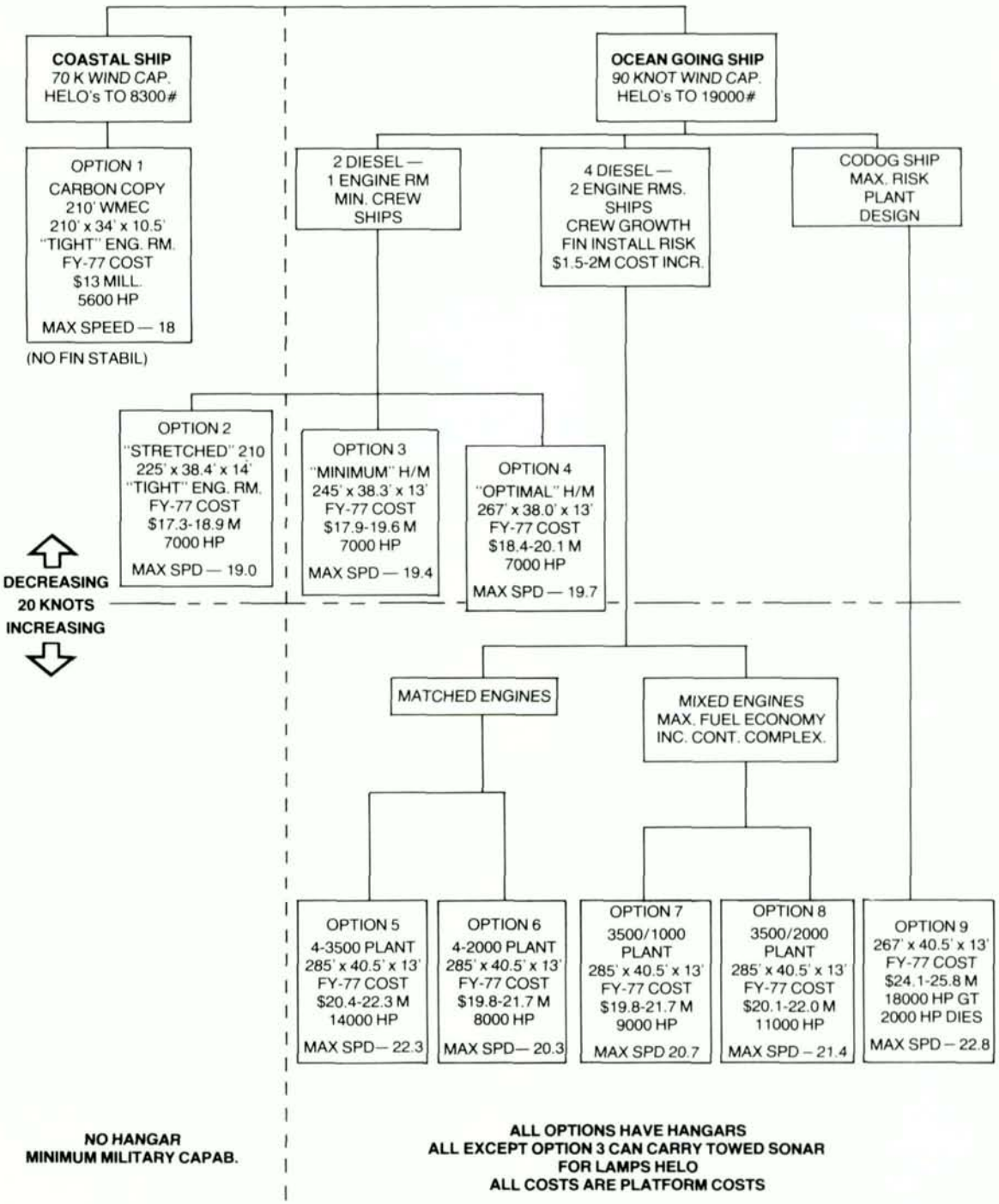

FIGURE 2.

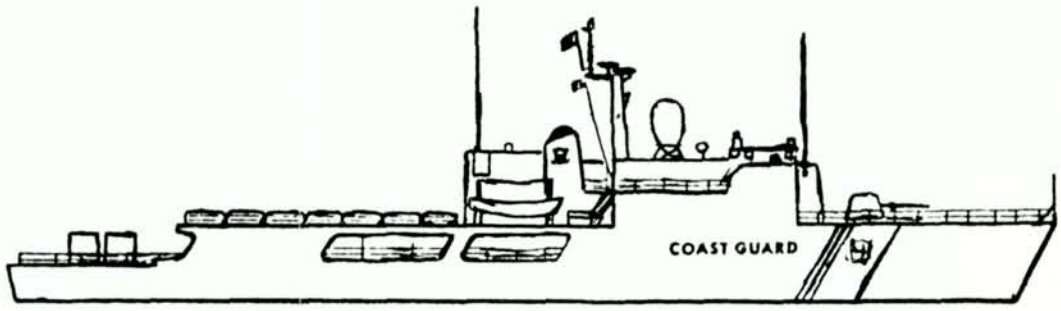

FIGURE 3. — MOD 1

The MOD 2 Design

Figure 4 represents the MOD 2 design — the final configuration of the 270-foot WMEC. This configuration still utilizes the original hydrodynamic form, however, the shell is continuous to the 0-1 Level all the way back to station 16. The MOD 2 also incorporated the recommendations of the MOD 1 arrangements evaluation, specifically:

- Relocation of officer berthing to the 0-1 Level, removing it from the main flow of traffic.
- Retention of modular berthing concepts.
- Allocation of permanent fixed volume vs. modules for the MK-92 fire control system.
- Incorporation of a sliding watertight door between the Engine Room and Auxiliary Machinery Room. This allows moving machinery components forward horizontally through the engineering spaces to a vertical lift to the shop.
- Consolidation of messing and galley functions on the Main Deck, with the wardroom adjacent to the single galley.
- Location of the trash compaction/stowage space aft on the Main Deck. This allowed easy off-loading of trash bundles and isolation from heat sources which could accelerate expansion and decay of compacted trash.
- Location of self-service laundry facility forward on the Main Deck.

Machinery Systems

Machinery systems for the new cutter are outlined in Table 1. Unique to this design is the installation of a waste-heat recovery system, in place of a conventional steam boiler, and the level of automation incorporated in the machinery plant. The waste heat recovery system will use the ship's service generator cooling water as an energy source, and be equipped with supplemental electric heating elements for pier connection when the plant is secured. The decision to utilize the waste heat system was based upon overall energy efficiency, and anticipated lower maintenance requirements than for the steam boiler.

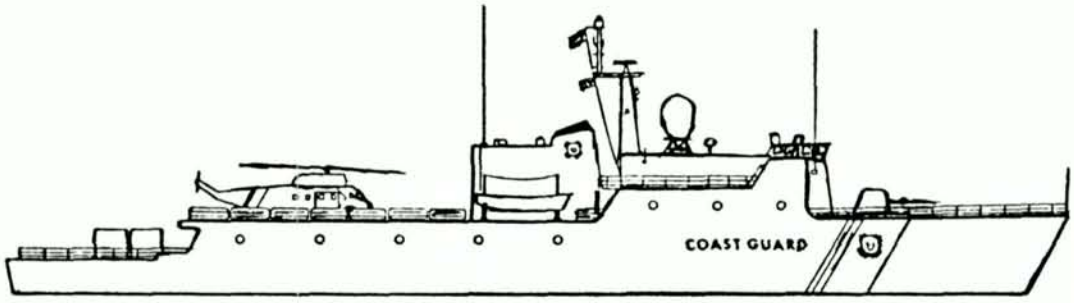

FIGURE 4 — MOD 2

TABLE 1

Machinery Characteristics

MAIN PROPULSION SYSTEM
Twin screw diesel — reduction gear drive. 7000 Max. Cont. SHP. Propellers — controllable, reversible pitch — 9 foot diameter.

AUXILIARY SYSTEMS
Ships's Service Generators — 2 x 475 KW diesel, 450 V., 60 Hz.
Standby Generator — 1 x 500 KW diesel, 450 V., 60 Hz.
Heat Recovery Units — 2 exhaust and jacket water waste heat recovery silencers, 2200 1 Lb/hr steam.
Air Conditioning — 3 chillers, 20 ton each.
Distillers — 2 x 6000 gallon/day units.
Roll Stabilizers — one pair of active, non-retractable fins electro-hydraulic, 50 hp each.

POLLUTION CONTROL EQUIPMENT
Sewage — Vacuum flush system with 1400 gallon (3 day) sewage holding tank.
Turbid Drains — 2 ejection tanks (1 fwd, 1 aft), pumped to sewage holding tank or overboard.
Oily Water — Bilge water pumped through 10 gpm oily water separator.
Fuel oil tank ballast pumped through oily water separator.
Separated oil stored in dirty oil tank.
Clean Ballast — 3 tanks, total capacity — 11,780 gallons.

The plant automation philosophy consists of centralized control, with automated controls and monitoring commensurate with unmanned engine room operation. Two watchstanders will occupy a control center in the Engine Room. Automation functions include preprogrammed remote control of engine speed and propeller pitch from both the Engineering Control Center, and the Bridge. Mimic boards with alarm lights, demand digital readout of machinery parameters, and automatic data logging for essential machinery parameters will be installed. Functions such as fuel oil transfer, lube oil purification and replenishment, and bilge pumping are not automated. However, manifolds with ported valves are specified to prevent line-up errors.

Contract Design

The final configuration of the cutter is shown in Figure 5. Significant changes in profile resulted from the addition of open bridge wings. The major perturbation to arrangement occurred due to assignment of women to the crews of major cutters. While the original arrangement had four distinct berthing units, each accommodating 21 personnel, a more flexible arrangement was desirable. Re-arrangement of the crew berthing area forward on the first platform now will allow berthing in groups of 9, 12 or 21.

The contract design phase also saw completion of an extensive model test program. Included in the program was extensive motions testing in long and short-crested seas, powering and manoeuvring tests, and roll damping tests in support of bilge keel and fin design.

AUTOMATION AND COMMAND/CONTROL

The 270 ft WMEC represents a major effort at integration of all the onboard electronics. Each and every system was considered from the aspects of manning level, power, weight, operational compatibility and reliability.

Navigation Systems

The Navigation System uses dual surface search radar, the AN/SPS-64, with both S-Band and X-Band. A regular indicator is installed both on the Bridge and in the Command Support Center (CSC). These will normally not be used because the radar is being transformed by a digital scan converter into high resolution TV. Both Loran-C and OMEGA receivers will be available for direct readout and input to the computers. Redundancy is provided in case of any failures. A dual axis doppler speed log will provide accurate ship speed both in shallow water (bottom bounce) and deep water (water mass) modes. A precision depth recorder will produce a paper chart and mag tape via computer.

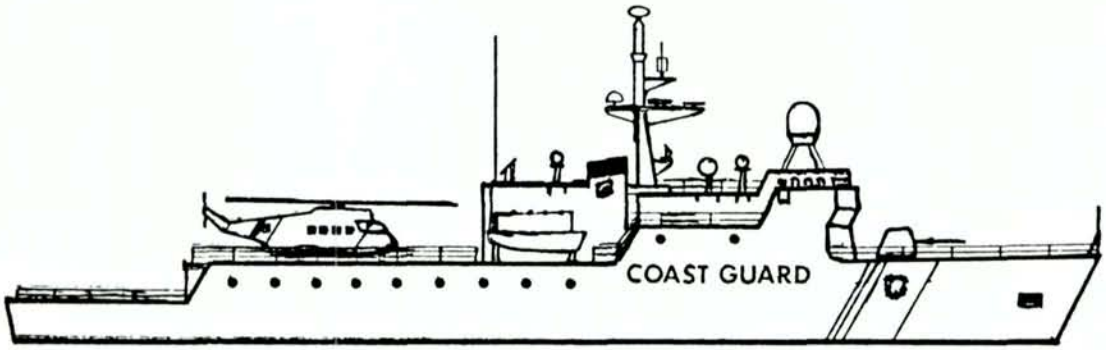

FIGURE 5 — OUTBOARD PROFILE

Of particular interest is the optical sight system mounted on top of the Pilothouse. This unit is stabilized for both roll and pitch. The optics are fed directly into a low light level TV camera which provides a clear picture in almost total darkness. This picture is fully distributed to all TV monitors and video recorders. The lens system is capable of 3 powers of magnification. The cutter will also carry two gyro systems because of the importance placed on gyro reference.

Communications Systems

The Communications Systems are designed to be controlled from the COMMS Center by a one-man watch during routine patrols and two men during special evolutions. The transmitter equipment is mostly located in the CSC to allow short transmission lines to the antennas.

The HF and UHF COMMS equipments are capable of digital control and each operational station that needs access for voice communications can digitally patch in their handset and remotely change frequency. This digital control is routed and monitored by the command display system described below. The record COMMS is all handled by Model 40 teletypes in the COMMS Center. These units, with CRT display, page printers, and mag tape unit allow the radioman of the watch to work without paper tape and handle a higher volume of traffic. The Navy is furnishing both a receive-only Satellite COMMS System as well as the two-way satellite NAVMACS (Navy Modular Automated Communication System).

The internal COMMS System for the cutter is comprised of regular telephones throughout for administrative COMMS, and an intercom for operational COMMS, with sound powered phone as the intercom backup.

Special Systems

A video recording system is used for recording operational data such as low light level TV observation, radar picture, and chart or status board info. This same system can be used for training and distribution to recreational TV's located at the crew's lounge, wardroom, etc.

The cutter will be supplied with a rapid fire 76 mm automatic gun mount (MK-75), controlled by a MK-92 Fire Control System. This fire control system is also distributed to the command control system to provide a backup radar capability to the bridge. The mission of the cutter is heavily oriented toward the NAVY ASW role of the 1980's and 1990's. Specifically, this requires the use of a LAMPS III helicopter for ASW. During LAMPS III operation, the helo data is received and processed on board the ship. This places a heavy burden on the on-board processing capability. The use of NTDS was considered, but the total cost plus the limited usefulness for regular Coast Guard missions, such as Law Enforcement and Search and Rescue, deemed it to be inadvisable.

There will be no fixed-hull active sonar system on board. Rather, the AN/SQN-19 Tactical Towed Array Sonar (TACTAS) will be added when available. This system will provide information to the displays in CSC. There are no plans at present to directly interface TACTAS to the cutter's command/control system, but the capability to do so exists.

The cutter will carry the new AN/SLQ-32 V2 Electronic Surveillance Methods (ESM) System. This provides a missile defence capability when used in conjunction with RBOC (Rapid Blooming Offboard Chaff). The ESM information will interface to the command control system in a similar manner to that ultimately selected for the NTDS interface.

Command Control Systems

The use of a Coast Guard Command, Display, and Control System (COMDAC) provides not only an opportunity to reduce plotters and status board keepers, but to also interface with LAMPS for ASW. The COMDAC system is the first major attempt to reduce operational personnel while still providing full capability for all missions. The system is conceptually a successor to previous efforts in the automation of CIC by the Coast Guard (OASIS) and Bridge manning reduction by the NAVY (IBS). The mission for the Coast Guard in ASW clearly mandated automatic processing of information because of the rapid data flow from the LAMPS helicopter. This data cannot be manually reduced, plotted, and sum-

marized without seriously degrading the helo response time. One might ask why the standard NTDS system was not selected for use in this case. The space, weight, and cost, of NTDS was not feasible particularly when its utilization for SAR, ELT, and other normal Coast Guard operations would not be directly applicable. The COMDAC system is precisely tailored to both the hardware and software requirements of the Coast Guard and integrates the total ASW problem. All portions of the total electronic system were designed with integration on the COMDAC system in mind.

CONCLUSION

The United States Coastguard has begun a new ship procurement programme which promises to rival in numbers and technology the 378-foot turbine-powered *HAMILTON* Class of the 1960s. The final configuration of the 270-foot Medium Endurance Cutter was reached through the complex process of design techniques and trade-offs described in this article. The integrated bridge and command display system of the WMEC 270 will make this ship the most technologically sophisticated floating unit in the US Coast Guard.

The first ship of this class, the USCGC *BEAR*, is programmed to commission in August 1981 followed shortly afterwards by USCGC *TAMPA*. The Coast Guard plans to construct up to 25 WMEC 270s (the 'Famous' Class) over a seven year period. They will replace the *CAMPBELL* Class 327 ft high endurance cutters (WHEC) and other older medium and high endurance cutters.

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APPENDIX 1
DESIGNATED TASK STATEMENT SUMMARY

Primary Employment

ELT up to about 200 miles off East, West and Gulf Coasts and Hawaiian Islands.

Other Employment

SAR, MSA, MEP and other incidental Coast Guard tasks in primary areas and coastal southern and southeastern Alaska.

Endurance

Homeport to ELT area (400 miles) at economical speed, 14 days on station at economical speed, 24 hours at maximum speed, and ELT area to homeport at economical speed.

Other Tasks

Conduct routine helicopter operations with an anticipated 80 flight hours per patrol.

Fight fires aboard other vessels and off-shore structures.

Tow vessels up to 10,000 tons displacement.

Launch, tow and retrieve VDS.

RAS capable.

Weather Constraints

Ability to sortie and perform its missions in any and all weather conditions in its areas of operation.

Ability to carry, launch and recover helicopter 90% of the time in weather of ELT areas.

Other Features

Minimize manning through automation.

Maximum speed 20 knots.

Habitability equal to or exceeding Coast Guard current standards.

APPENDIX 2
DESIGN ARRANGEMENT EVALUATION

Alternative designs are ranked comparatively according to the following factors:

A. **Noise Guidance:**
Separation of noise generators (e.g. main and auxiliary machinery, heavy hydraulic equipment, propeller and rudder machinery) from quiet functions (berthing, control spaces).

B. **Vibration Guidance:**
Without specific data available, the aft 1/3 of the cutter is considered unsuitable for vibration-sensitive functions (e.g. medical work, avionics shops, berthing).

C. **Temperature Guidance:**
1. Avoidance of human support spaces adjacent to very hot or very cold areas — particularly over heat and under cold.
2. Avoidance of wet space locations along the shell to minimize condensation.
3. Separation of hot and cold spaces by an unmanned buffer space.

D. **Motions Guidance:**
1. Avoidance of human support spaces, especially medical and commissary spaces near the bow or stern.
2. Arrangements of berthing, messroom seating, ladders, and sanitary fixtures fore and aft.
3. Arrangement of steam kettle rows and deep fat fryers athwartships.

E. ***Humidity and Odors Guidance:***
1. Separate areas of high heat and humidity (laundry) or fumes (trash room, weld shop), from habitability spaces, especially medical or commissary spaces, by at least a passageway or watertight boundary.
2. Isolate HVAC circuits for various functions (e.g. living, commissary, medical) to avoid re-ingestion of fumes.

F. **Functional Adjacency Guidance:**
1. Stack sanitary spaces vertically above holding or treatment facilities.
2. Provide adjacency between food preparation areas and storerooms.
3. Provide adjacency between helicopter platform, medical facility and mess deck.
4. Provide adjacency of senior officer's berthing to conspaces.
5. Provide adjacency of electronic equipment rooms to antennae; magazines to weapons.
6. Provide adjacency of special firefighting equipment to machinery and aviation spaces.
7. Provide adjacency of shops to each other for mutual support, and to the spaces served.

G. **Operational Separation Guidance:**
1. Separate officer berthing from enlisted traffic paths.
2. Separate main traffic routes from berthing and operating spaces.
3. Separate manned stations from radiating antennas.

H. **Miscellaneous Guidance:**
1. Provide internal access throughout ships length suitable for litter and damage control timber movement.
2. Provide messline arrangements which do not block passage in good or bad weather.
3. Place laundry above water line, with good access for bulk loads.
4. Provide ship's office with access to crew, officers country and quarterdeck.
5. Arrange mess deck for movies and training sessions.
6. Provide for structural continuity throughout.

Nobody asked me, but...

CRI DE COEUR

In Roman times messengers bearing bad news were put to the sword. Things have not changed all that much for communicators over the years. The ANI Journal of November 1979 carried an attempt at brittle wit at the expense of the communicators and it raked across some old scars. No one minds a little good-natured leg pulling but I suspect some of it is not all that good natured, and springs from a deeper and more serious malaise. Let me relate some unfunny but true stories.

Several years ago, a Very Senior Officer (VSO) told me (nay, instructed me) that the RAN did not need any Secure Voice Equipment (SVE). This was after the Communist Bloc countries' armed forces had been using SVE for years and the U.S. was desperately trying to outfit all its forces after some unhappy operational experiences. The reference was plain, my proposal was a matter of self-interest on bad judgment, on both, and not because of any operational necessity.

About the same time, another VSO complained to me that some of the Fleet's communications equipment was not working at all well over relatively short ranges, while Houston was talking to men on the moon comfortably and clearly. He was not pleased with my response that the equipment concerned was obsolete, its planned replacement date having been deferred several times to 'save' money, if he cared to provide the cash, he too could have communications as good as NASA's. It was no problem technologically. You get what you pay for.

In planning a major international exercise, the Fleet Staff had cast the *MELBOURNE* in the role of the CVA flagship. It was pointed out that the ship was, in RN terms, a Grade IV flagship, not Grade I, and outfitted for communications accordingly. We already had to provide Safety, Press and Exercise circuits, over and above the outfit's designed capacity, and it was suggested that we organise the exercise on more realistic lines. But, pursuing dreams of grandeur, we were asked if the equipment and people could be stretched 'just for this exercise'. Theoretically, what they wanted could be done, after a fashion, but only by some fairly dicey means which could not be guaranteed to work adequately. Reporting this, advice was again offered to rethink, as they probably would not like the consequences. But these cautions were overridden. At the exercise washup, Our Gallant Leader opened his remarks to the international gathering by saying angrily, 'It would have been a good exercise if only the communications had worked'.

It has taken nearly ten years to make any serious headway with command, control and communications (C3). Perhaps the expression C3 had the look of a Madison Avenue show job and put some people off. In retrospect, it was probably unwise to use it. But others, entranced by the novelty of the Naval Tactical Data System (NTDS) made no bones about their belief that it was the Alpha and Omega of C3, and what more could we possibly want?

We may contrast these sad stories with such sayings as "without communications all I command is my desk". And former NTDS Project Officer used to say, "War at sea is not very difficult if you know what is going on'. Amen. In business, they call it Information and Decision, because sensible business managers know that they cannot begin to make the right decisions unless they have adequate information.

I can visualize the hackles rising on some readers — if indeed they have got so far — and the muttered "Bloody communicators, after more money again I suppose'. But, hold on and think for a minute.

The Navy is in the business of managing violence at sea (to adapt the Army's purple phrase). To this end it acquires ships, underway support and shore facilities. Management of the resulting $1000m a year company requires effective command and control — with information feedback — exercised through various forms of communications. At sea, where the ultimate objective is to be realized, the best weapons and most professional fighting men are worthless unless they get to the right place, at the right time to use their weapons on the right targets. (Please, Chief, do not interrupt to remind me that if the engines don't work you wont get there at all. I know and agree whole-heartedly. We all have our part to play.) My point is that communications is a crucial element in the achievement of the aim, and we'd better take an intelligent interest if we want to do any good, or even to survive.

In a Navy of our size communications used to cost about 5% of the budget — all up, running costs, people, projects, new construction, which wasn't so much compared to, say, the Gunner's 20+%. The bigger the outfit the lower the percentage needed for communications; at the time it was about 4% in the RN and less again in the USN. The same applies to essential infrastructure, such as dockyards.

The world is in the first stages of an information explosion (the expression is used so often that it is becoming meaningless.) The possibilities flowing from chips, computers generally, solid state electronics and cheaper and cheaper satellite communications are beginning to affect us all; the impact will be even greater in a few years. Even the least technically minded person at the rental car desk, bank and airline counter is now having a daily experience of the management of essential information.

And what, pray, is the Navy doing?

Nobody asked me, but it seems to me we ought to begin by recognising that all our tactical communications and information systems comprise a single entity, and all those engaged in providing essential tactics information (including intelligence, transferring it, displaying it, and relaying instructions from the command to implement the decisions, ought to work for one Director General for C3 in Navy Office. There is enough in weapons and platforms to justify a separate Director General for them.) For preference, the communications design engineers ought to work directly for the C3 group Director General but trade union demarcations die hard. Obviously there are some grey areas, underwater and electronic warfare both provide information and weapons. In addition, the C3 group ought to have ship's internal communications, to drag it out of the 1940's and into the 1960s with a shipboard version of the integrated systems already flying in Boeing 747s by then — cheaper, lighter and more reliable. We could save ten tons of wiring in a destroyer, to say nothing of the costs of running miles and miles of cabling supporting a variety of autonomous systems. But we said that 10 years ago, didn't we? (Oh, you hadn't heard?) As well, we ought to be making sure that the communicators who are going to become our managers in Canberra, where it all has to begin, are adequately trained. Unless things have changed, I have grave doubts whether our PWOs (C) will be properly prepared for what we will expect of them. As a small example, they need a good knowledge of the Domestic Satellite, the Australian electronics industry, Telecom, OTC and the Defence Science and Technology Organisation before they get to Canberra for the first time. Do they? I doubt it very much, and it's hard picking it up as you go.

What I am suggesting is that it is time we put away our outmoded attitudes to communications; attitudes which are reflected in a number of ways, not least being our fragmented management of this vital concern derived from 'craft unions' of 20 and more years ago.

J.A.R.

A FREAK OF NAVIGATION

By Courtesy of the 'Shiplovers of Victoria'.

The Passenger Steamer *WARRIMOO* was knifing her way through the waters of the Pacific Ocean on her way from Vancouver to Australia. The Navigator had just finished working out a star fix and handed the results to the Captain. The vessel's position was reckoned to be Latitude 0°30'N. and Longitude 179°3'W. It was early evening, the date was December 30, 1899, and we were near the Equator and International Date Line.

The Captain decided to confound the passengers with the possibilities he had at his command — to prove a navigational freak of a life time!

He called for four more Navigators and ordered them to check and double check the ship's position every few minutes. He changed course slightly so as to bear directly on his mark, and carefully adjusted engine speed so that he would arrive there just at the right moment.

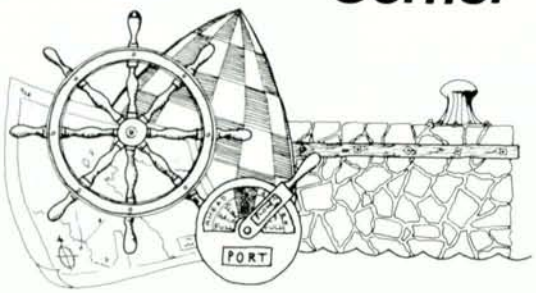
At exactly midnight local time, the *WARRIMOO* was positioned exactly on the Equator at the point where it crosses the International Date Line — 180°.

It produced the following results:

The forward part of the ship was in the Southern Hemisphere in mid summer; the after part was in the Northern Hemisphere in the middle of winter; the date on the port side of the ship was December 30, 1899; the date on the starboard side was January 1, 1900; the ship was in two different days; two different months; two different years; two different seasons, and two different centuries, all at the same time.

The passengers were cheated out of a New Year's celebration, because an entire day (December 31, 1899) disappeared from their lives before they could 'live it'.

Shiphandling Corner



DARWIN ANECDOTES

Darwin Harbour, with its notorious rise and fall of tide and often unpredictable, fast tidal streams must have been, over the years, the scene of many good shiphandling anecdotes.

My two concern the days before the advent of the *ATTACK* Class patrol boats. Then the RAN had a succession of small ships based in Darwin, serving much the same role as the *ATTACKs'* but without the same dash and warship appearance.

The first was HMAS *EMU* which served in Darwin from the late 1940s through to the end of 1959. She was a tug, a sister-ship of the *BRONZEWING* of Garden Island Dockyard fame.

EMU's shiphandling problem was that her main engine was a single big, direct drive Crossley diesel — a straight eight, if I remember correctly. The engine stopped between ahead and astern movements, and alas, there was no guarantee that it would restart again when the opposite movement was required — just a deathly hush and the popping of the air start valves before the re-assuring 'clunketty-clunk' of the big diesel turning over again.

Unfortunately our berth in Darwin was inside the Western end of Stokes Hill wharf — then a recess just long enough for a ship of *EMU's* size (100'). There was solid wharf across our bows when alongside. (This berth was lost forever during the re-building of Stokes Hill wharf in the early 1960s).

Inevitably, there were occasions when *EMU* did not stop in time (or more accurately, did not get astern power when ordered). Then to the tune of the popping air start valves, she would sail gracefully on and in under the wharf.

After one such incident, we returned to Darwin to find that some waterfront wit had erected a sign, ahead of us at our berth, saying 'WARNING — Ships shall not pass this point'.

HMAS *EMU* built by Mort's Dock in 1946, paid off in December 1959, and sold for further service as the fishing trawler *TENAX* in 1967.

— by courtesy Naval Historian

HMAS *BASS* alongside Stokes Hill wharf in Darwin 1963.

EMU was relieved in Darwin by the General Purpose Vessel, HMAS *BANKS*, in early 1960. *BANKS* in turn was relieved by her sister-ship, HMAS *BASS*, in early 1963. My second Darwin shiphandling anecdote concerns this last ship.

The normal berth for *BASS* was also inside Stokes Hill wharf. Initially it was in the same berth as that usually occupied by *EMU* (see photo) but later as a consequence of major modifications to the wharf, it was moved along toward the East. This latter berth allowed the normal leaving harbour manoeuvre of clearing the berth, turning at rest (sometimes hair-raising if the tide was in full flood or ebb) and then leaving harbour by a hard turn to Port out through between Stokes Hill and Fort Hill wharves and then to Starboard again for the run to the open sea.

I should say at this stage that the EXPLORER Class GPVs (*BANKS* and *BASS*) could be absolute swines to handle — as the Reserve Officers at Port Adelaide and Hobart can probably now attest. They have two relatively low-power GM diesels (work-boat engines!) driving small screws close together, producing little turning moment. Steering was not good at low speed, and the swing when going astern could be both unpredictable and uncontrollable.

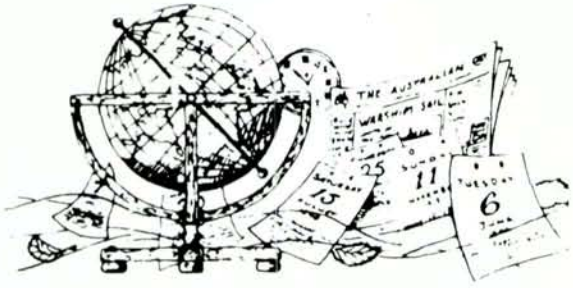
A pilot in Cairns once told me that in all his years of experience, he had had more difficulty in unberthing the Philippines survey vessel, *ARLUNYA*, a sister-ship of *BANKS* and *BASS*, than he had had with any other vessel, regardless of size. Spring the stern off, pick up sternway and back she would go alongside!

Returning to *BASS*, on one occasion leaving harbour with a full springs ebb-stream (three knots or more) inside the wharf, the turn to Port to take us out between Stokes Hill and Fort Hill wharves was just a few seconds late and lo and behold, we were alongside across the end of Fort Hill wharf. When the helm was initially put over, it was apparent that the vicious sideways sweep of the tide had been misjudged and with some contact with Fort Hill wharf inevitable, the only safe solution was to take the way off the ship and come alongside — bound firmly across the end of the wharf by the strong ebb-tide.

Due to the problems I have already mentioned, there was then no way to get the ship off the wharf short of a tug. Fortunately, the falling tide did not hang us up on the wharf, in our unorthodox berth, and an hour or so later, the stream eased and we were able to get off the wharf and proceed to sea without damage. I don't think NOIC ever realised our securing alongside at Fort Hill was unintentional!

The lesson in these anecdotes of Darwin Harbour seems to be that in shiphandling, regardless of size of ship, the shiphandler cannot let his guard down for even a few, short seconds — and he should always have an escape route!

'NORTHERNER'



I was there when ....

IT WAS A MATTER OF LUCK

The question of actually seeing action in the armed forces is largely a matter of luck. Whether it is considered good, or bad, luck depends on the mental outlook of the individual. Naturally a soldier whose unit is in contact with the enemy, an airman taking part in offensive sorties or naval units operating off an enemy coast will see almost continuous action. Others, such as anti-aircraft guns' crews, raiding parties and convoy escorts will see action only spasmodically. Some, for instance headquarters and base staffs, supply and transport officials, will never see any action unless the place they happen to be in is subjected to an air raid. Everything depends on you being on the right spot at the right time: subject to your own interpretation of "right".

I can speak only, of course, for the Navy.

Seeing actual action, in the Navy, is the merest fraction of one's service. I should say that considerably less than one per cent of an average Naval man's war service is spent in contact with the enemy. The majority of the time is spent in days and weeks of endless preparation for battle. Then there are the days at sea patrolling, investigating, escorting.

During one month of 1941 I was at sea for twenty seven days in a cruiser in the height of the "season" for Nazi surface raiders, and although we steamed about in areas in which the raiders were known to operate, we did not even see the smoke of an enemy. A little later, when far out into the Pacific, we commenced to chase a raider. We pursued him around New Zealand, while another cruiser steamed West from Auckland to head him off. But we lost him in the Tasman Sea.

Such disappointments for ships of our Navy went on all over the world. Some were lucky, sighted the enemy and got off a few salvoes. Others were even more fortunate and sank their quarry.

When action does come in the Navy, everything usually happens so quickly that it is all over before you can adjust yourself to the fact that you are in action. Few encounters are as sustained, as cold, or as calculated as the Battle of the River Plate, in December 1939.

Things happen rapidly and men act by instinct. All differences and inhibitions disappear in the face of the enemy. For one glorious period you really find yourself. In one ship I served in we practised for months at defence against air attack. The men strained and sweated at their drills, and we carried out numerous practice firings at a smoke-burst. When our first dive-bombing attack came, the aircraft came out of the sun and was only in gun range for ten seconds.

In the invasion of New Britain my ship was off the enemy shore for just over one hour. It seemed more like four hours. The Battle of Cape Matapan, one of the most exciting night actions ever fought by a British fleet, lasted approximately one hour. In the dreadfully uneven action between H.M.S. *RAWALPINDI* and a Nazi pocket-battleship in November 1939, it was all over in thirty five minutes.

The majority of Naval actions are quick, noisy, bloodthirsty affairs. In the space of a few exhilarating moments, you go through what you have trained and waited for, for a very long time. Winston Churchill expressed this in one of his speeches when he said, 'The most strenuous parts of the Navy's life are not the actual combat periods, but the long spells of roaming the seas and oceans searching for the enemy'. These are as close to the great Prime Minister's actual words as I can remember. As always, he 'hit the nail on the head', and won the gratitude of Naval men the world over. He was one of the few people to have shown this understanding of the Navy's activities.

Some men ache to go into action, some do not worry if they do or not and a small minority, for various reasons of their own, profess no desire to do so. With some Naval men it is a fetish, but most of them give the matter very little thought, and certainly do not discuss it.

Occasionally a little jealously creeps in. At one Australian base were two ships whose Captains were great friends. Both men, however, were very keen to do something in the way of contacting the enemy. The enemy drew closer, and on several occasions when one of the ships

rounded a certain headland it was attacked by enemy aircraft. The Captain of the other ship was slightly jealous about this, and even went to the extent of taking his ship around this headland at the identical time of day but nothing happened. The two men met shortly afterwards, and when the former began to talk of his bombing attacks the other said, 'I don't believe they were really enemy aircraft. You were just imagining it. I think some great big seagull swooped down and dropped something near you.' It was said in fun, yet a faint undercurrent of jealously was there.

Of course in the Navy you have so many types of ships, and so many types of actions. Animosity can arise at times, and a certain amount of "back-biting" goes on. It is all very stupid, though, and quite unnecessary. Yet men can get the most distorted views. I once heard an Officer who was floating around the Indian Ocean in luxury in an Armed Merchant Cruiser sneering at the men in the minesweepers working out of Melbourne. 'Fancy them being on the same footing as us,' he sneered. 'Why, they get home about twice a week and we haven't been home for months.' He obviously did not know the dangers of minesweeping, when at any moment your little ship might be blown sky-high. In his comfortable ship with its big lounges, and wide decks for recreation, he could not visualise the wet discomfort of a little ship no bigger than a ferry steamer being tossed about by mountainous waves. Armed Merchant Cruisers, the most comfortable Naval ships, were like floating palaces compared to minesweepers.

Many men narrowly miss actions. I was unlucky on numerous occasions. After a long period of minesweeping off the Australian coast, I was lying on the sand at Palm Beach, near Sydney on leave in 1940, when I read in the paper that my flotilla had found two minefields off Victoria. My feelings can be imagined. On another occasion, aircraft reported two submarines very close to a cruiser in which I was serving. Neither of them showed any inclination to attack us. I missed the fierce Battle for Java and, together with everyone else in HMAS *ADELAIDE*, was very disappointed. We were heading straight for it, and would have steamed into the thick of the fray. But we picked up an important convoy and were ordered to bring it back to Australia. A few months later we steamed through the Coral Sea less than twenty four hours before the big battle began there. Such tricks of Fate are most heartbreaking. As I have already stated, contacting the enemy's ships is largely a matter of luck. That is, of course, unless you seek him out at home regardless of the odds and cost.

Sometimes meeting up with the enemy is bad luck indeed, as was the case with HMAS *PERTH* and the USS *HOUSTON*. These two fine ships tried to slip back home under cover of darkness to get ammunition. They ran into a large Japanese force in the Sunda Straits and were sunk. Details of this action were not then available. With the two Allied cruises, however, almost out of shells one can hazard more than a rough guess of what occurred.

Late in 1941, after the Japs had been in war some days, we took a troop convoy across the Banda Sea. The enemy had begun his great push to the south, yet we did not meet him. A strange coincidence about this was that my own brother was in the convoy. We took the troops, the 2nd/21st. Battalion A.I.F., to Ambon, principal port of the Spice Islands and third naval base of the N.E.I. Air raids were expectedly hourly but never came. A short while later, when another RAN ship visited there they got all the air raids they wanted. My missing things persisted. Although I have had my share of excitements, bad luck has dogged my footsteps. I was never more disappointed than when, after serving eighteen months in *ADELAIDE*, she intercepted and sank the Axis blockade runner *RAMSES* a month after I left her. I was very upset about this, as we were always trying to trap the blockade runners plying between the Far East and France via the Cape. A few of them got through. Most of them were intercepted by ships of our Navy and quickly dealt with. One got as far as the Bay of Biscay, only to meet up with a wide-awake ship of the Royal Navy and be sunk. These ships had pluck, and their crews took their lives in their hands.

I was not the only unlucky person in the RAN. Most officers and men had their unlucky "breaks". I seem to remember that Captain Waller, while in HMAS *STUART* in the Mediterranean, left his ship just before she carried out the brilliant sinking of a U-boat.

Phenomenally lucky "breaks" were few, as in all walks of life. There was the case of Lieutenant B.J. Harvey, RANVR, in Darwin in 1942. He was suddenly ordered temporarily to fill a vacancy in HMAS *DELORAINE*. Just after he joined the ship sailed, and when not far off the coast a Jap submarine fired a torpedo at her. *DELORAINE* attacked with commendable speed, and before long the submarine was lying shattered, with her entire crew still on board, at the bottom of the Arafura Sea. This was the first case in history of an enemy submarine being destroyed in Australian waters by an Australian warship. Lieutenant Harvey played an important part in the hunt, and before long was wearing the ribbon of the Distinguished Service Cross. That was one day when Lady Luck smiled on him with a vengeance.

A different form of good luck came to Paymaster-Lieutenant W.H. Ross RAN, who, after serving six years in HMAS *SYDNEY* left her a few days before she was lost with all hands. The pendulum swung the other way for *SYDNEY's* popular Chaplain, the Reverend George Stubbs,

who joined her five weeks before she was lost after serving four and a half years at Flinders and four years on Garden Island. For a man to be eight and a half years ashore, and his ship to be lost within five weeks of his returning to sea, is one of the cruellest tricks Fate could possibly devise.

Some men have never had their ship sunk under them. To others it occurred more than once. Lieutenant (E) L.L. Williams RAN survived the sinking of HMAS *VAMPIRE* in the Bay of Bengal by Jap aircraft. On his return to Australia he was appointed to HMAS *CANBERRA*, and survived her sinking off the Solomons. Commander F.N. Cook DSC RAN survived the sinking of HMS *ROYAL OAK* in Scapa Flow in October 1939, and later managed to escape when HMS *CURLEW* was sunk. In the three years Lieutenant W.G. Whitting DSC RANR (S) was in HMAS *VENDETTA*, she was nearly sunk on numerous occasions. One of the greatest feats of the war, and one of the least known, was the towing of this destroyer from Singapore to Melbourne, during which time she was subjected to fierce air attacks. Lieutenant Whitting was in command for the tow. Fate seemed determined, however, that he should be in a sinking. After his return to Australia he was appointed to the corvette *ARMIDALE* as First Lieutenant. Not long afterwards *ARMIDALE* was sunk by Japanese aircraft in the Arafura Sea while escorting a convoy to Timor, and became the first Australian corvette to be sunk by enemy action. She brought some 'planes down before she sank. Lieutenant Whitting survived the action, and eventually was appointed in command of the corvette *COLAC*.

Yes, war is a tale of bad luck and good luck. It is, and always has been, a case of here today and the Lord knows where tomorrow. All you can do is "put your trust in God, and keep your powder dry." Once again quoting Winston Churchill, he seems to sum up in these simple, though masterful, words, what I am floundering about trying to say: "Let us be contented with what has happened to us, and thankful for all that we have been spared. Let us accept the natural order in which we move. Let us reconcile ourselves to the mysterious rhythm of our destinies, such as they must in this world of space and time. Let us treasure our joys but not bewail our sorrows. The glory of light cannot exist without its shadows. Life is a whole, and good and ill must be accepted together. The journey has been enjoyable, and well worth making — once."

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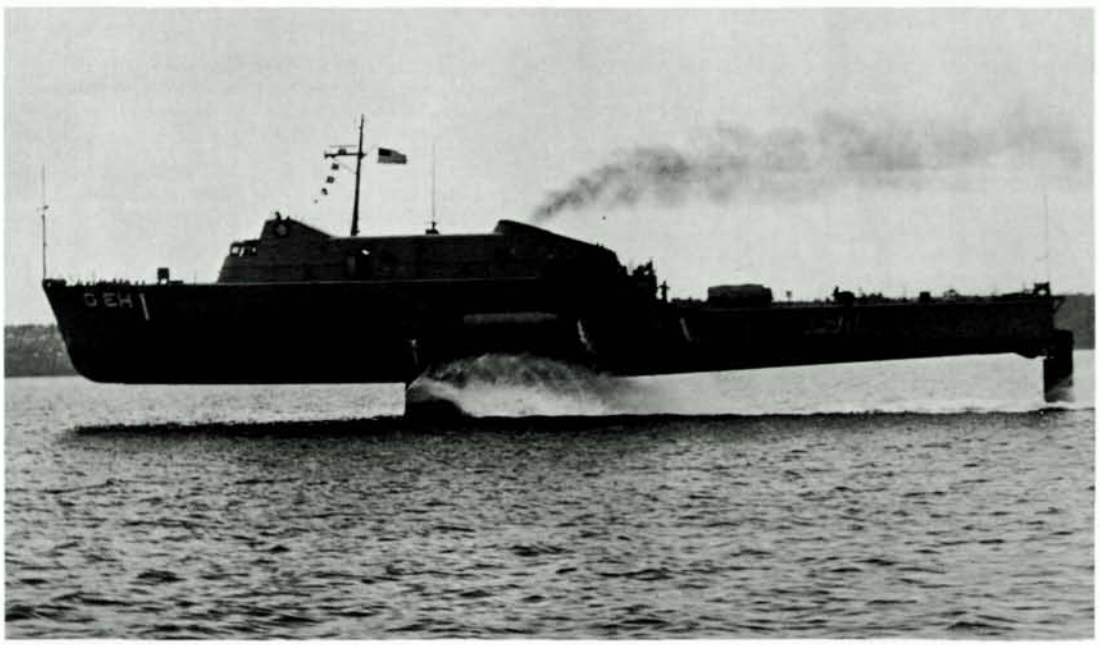
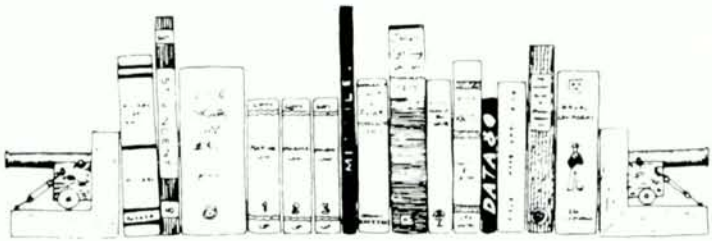


The large US aluminium hull experimental hydrofoil *PLAINVIEW* (length 212 feet) entered service in 1969 but was not a success, mainly due to engineering difficulties. Three retractable foils, 25 ft in height, each weighing 7 tons, were fitted port and starboard and on the stern and could be used in waves up to 15 feet. Initial maximum speed was about 50 knots.

BOOK REVIEWS



PIERCING THE REICH. By Joseph Persico. Sphere Books. 1980. 464pp Paperback. Recommended price $5.95.

Joseph Persico has constructed from files declassified only since 1976 and from personal interviews with survivors, a bizarre story of US attempts to infiltrate or to recruit agents in Nazi Germany during the last year of the Second World War. The adjective 'bizarre' is carefully chosen since his tale is indeed one of violent contrasts.

The efforts were masterminded by the US Office of Strategic Security (OSS) for the best and worst motives. On the one hand there was a pressing need for strategic and tactical intelligence on Germany and Austria which could not be provided by other than human sources, and on the other, was the desire to demonstrate to the British intelligence services that the OSS had come of age. As a consequence the desire for the 'big win' sometimes competed with the principles of sound planning, with frequently fatal results.

But in case this appears a pessimistic verdict the difficulties facing OSS should be borne in mind. Nazi Germany in late 1944 was a police state of some maturity in which the last remnants of an anti-Hitler resistance movement in the Wehrmacht had just been ruthlessly and bloodily exterminated. Contrary to Allied expectations German resistance to their advancing forces had not melted away but showed every sign of stiffening, and, as their armies closed upon Germany proper, Allied intelligence sources dried up. M16 and the SOE considered the task of infiltrating agents into the Nazi homeland virtually impossible; it is not surprising that OSS decided to try.

The sinews to support the setting up of an Intelligence organisation in Germany and Austria already existed or was quickly established. Through its Labor Division, OSS had gathered not only a great deal of information on German industrial organisation but had also established links with the hard core of socialist trade unionists who had been forced out of Germany into exile in Britain. On these men and women, OSS pinned its hopes of making contact with anti-Nazi labour resistance cells inside Germany, from which it might be possible to derive military information and through whom a campaign of industrial sabotage might be effected. Equipped with clothing and effects carefully selected from the range collected by OSS front organisations from refugees landing in New York, and furnished with expertly prepared documents concocted by a very wild bunch of forgers and printers in OSS headquarters London, these brave Germans were parachuted into Germany from September 1944. Their results were unspectacular but necessary, and that so many survived is a tribute to the care which went into their preparation.

Less successful by far were missions composed of German POWs recruited by OSS 'talent scouts' who undertook tactical penetrations or else accompanied US servicemen on infiltrations. Selection of these 'volunteers' was often a very subjective matter and preparation was seldom entirely adequate. Teams dropped into Austria, particularly in the area of the fabled, but ficticious, Redoubt area near Berchtesgaden, were gruesomly unsuccessful. OSS often gained less than effective cooperation from Allied military forces; front line troops could with difficulty be restrained from shooting down POWs recrossing to the Allied side after missions, while the task of obtaining aircraft for drops and crews which would faithfully complete these hazardous and unpopular sorties was never easy.

So much for the negative side. The OSS resident in Berne, Alan Dulles attracted some very precious and important sources, including a high ranking source in the Sicherheitdienst (SD), and an officer of the Foreign Ministry. The latter is credited with exposing the work of *Cicero* in Ankara. Contacts with Austrian opposition and resistance movements were also effectively cultivated and it was through development of these contacts that the city of Innsbruck was surrendered to the American Seventh Army intact, after its seizure by Austrian patriots.

By the end of the war OSS had placed nearly 200 agents into Nazi-held territory for the loss of only 36. The contribution made by these agents could rarely be proved to be crucial to Allied fortunes, but they all assisted in building up the picture of life and conditions in Germany, in providing military intelligence and, in Austria, in the fomenting of anti-Nazi feeling. All in all, the aims were generally met — a remarkable achievement for a newly born intelligence service in the face of great difficulties.

The book is recommended reading for those who believe that bungle, muddle and procrastination began only in 1975, and also for those who enjoy a good meaty tale of courage and intrigue. Joseph Persico's style may not be to every taste, but the story he tells is compelling.

I.E. PFENNIGWERTH

THE RUSSIANS. By Hedrick Smith. Sphere Books Ltd. Paperback. Recommended price $6.75.

There is no shortage of books about the Soviet Union. Indeed few societies or political systems have spawned such a plethora of studies, critical appraisals, or just plain reportage. The secretive and totalitarian nature of Soviet society, and its expanding international political power have aroused, and continue to arouse, intense public curiosity in the West — a curiosity to which the growing caucus of Sovietologists has unfailingly responded with a stream of literature. To stand out from this dense body of material, a book must have singular interest. Rick Smith's, *The Russians*, published in 1976, and still a best-seller, is such a book.

Smith was Moscow correspondent of the New York Times from 1971 to 1974. In the company of distinguished journalists who were his contemporaries in Moscow, Smith stood out not only as an objective and yet original reporter, but, in a traditionally exuberant profession, as a quiet and cautious practitioner. He and his wife, Ann, lived in the block of apartments on Moscow's mid-city ring road, the Sadovo — Samotechnaya, which housed most of those Western diplomats and pressmen regarded by the KGB as presenting the most active threat to the Soviet State's obsessionally preserved security and reputation. The Smith children went to the neighbouring Sverdlovski Quarter Soviet primary school, and their parents made it a point to break out of the rather closed foreign diplomatic and press community in Moscow and into Soviet Society at all levels.

Smith's objective from the start was to live, breath and report on the human quotient of the Soviet scene; 'The texture and fabric of the personal lives of the Russians'. Meticulous and possessed of a prodigous memory, his trained eye, ear and pen captured and recorded an authentic panorama of the lives of ordinary and extra-ordinary Soviet citizens. Rick Smith carried this 'Peoples Eye View' through to his examination of the system and of the significant and controversial issues in state and society. The book is a work of art, for Smith's insight and feel for the seemingly insignificant detail which reveals the truth are unerring, and his writing style both subtle and direct. It is a 'Tour de Force' of journalism and deserves every bit of the success which it continues to have.

Its very objectivity makes it sensational. The truth is that life in Soviet Russia is totally unlike that in the West, just as it is totally unlike the picture painted of it by Soviet officialdom. Nor does it resemble the many superficial descriptions provided by journalists and commentators with less time, less insight or less determination than Rick Smith to see the skull beneath the skin. Many aspects of everyday existence in the USSR are surprising and some shocking. All are difficult to believe unless set out in such a way as to convince the reader of their reality. Smith had this gift. His book rivets one as it moves from one simply described but startling revelation to another. For instance, it is difficult for a Westerner to conceive of a society in which sensational murders are not news to be widely reported in the media. The October 1974 murders, the rumours about which are faithfully reported by Smith are a case in point.

Early in October 1974, my wife and I found that, contrary to the normal practice when we were in Moscow, as opposed to the provinces, we were being followed very closely indeed by the KGB. It did not take us long to find out that it was not for the normal reasons but for our own protection. A series of vicious and apparently indiscriminate murders of women had taken place in Moscow. The Organs of Security were not about to allow a diplomatic incident to sour the milk of detente and our 'tails' stuck to us like lice. Rumours about the murders abounded. One of the most prevalent was that there had been a mass jail break-out in the closed city of Gorkii on the Volga. The escaped prisoners, whose number was variously reported as between 40 and 70 apparently included a number of convicted psychopathic killers. The prisoners, so the rumours went, gained possession of a high speed river hydrofoil and reached Moscow in the craft before dispersing. Once in the capital, the psychopaths went on a rampage of killing, disposing of double figures of victims before the Militia caught up with them. Not a single mention of this, to say the least, sensational event was made in the press, radio or television, yet the evidence that something untoward was happening in Moscow was obvious. The streets were patrolled at night by 'Druzhnik's' (a sort of auxiliary policeman or special constable, wearing a red arm band on civilian clothes) and the militia were around in twice or three times their normal numbers. Smith faithfully conveys these revealing incongruities.

Nevertheless, and in spite of his objectivity and his book's real literary merit, what he has written needs to be read with caution. By bringing the reader into intimate contact with the daily life of the Soviet citizen he has introduced a note of blandness. One feels instinctively, having read the book, that the bad old days of Stalinism, purges, death and torture are over and have been replaced by a sort of benign authoritarianism which, reports Smith, Russians tend, for historical reasons, to feel happier under anyway. In fact the realities of governmental menace have a visceral grip on citizens in general, and in particular on those who are not conformist and tight-lipped. The latter are right to be afraid.

Take the story of D, a painter. A most original and competent artist, his sombre impressionist oils were imbued with a religious symbolism stemming from his own slav spiritual commitment. They did not match the state's vision of socialist art, and were not hung in State galleries. He did, however, have admirers in the intellectual community, and his paintings were much sought after. D's studio, in the top floor apartment of a river embankment building in a famous Russian port, overlooked a strategic factory. In the mid seventies, D was introduced to an individual from an embassy in Moscow, whose apparent interest in art could have been less genuine than his interest in strategy, and who could have used D's studio to observe goings on behind the factory walls. Within months D's studio was burnt down with him in it.

Tragedies like this, events which could be construed as official murder, are as much a part of everyday life in the Soviet Union as meat shortages and corruption. Official brutality, pure and simple, is also never far beneath the surface.

My wife and I arrived late one night in the medieval city of Novgorod. It was a favourite stop-over for us. Inside the walls of the magnificent Kremlin there are historic churches, an excellent art gallery, an iconographic museum and one of the best restaurants in the USSR. Our arrival at the hotel was blocked by Militia vans and a restless but silent crowd. In the centre, truncheon-wielding Militia-men were laying into a small group of terrified male teenagers. Our ears ringing with the screams of the offenders and the thuds of wood on flesh, we watched as, one by one, the youths were flung into the vans. In a few minutes it was over; the crowd melted as silently as it had stood and we picked our way through pools of blood and the debris of broken spectacles, abandoned footwear, sodden shapkas and scarves, into the hotel. Later, I asked a waitress what the trouble had been about — 'Oh Nichevo (nothing at all)' she replied. 'It was one of the kids' birthdays. They had had too much to drink and a quarrel started'. This incident was by no means isolated. We witnessed many such scenes over the few years we were in the USSR. Hedrick Smith fails to convey the sense of fear and tension that the omnipotent instruments of totalitarianism can instill into a population.

There is another area in Smith's *The Russians* which needs to be taken with salt. Smith is not alone in being, amongst commentators of the Soviet scene, a 'historicist'. This is to say that he sees the present rulers of the USSR as the natural heirs to the Czars, the present organs of repression as the heirs to the Czar's secret police, the Gulag Archipelago as a continuation of exile to Siberia, and the totalitarian and authoritarian nature of the present regime as answering to a basic psychological need in a Russian's mentality. In a word *'tout ca change, tout c'est la meme chose'*.

This view is to some degree summed up by Smith's choice of a title for his book. The book describes the USSR, not Russia, which is only one of the so-called Republics of the Soviet Union. The use of the word Russia or the 'Russian Empire' to describe the huge territory dominated by the communists is a dangerously unreal but widely accepted concept in the West. Pre-revolutionary Russia and its Empire, which the 'historicists' seek to associate with today's Soviet Union by use of the term *Russia* instead of *USSR* was in fact, by the turn of the century, a regime with a high degree of freedom of expression, an independent judiciary and a spectacular rate of industrial growth. Industrial expansion between 1905 and 1914, for instance, averaged some 13% per annum, a level unsurpassed by any nation before or since. To think of the Russian Empire before 1917 as a backward, enslaved, decadent, and lawless society is a misconception.

I recommend to readers of Smith's *The Russians* that they should also read Solzhenitisyn's *The Mortal Danger*, in which the fallacy of 'historicism' is exposed, as a necessary counter-balance — a backdrop against which to view what is essentially a journalist's, not a philosopher's, vision of the USSR today.

'BRASDACIER'

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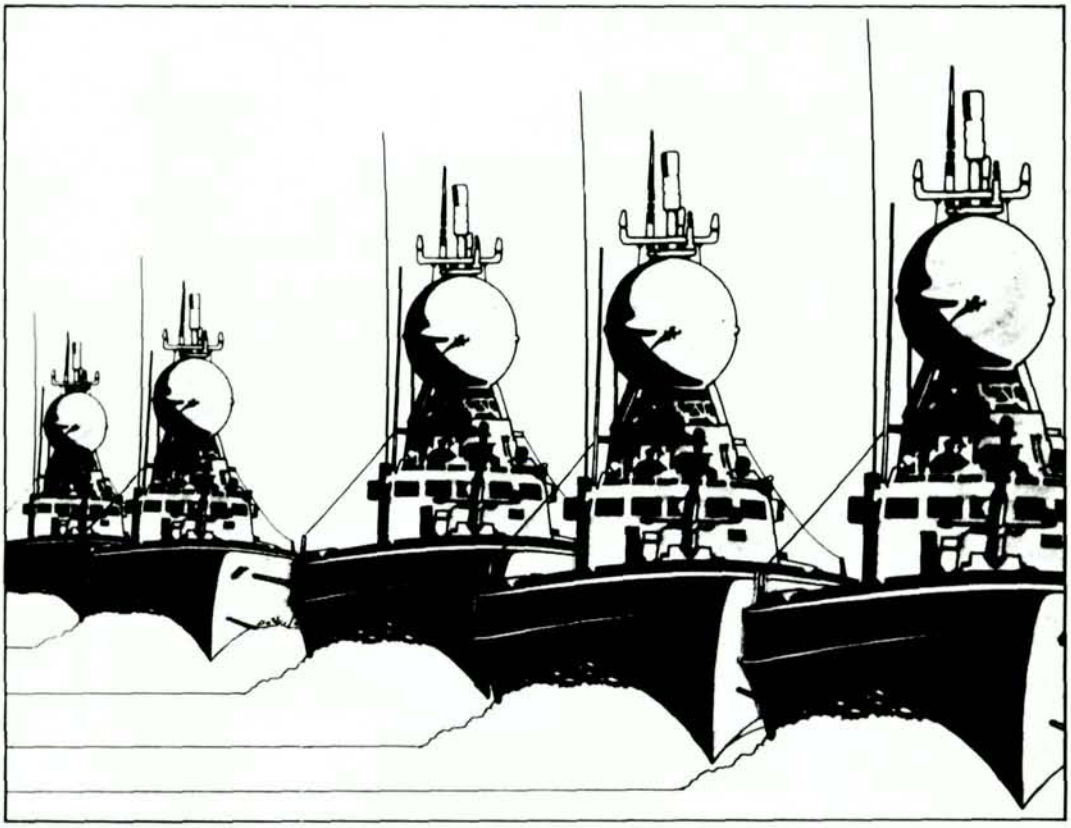

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